Health and health related behaviour within general practice in South Thames

Final Report

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Executive Summary

Background & Methodology

- Work in the National Health Service is commonly perceived to be extremely demanding and pressurised. Hospital workforce studies have reported high levels of job strain or work-stress, particularly amongst managers.

- This study aimed to investigate the prevalence of job strain amongst doctors and staff working in general practice in the NHS-E South region.

- A two stage research design was adopted, comprising a postal survey (n=1089, response rate = 70%), and follow-up face to face interviews with staff at 10 practices (n=87).

Quantitative Findings

The Prevalence of Psychiatric Distress

- The 12 item General Health Questionnaire (GHQ) was used to identify 'cases' of minor psychiatric distress.

- 23% of respondents were classified as cases of psychiatric distress.

- The highest rate of cases was found among doctors and practice-managers, 30% of whom were classified as cases of psychiatric distress.

- The lowest rate of cases (17%) was found amongst receptionists.

- In 10 of the 81 practices 40% of staff were classified as cases, while at the other end of the continuum, 10 practices had less than 10% of staff who were cases. This 'practice effect' was found to be independent of differences in the occupational composition of practices.

Job-Strain

- The relationship between work characteristics and morbidity was explored using Karasek & Theorell's Job Content Instrument, which comprises indices of job demands, job control, and social support at work.

- Respondents who report high job demands in conjunction with low job control and low social support are deemed to have a high degree of job-strain, which

other studies indicate is associated with above average rates of psychiatric and physical morbidity.

- Practice managers were more likely to report high job demands and low social support than other occupational groups in the study, although they also tended to report high levels of job control.

- Doctors were less likely than practice managers to report high demands or low social support, although they were marginally more likely to report low control.

- Receptionists and admin/clerical staff were much more likely than their colleagues in other occupational groups to report low job control, although they were less likely to report high demands or low social support.

Job-Strain & Health

- Those reporting high job demands were twice as likely to be cases of psychiatric distress, compared with those reporting low demands.

- Those reporting low job control were twice as likely to be cases of psychiatric distress, compared with those reporting high job control.

- Those reporting low social support at work were 2.37 times more likely to be a case of psychiatric distress than those reporting high social support.

- High job control appears to reduce the rate of psychiatric distress cases amongst those with high job demands, but only amongst those who also report high social support. Where social support is low, rates of psychiatric distress do not appear to be significantly reduced by high control.

- There was no apparent relationship between the job strain variables and measures of physical health status, although this might be because of the health measures used, or because physical ill health lags behind the incidence of job-strain, or because the physically ill tend to be selected out of the workforce.

- Contrary to expectations, no association was found between psychiatric distress and: practice size; full or part-time employment; length of time in general practice; doctor's age (with possible exception of age 45-54); and doctor's gender.

Job Satisfaction

- Receptionists, practice nurses, district nurses, and health visitors had lower job satisfaction than doctors.

- Those with low job demands were twice as likely to have medium to high job satisfaction as those with high job demands, (although doctors were the exception to this rule, tending to have both high demands and high job satisfaction)

- Those with high job control were 9.5 times as likely to have medium to high job satisfaction as those with low control.

- Those reporting high social support were 9.9 times as likely to report medium to high job satisfaction than those with low support.

- There was no apparent relationship between job satisfaction and absenteeism.

Qualitative Findings

Perceptions of Job Demands

- Karasek's conception of high demands as heavy workload and pressure of time was highly salient to work in general practice. For clinicians this was compounded by the fear of making mistakes due to pressure.

- Dealing with 'difficult' patients was identified as an additional demand. There were two dimensions to this difficulty: rudeness/abuse (and sometimes physical assault), and inappropriate demands for care. The stress of dealing with difficult patients came not just from extra workload, but also had a moral dimension.

- Clinicians often spoke about the emotional demands of dealing with severe illness or social problems. Women were felt to face greater exposure to emotional demands. Balancing empathy and detachment was felt to be demanding, and the ability to 'compartmentalise' the two was considered to be an essential skill.

Perceptions of Job Control

- Karasek's conception of job control as decision latitude and skill discretion was salient to work in general practice, but for many doctors in particular it

was felt that this could not be separated from clinical and managerial responsibility.

- There was, therefore, a degree of ambivalence about job control, and Karasek's prediction that increased job control reduces job strain was not always felt to be accurate.

- Ambivalence about job control adversely affected the relationship between doctors and nurses, and doctors and practice managers, causing disputes over the manner and extent of delegation. This was compounded by financial constraints on the appointment of managers.

- Assessments of job control were found to be highly subjective.

Perceptions of Social Support at Work

- Karasek's conception of social support at work in terms of the provision of information and help from colleagues and managers was salient to work in general practice.

- Although social support was perceived to benefit the recipient it was experienced as an additional demand by those who provided it, and could therefore also be viewed as a contributor to job strain.

- Other aspects of social support at work included: the 'family atmosphere' associated with small organisations, clarity about obligations and entitlements, flexibility, and an 'emotionally intelligent' managerial style.

- The above features of supportive social relations were also felt to be important between staff and patients, as a means of reducing unreasonable demands, abuse, and litigation.

Perceptions of Work-Stress

- Some informants defined work-stress purely in terms of job characteristics like demands and control. Others felt that work-stress occurred when the individual was unable to cope with these characteristics, or when they led to physical or psychological health problems.

- Some informants felt that stress was a 'good thing', serving as a stimulus to action and a boost to self-esteem.

- It was also suggested that individual's had a 'threshold' beyond which they would not be able to cope. This threshold varied from person to person,

however, it was shaped by social and cultural factors, as well as by personality and work characteristics.

- Many informants felt that they had stressful jobs, but it was generally not felt that work in general practice was intrinsically harmful to mental or physical health.

- Several informants viewed their job in general practice as a refuge, either from a previous post, or from stress at home.

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Introduction and background to the study

During the 1960s, 70s and 1980s general practice underwent a continuous process of professional development that significantly raised the status and morale of practitioners and made it an attractive career option.[1] However, more recent changes may have threatened this development and evidence from several studies[2] indicates a lowering of job satisfaction[3] and an increase in job stress and poor mental health amongst general practitioners.[4] The major sources of stress for general practitioners appear to include excessive work hours (particularly out of hours care), administrative burden, government inspired changes, the emotional burden of patient care, worry about complaints from patients and conflicts of career with personal life.[5,26] The extent of the problem is illustrated by calls to the BMA stress help-line which received more than 6000 calls in its first two years of operation.[27] Further evidence suggests that younger male GPs are at particular risk of job dissatisfaction, emotional exhaustion, and depersonalisation of others.[26, 28, 29] Other workers in the health sector have faced similar difficulties, raising the question of whether the problems facing general practice are specific to this particular sector of healthcare, or, part of a broader malaise.[6]

The importance of understanding work stress and health as a problem for the whole organisation, rather than for the individual, has been emphasised in UK government policy documents.[7] Yet despite this emphasis, research has tended to focus on the general practitioner in isolation, with little attention paid to other members of the practice and the wider primary care team. For example Appleton et al,[5] in a study of 406 general practice principals found the prevalence of stress to be 52% using the GHQ12 threshold of 2/3 as a measure of psychiatric distress. Firth-Cozen,[28] in her longitudinal study of a cohort of medical students, followed up in 1993-4, found that 33% of the GPs scored above the threshold for symptoms of stress using the GHQ-12However, little is known about levels and

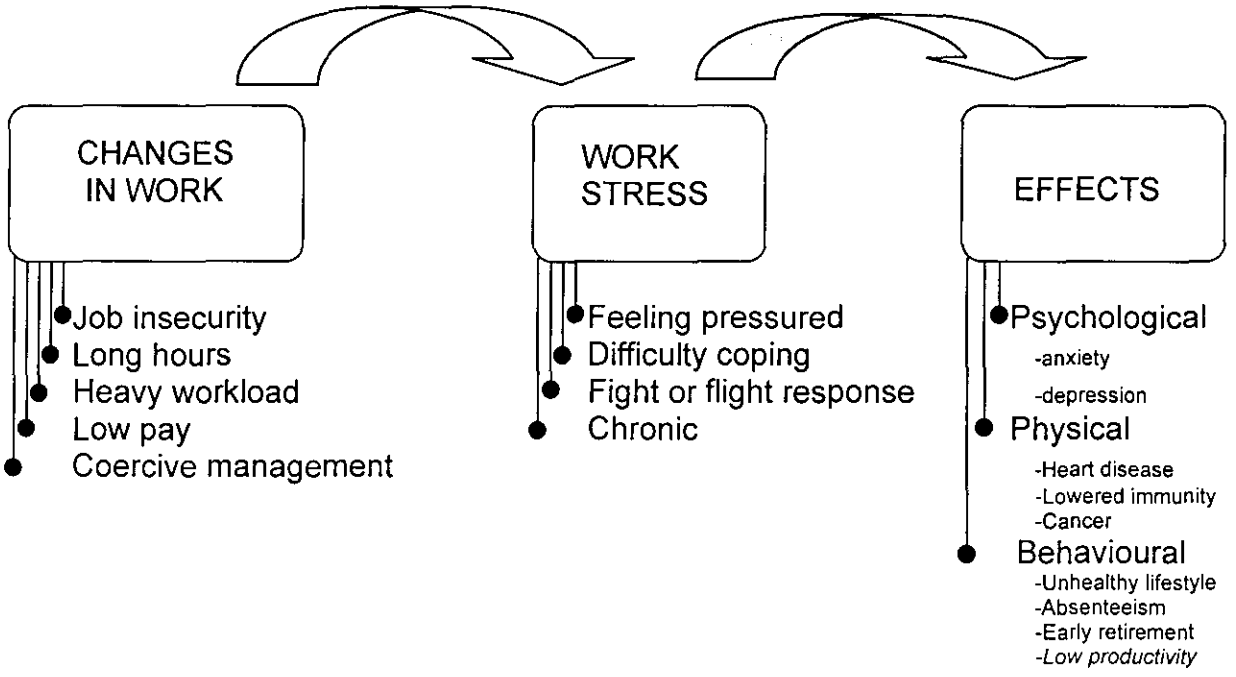
sources of stress for other practice staff, such as: practice managers, nurses, receptionists, and other primary care workers. By contrast research in the hospital sector has begun to adopt this workforce perspective rather than treating individual occupational groups in isolation. One such study,[8,9,25] examined levels of stress amongst employees in NHS Trusts, documenting the work factors associated with stress and the effectiveness of selected interventions in reducing stress. Samples of the workforce were surveyed on two separate occasions in 1994-6 and 1996-8. Using GHQ-12 'caseness' (3/4) as indicator of stress the research showed just over a quarter of the samples in both surveys were found to be suffering from a significant level of stress. There were considerable differences in stress levels between occupational groups (with managers, junior managers in particular, experiencing the highest, and ancillary staff lowest). As a whole the rate of psychiatric distress cases among NHS staff was substantially higher than that recorded among British employees more generally. Larger trusts tended to experience higher levels of stress. The work characteristics which best accounted for differences in stress levels among employees were high work demands, low influence over decisions, poor feedback on performance and high role conflict.

Although the introduction of primary care groups and the continuing emphasis on teamwork has raised questions about general practice as an organisation, the workforce perspective adopted in the above study of hospital trusts has not been replicated in primary care research. This report presents findings from a study which attempted to fill this gap by examining the prevalence of stress and causes of work stress amongst the general practice workforce.

Work and Health: different perspectives

The chart below depicts a simplified version of the general explanation for a possible link between work and health. Thus, working conditions such as job insecurity, long hours, heavy workload, insufficient rewards, and coercive management, generate work stress, which can manifest itself in feeling

pressured and having difficulty coping, which in turn can lead to physical psychological and behavioural problems.



More specifically, studies in the health service, such as Borrill et al's study of stress in hospital trusts[8] identified the importance of high work demands and low influence over decision making as important factors. However, there are a number of social epidemiological models which have included these factors in their attempts to explain the relationship between work characteristics, stress and health. For example, one approach developed by Siegrist[10] called the "effort-reward imbalance model" focuses on the links between work tasks and labour market dynamics. Siegrist suggests that occupational status can provide an opportunity to increase self-esteem and self-efficacy, through effective role performance. But the psychological benefits associated with work depend upon a reciprocal relationship in which the individual's investment of effort, is matched by adequate rewards (money, esteem and career opportunities). Lack of reciprocity, i.e. jobs that entail high costs and low gains, lead to emotional

distress and the arousal of the autonomic nervous system, which in turn has consequences for health.

A second social epidemiological approach which has been more widely used puts more emphasis on the situational characteristics of the work environment particularly the extent and nature of a worker's control over the working environment. This is the job strain model developed by Karasek and colleagues,[11, 12] and it considers the influence of 'social support at work' in addition to the concepts of 'job demands' and 'job control'. The 'job demands' dimension comprises both physical and psychological demands, and examines the pace and intensity of work. The model predicts that job strain is not simply a function of job demands, but also depends upon the amount of control the worker has over their work and the skill and variety involved. Work which combines high demands with low control is predicted to cause a high state of job strain with the subsequent risk of psychological and physical morbidity. Such adverse outcomes may be mitigated by social support at work, from colleagues and superiors, which interacts with decision latitude to confer protection from the effects of high job demands. Hence, it is argued that job strain and its manifestation in the form of depression and anxiety, is more prevalent in work characterised by high demands, low control and low support.

One criticism of these social epidemiological approaches is that they neglect the meaning placed on, or the interpretation of, the so called stressful circumstances by different members of the workforce. Eakin and MacEachen[13] describe this as the social interactionist approach. They state the 'social interactionist' approach proposes that health problems can be created, aggravated and made chronic through the meanings associated with certain conditions of work; social relations and bodily circumstance. For example, in their study of the health-related experiences of employees in small enterprises Eakin and MacEachen show that particular features of working life in small workplaces, especially their personalised social relations and low polarisation of employer – employee

interests, shape workers' perceptions of the employment relationship and of health in relation to work. For example, employees who perceived their superior or employer in negative terms recounted quite different health-related experiences to those who had more positive relations with their employers. Those employees who had relatively 'negative' relations with their employers were both more likely to resent it and to blame it on their bosses or supervisors. Thus Eakin and MacEachen argue:

> *'The study also underscores the extent to which health status does not exist independently of its subjective interpretation by those experiencing them, and the ways in which this interpretation is bounded by the social relations in which it is embedded'. p913.*

Conceptual Approach

The study set out to explore the patterns of health amongst primary care team members; to establish whether it is possible to characterise practices as "healthy" and "unhealthy"; and explain the reasons for any such patterns. The conceptual approach was informed mainly by the model of job strain developed by Karasek and colleagues by examining, through analysis of quantitative survey data, the relationship between work characteristics and indicators of physical and psychological health, and whether these relationships are affected by other factors such as practice characteristics, job specific and person specific characteristics. The qualitative element of the study, (the follow-up interviews) enabled the same relationships to be examined, specifically exploring the relationship between situational work characteristics (e.g. job demands, control and support) and primary care team members' perceptions and experiences of so called stressful work characteristics. This enabled some of the questions raised by Siegrist's effort/reward imbalance model, and by Eakin and MacEachen's social interactionist approach, to be examined.

Aims & Objectives

- To identify the extent of variations in mental and physical health status between general practice workers and between practices
- To examine the relationship between work characteristics and mental and physical health status
- To examine perceptions and experiences of work stress among the primary care team

1. Methodology

A two-stage research design was adopted, comprising a postal survey of practices in South Thames, followed by in-depth interviews with staff at a number of practices that had participated in the survey.

Stage 1: The postal survey

Questionnaire design

A detailed questionnaire was designed to examine the relationships described in the previous section. The questionnaire is attached, (appendix 1).

Psychiatric distress was measured using the 12 – item General Health Questionnaire, (GHQ-12).[14] The GHQ 12 covers feelings of strain, depression, inability to cope, anxiety-based insomnia, lack of confidence and esteem, and other symptoms of psychiatric distress, (see appendix 1, q.9). It was designed to identify individuals in both community and workplace settings reporting sufficient symptoms to be deemed 'probable cases' of minor psychiatric distress. In this study, following previous studies in the workplace, a threshold of 3 was adopted, i.e. respondents reporting four or more symptoms were classified as GHQ 'cases.[15, 8]

Job strain was measured using Karasek's job content instrument, (see appendix 1, q's 9-14),[11] which comprises three dimensions: job control, job demands, and social support at work. The variable measuring each dimension was constructed

by combining each respondents answers to a series of questions, for example, "Do you have time to do everything" was one of the questions used to measure job demands; "I have a good deal of say in decisions about my work" related to job control; and "How often do you get help and support from your colleagues" related to social support, (see appendix 2). Each question had a series of alternative responses which were coded using a Likert scale, (e.g. Often = 1, sometimes =2, seldom =3, never =4), so that the responses could be summed to give a score for each variable. The questions used to measure the three variables of the job content instrument, and the method of coding and scoring them, was derived from the Whitehall II study of British civil servants.[23, 16]

Data were also collected on supplementary aspects of stress and work characteristics, including: the balance between work and family life, health status (measured by the SF12, see appendix 1, q's 1-7),[17] sick leave and GP consultation, health related behaviour (smoking, drinking, weight and exercise); occupation and employment status; personal characteristics (gender, age, marital status); practice characteristics (partnership size); and the level of unemployment in the local population.

Sampling & Methodology

A list of all practices in the South Thames Region (n=1283) was obtained from the NHS-E Regional Office. A sample of 300 practices was randomly selected from the list, by using random number tables. This sample size was based on the original idea of focussing only on GPs, practice nurses, practice and

fundholding managers, and receptionists. It became clear that this was a rather restricted view of what constituted 'practice staff' and it was decided to extend the sample to include other members of staff. This had implications for the sample size in terms of what was manageable and thus the sample size was reduced to 100, therefore, every third practice from the original 300 was selected.

The pilot study indicated that there might be problems gaining access to practices, therefore, a complex system of contact was used. First, a letter was sent to the senior partner at each of the 100 practices in the sample, introducing the study and requesting participation. This was followed by a telephone call to either the senior partner or the practice manager to ascertain willingness to participate. In 5 of the practices the GP had retired, and a further 14 declined to participate. This left a final sample size of 81 practices.

A second letter was sent to practice managers asking for the number of staff in each of a list of occupational groups (see table 1). Follow-up telephone calls were made to those who did not respond to the letter. The sample size, by occupational group is illustrated in table 1.

Table 1. Sample size by occupational group

Occupational Group	Number	% of Total
General Practitioners (including registrars, assistants and locums)	304	20
Practice Managers	74	5
Receptionists	431	28
Administrative & Clerical	202	13
Practice Nurses	187	12
District Nurses	193	13
Health Visitors	139	9
Unassigned	15	1
Total	1545	

The appropriate number of questionnaires and reply paid envelopes was sent to each practice, for distribution by the practice manager or senior partner.

Practices with a response rate of 70% or less, one month after the questionnaires were sent out, were contacted by telephone, and the practice managers were asked to circulate duplicate questionnaires and a brief reminder.

Survey Response Rate

The number and percentage of practices willing to participate in each district is illustrated in table 2.

Table 2. Geographical distribution of sample

	Number of practices in district	Practices randomly selected	Practices willing and able to participate
Bexley & Greenwich	90	10 (11%)	8 (9%)
Bromley	57	4 (7%)	3 (5%)
Croydon	70	7 (10%)	5 (7%)
East Surrey	62	4 (6%)	4 (6%)
East Sussex	134	12 (9%)	12 (9%)
Kent	317	21 (7%)	18 (6%)
Kingston & Richmond	63	3 (5%)	3 (5%)
Lambeth, Southwark & Lewisham	162	13 (8%)	9 (6%)
Merton, Sutton & Wandsworth	133	14 (10%)	10 (7%)
West Surrey	94	7 (7%)	6 (6%)
West Sussex	100	5 (5%)	3 (3%)
Total	1282	100	81

As table two indicates, the percentage of practices selected in each district ranged from 3 to 9.

The survey response rate can be calculated in two ways, depending on whether the denominator includes practices where the senior partner or the staff (collectively) refused to participate. Arguably, such practices count as refusals and should be included in the response rate calculation, however, staff at these practices were not sent questionnaires and, therefore, did not have the

opportunity to refuse directly. For this reason the practice level refusals have not been included in the response rate calculation.

Table 3 illustrates the response rate, broken down by occupational group.

Table 3. Response rate by occupational group.

Occupational Group	Number in Sample	Number of Responders	Response Rate
General Practitioners (including registrars, locums & assistants)	304	195	64%
Practice Managers	74	70	95%
Receptionists	431	315	73%
Admin. & Clerical	202	139	69%
Practice Nurses	187	129	69%
District Nurses	193	116	60%
Health Visitors	139	88	63%
Unassigned	15	27	n/a
Total	1545	1089	70%

As table 3 indicates, the response rates varied between occupational groups, from 60% to 95%, giving a total response rate of 70%. Seventy-nine percent of participating practices had response rates of over 60%, and all occupational groups had a response rate of over 60%.

No information is available about the characteristics of non-responders, and it should be borne in mind that levels of job strain and health may be different to those reported by responders.

Statistical analysis

Bi-variate (cross-tabulations) analysis was used to examine variations in stress levels by occupation and by work characteristics using the chi-squared statistic to

test for statistical independence. To gain further understanding of the complex relationship between stress levels (and other indicators of health status e.g. physical component scores, job satisfaction levels, absenteeism in the workplace, and formal GP consultations) and occupation, and with the job-strain variables, a series of logistic regression analyses explored the relationship between five dependent variables and work characteristics, allowing for the inflluence of other independent variables.

Dependent variables

Although the main objective of the survey was to examine mental health and job characteristics, the questions included in the survey permitted further analysis of other important and interesting outcomes within general practice. In this paper, multivariate analysis is carried out for the following dependent outcomes:

- GHQ-12 classification – a dichotomous outcome taking a value of 0 for total GHQ scores below 4 (the non-cases), and a value of 1 for total GHQ scores of 4 or more (the cases) [question 8 in the survey]

- Physical Component Scores (PCS) – a dichotomous outcome taking a value of 0 for the bottom quartile of total PCS score, and 1 for the remaining quartiles [questions 3, 4 and 6 in the survey]

- Job satisfaction – a dichotomous outcome taking a value of 0 for total satisfaction scores between 10 and 22, and 1 for the remaining scores above 22 [question 15 in the survey]

- Absenteeism from the workplace – a dichotomous outcome taking the value of 0 if no days taken for sick leave in the last year, and 1 for at least one day off sick in the last year [question 29 in the survey]

- Formal GP consultations – a dichotomous outcome taking a value of 0 if consulted a GP in the last 12 months, and 1 if consulted a year or more ago (effectively no consultation this year) [question 33 in the survey]

The PCS and Job satisfaction variables were originally coded into 3 categories and could have been estimated using a more complicated model such as the ordered probit model. However, there is little point in using this type of model unless all three categories of the dependent variable are of interest and have meaningful interpretations. This was not the case for PCS (the third category being the two middle quartiles) and Job satisfaction (third category was 'medium'). Hence all models were coded as dichotomous outcomes.

The order of the dependent outcomes follow a logical sequence of events: 2 measures of illness (GHQ and PCS), 1 measure of job satisfaction, labour market consequences – absenteeism, and finally service utilisation (GP consultations). However it should be emphasised that the data used in this paper are most suited for the GHQ and job satisfaction models.

Independent variables

The full list of independent (or explanatory factors) used in the various statistical models are presented below, together with some limited descriptive information. The derivation and coding of these variables is:

- Gender – code 1 for male, 2 for female [question 37 in the survey]

- Age bands – code 1 for 18-34, 2 for 35-44, 3 for 45-54, and 4 for 55 plus [recode of question 38 in the survey]

- Marital status – code 1 for single (never married), 2 for married or living as married, 3 for widowed, and 4 for divorced [question 39 in the survey]

- Occupation – code 1 for doctor, 2 for practice manager, 3 for receptionist, 4 for admin/clerical, 5 for practice nurse, 6 for district nurse, and 7 for health visitor [derived from question 40 in the survey]

- Health compared with last year – code 1 for 'much better', 2 for 'somewhat better', 3 for 'about the same', 4 for 'somewhat worse', and 5 for 'much worse' [question 2 in the survey]

- Job demand is part 1 of Karasek's job content instrument – code 1 for bottom quartile score, 2 for middle quartile scores, and 3 for top quartile score. Low scores indicate a low job demand content [derived from questions 9 and 11 of the survey]

- Job control is part 2 of Karasek's job content instrument – code is the same as that for job demand. Low scores indicate a lower level of control over job aspects [derived from questions 9, 10 and 12 of the survey]

- Social support is part 3 of Karasek's job content instrument – code is the same as that for job demand and job control. Low scores indicate lower social support at work [derived from questions 11 and 14 of the survey]

- Job responsibilities interfere with family life – code 1 if respondent answers 'a great deal' for at least one of the 4 categories from q20 in the survey, 2 for all others, including the category 'not applicable' [derived from question 20 in the survey]

- Family life and family responsibilities interfere with job performance – code 1 if respondent answers 'a great deal' for at least one of the 4 categories from q19 in the survey, 2 for all others, including the category 'not applicable' [derived from question 19 in the survey]

- Full or part-time status – code 1 for full-time, 2 for part-time [question 41 in the survey]

- Smoke – code 0 for yes, 1 for no [question 21 in the survey]

- Drink – code 0 for 'heavy' drinker (every day or 5-6 times a week), 1 for 'not heavy' (none to 3-4 days a week) [derived from question 22 in the survey]

- Weight – code 0 if self-reported not over weight (underweight, right weight or not sure about weight), and 1 for self-reported over weight (overweight or a little overweight) [derived from question 27 in the survey]

- Activity in the last 2 weeks (vigorous sport or recreational activities) – code 0 if none, 1 if 1 or more activities [derived from question 28 in the survey]

Questions not used at all from the survey include the following: 1, 5, 7, 13, 16, 17, 18, 23, 24, 25, 26, 30, 31, 32, 34, and 36. Many of these variables are either closely related to the above variables or were not appropriate predictors for the dependent outcomes.

Other independent variables used in the modelling process derived from 'other' sources:

- Size of partnership - continuous variable with range of 1 to 10
- The percentage of regional unemployment applicable to the area of practice - continuous variable

Logistic regression

The dichotomous nature of each of the dependent variables meant that multivariate analyses could be carried out using the logistic regression. This is a

standard statistical procedure for this type of data, and is well suited for modelling categorical data and for directly calculating the probability of events.[18] Another important feature of the logistic regression is the standard calculation of odds ratios for each explanatory variable used in the model (see below for more detail).

Modelling procedure

The modelling strategy adopted in this paper is based on the following:

- Initial variables of interest have a theoretical justification and meaningful interpretation

- Each variable selected is first tested in a univariate logistic framework.[19] This involves running a series of logistic regressions with only the variable of interest included in the model (plus a constant term). This provides an early indication of how significant the variable is likely to be at a multivariate level, and also checks on the sign of the coefficient (for example, the variable may be coded incorrectly). A variable insignificant at the univariate level, at a predetermined level (for example 5%), will not usually be significant at the multivariate level when all other factors are controlled for (held constant).

- Variables significant at the univariate level (usually at the 5% level) are checked for possible recoding opportunities on the basis of descriptive statistics. For example, simple crosstabulations and means can reveal important relationships between the dependent and independent variables.

- Standard demographic and socio-economic variables (sex, age, occupation etc.) are usually the first set of variables used in the modelling process. They are uncomplicated and tend to be of interest regardless of whether or not they are statistically significant. They are also broad 'aggregated' measures in the sense that any other variables entered into the equation must be a subset of

gender, age etc. By introducing other variables into the equation the partial effects can be observed on these variables

- Variables are entered into regressions one at a time and in different combinations, usually starting with those hypothesised to be the most important predictors of the dependent outcome (after inclusion of the demographic and socio-economic variables). This method of entry allows a closer observation of changes in the significance of variables and the effects that new variables have on those already in the model (for example, job strain variables have a large impact on the occupation variable in the GHQ model)

- Interactions are tested for important relationships in the data, for example, the interaction of gender and occupation, and for age and occupation

- For categorical variables with more than 2 values, the default in logistic regression is to drop the last category, which then becomes the reference group for interpretation purposes. However reference categories should in theory be those of most interest and useful in comparisons. Where appropriate adjustments are made to allow for this, for example, doctor (the first category) is the more appropriate reference group for the occupation variable, not the last category, health visitor.

- Variables that are insignificant at the multivariate level and of marginal interest are usually dropped from equations (usually in the interests of 'parsimony' – the process of keeping models as simple as possible but at the same time explaining as much as possible)

- The fit of each model is not so important in dichotomous variable models (and with cross-sectional data). This is because actual values are clustered around 0 or 1 rather than a more linear form such as least squares. However, in logistic regression, 2 measures of R^2 (overall measure of variation in the

model) are provided for those who are interested in this calculation (Cox & Snell, and the Nagelkerke methods). An alternative and more intuitive observation of how well a model is developing is the change in the log likelihood (provided with each run of the logistic regression) when new variables are entered. Significant variables increase the log likelihood of the regression. Both methods are used to monitor model specification.

- Finally, given the logical order of the regressions estimated here (illness and job satisfaction, absenteeism, and then service utilisation), it is important to interpret variables with closely related models in mind. For example, across all regressions, doctors appeared to be most satisfied with their job and have the highest job demand, but high job demand *per se* was associated with lower levels of job satisfaction.

Interpreting regression results

When checking the output for logistic regression, the following observations are needed:

- Coefficient signs look sensible (- or + ive)

- Standard errors are not too high (usually a sign of multicollinearity or that a particular variable category has a small frequency count). Large confidence intervals for odds ratios are also a sign of unreliability

- The level of statistical significance is acceptable - a 5% level is adopted in this paper. This is of course arbitrary - for example, a 50% significance level could be appropriate in testing for the significance of a particular drug intervention in a life or death situation

Odds ratios look sensible. Note that negative coefficients have odds ratios less than 1, and positive coefficients, greater than 1. It is easier to interpret odds

ratios greater than 1. For example, if a gender variable (coded 0 for male, 1 for female) has an odds ratio of 1.5 in the GHQ regression (0 for no case, 1 for case), this means that females are 1.5 times more likely to be a GHQ case compared with men. If in the same regression the odds ratio is 0.5, this means that females are half as likely to be a GHQ case, or men are twice as likely to be a GHQ case (this is easily computed by dividing the odds ratio into 1, i.e. 1/0.5 is 2 etc.)

Stage 2: The follow-up interviews.

The postal survey provided a quantitative account of the prevalence of work stress using the indices for Karasek's job strain variables and the GHQ-12 measure of psychiatric distress (amongst other variables). However, we were also interested in people's perceptions and experiences of work stress, and this required a qualitative methodology that would enable informants to express themselves in their own words. It was also considered important to examine the social relations and organisational dynamics of particular practices, rather than focussing on individual informants in isolation, and for this reason it was decided that whole practices would be selected for the follow-up study.

Site selection & recruitment of informants

When practices were selected for the postal survey they were also asked if they would be prepared to participate in the follow-up study. Those that refused to participate were obviously excluded from the selection procedure along with those that returned a response rate below 60%. Practice profiles were produced for each of the remaining practices, comprising data on job strain and mental health status of staff (from the survey), and information on number of partners, geographical location, and local population characteristics. The intention was to conduct interviews at five practices that appeared to have high rates of job-strain and poor mental health, and five which had low job-strain and good mental

health. However, there were often inconsistent patterns in distribution of variables and in the scores for different occupational groups in each practice, so the selection process was not as straightforward as had initially been envisaged. To overcome this difficulty each of the four researchers conducted an independent ranking exercise, identifying 10 'good' and 10 'bad' practices for follow-up, based on a subjective assessment of the information provided in the packs. The rankings were then compared at a group meeting where a final selection was made, based on which practices had been cited most often, and backed up by group discussion. As well as the job-strain and mental health variables, practice size, and geographical location were also considered in the selection of practices.

The selection procedure identified ranked lists of 9 'good' and 12 'bad' practices. The best five and worst five practices were then approached to see if the senior partner was still willing to participate in the follow-up study. All five of the good practices agreed to participate, however, it proved much more difficult to recruit from the list of 'bad' practices, and only three of the top five could be persuaded to take part. Other practices from the list were then approached, the sixth practice refused to participate, but the seventh and eighth practices agreed.

The intention was to interview all staff (within the occupational groups included in the survey) that were willing to participate, however, some of the larger practices were reluctant to commit such a large amount of staff time given that it was not possible to reimburse costs. Recruitment was done via the practice managers, who approached staff and scheduled interview times. Each occupational group was adequately represented, although NHS Trust staff (district nurses and health visitors) were more difficult to recruit, and are therefore slightly under-represented. A total of 87 interviews were conducted, including: 31 receptionists, 8 administrative staff, 10 practice managers, 9 practice nurses, 7 district nurses, 5 health visitors, and 17 doctors.

Data collection & analysis

Given the sensitivity of the research questions, it was felt that informants should be interviewed individually to ensure confidentiality and allow the informants to speak openly. A semi-structured interview schedule was used, focusing on the issues raised by the postal survey, and allowing digression where new themes were raised by the informant. The interviews took place at the practice, during work time. All of the interviews were conducted in private to ensure confidentiality. The informants were briefed to assure them that their comments would be entirely anonymous, and their permission was sought to tape-record the interview. Interviews lasted from 20 minutes to an hour. The interview data were complemented by field notes detailing observations made about each practice.

All of the interview tapes were transcribed verbatim and analysed using the Atlas/ti computer package. The analysis deployed the iterative approach of grounded theory,[24] in which transcripts are read repeatedly to identify common themes. The themes are then used to develop a theoretical frame-work. The oscillation between data and theoretical framework is repeated several times, making modifications to the coding and the theoretical framework, until the best fit between the two has been achieved. The analysis was then written up, using illustrative quotations from the transcripts.

3. Findings from the postal survey

Occupational variations in job stress and job content

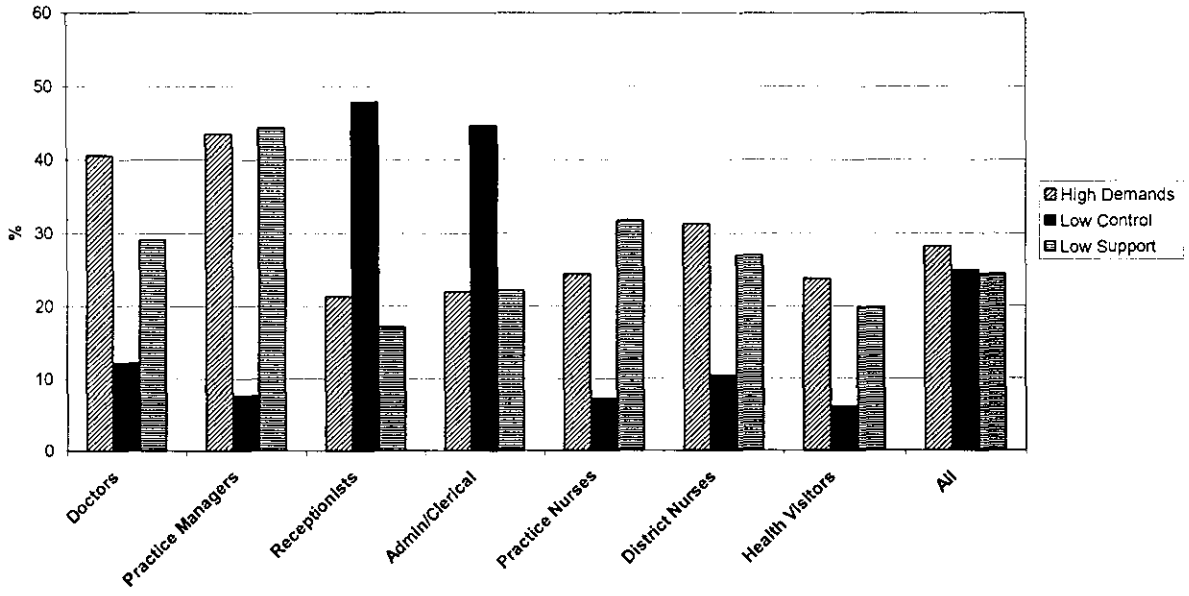
Twenty three per cent of respondents could be classified as psychiatric cases according to the GHQ method of assessment. The highest percentage of GHQ cases (see Fig. 1) was found among doctors and managers (30%), followed by district nurses (27%). Receptionists and administrative & clerical staff had significantly lower rates, 17% and 19% respectively. Differences by occupation were statistically significant, (Chi-square=16.4, P<0.05; ANOVA F=2.8, p<0.05 for both dichotomous and continuous measures of GHQ).

Fig. 1.

The job strain model suggests that high job demands, low job control, and low social support are indicative of job strain, which might have adverse consequences for health. High and low groups were defined for each of the three variables - calculated by dividing the distribution for each variable into quartiles. The bottom quartile was labelled as the low group and the top quartile as the high group. However, because the range of scores was small, the quartiles could not be cut at exactly 25%. Figure 2 illustrates differences in the percentage of respondents in the high job demands group, the low job control group, and the low social support group, by occupation. The quartile size of each group is indicated under the 'all' heading.

Fig. 2.

High Job Demands, Low Control & Low Support by Occupation



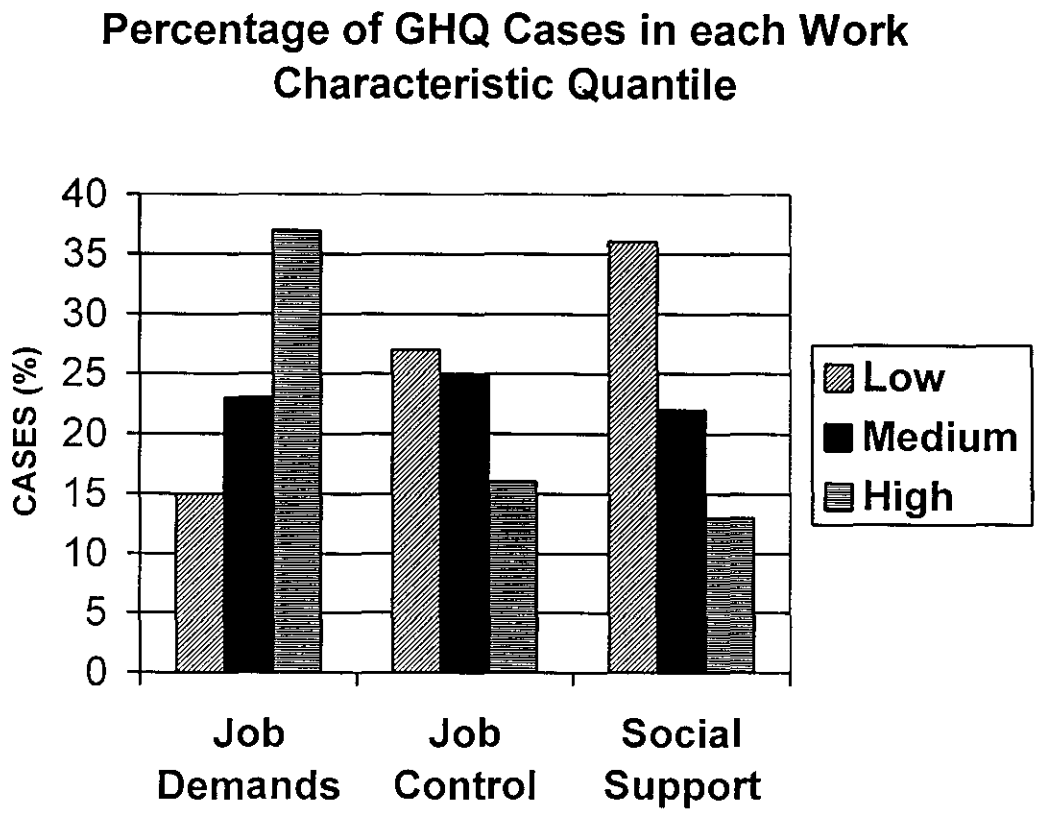
The data in fig.2 suggest that there is considerable variation in job strain measures by occupational status. Compared with the other occupations, doctors

tended to have highly demanding jobs over which they had moderate control with only a moderate degree of social support from colleagues. Practice managers also tended to have highly demanding jobs, but with higher levels of job control and low levels of social support. Receptionists and administrators appeared to have relatively low job demands and low job control, but relatively high levels of social support. Differences between occupational groups were statistically significant for all of the three job strain variables, (Job demands – Chi-square=39.862, $p < 0.05$; Job control – Chi-square= 236.641, $p < 0.05$; Social support – Chi-square= 45.725,$p < 0.05$).

Job Content and Stress

The analysis so far has examined variations in the distribution of psychiatric distress and job strain, but what can be said about the relationship between these variables? Figure 3 shows the pattern of these relationships, and for all three dimensions of the job content instrument there were statistically significant relationships with psychiatric distress (GHQ 'caseness'). There was an inverse relationship between level of job control (Chi square=10.27, $p<.01$) and GHQ caseness and between level of social support and GHQ caseness (Chi-square=36.6, $p<.001$). However, there was a positive relationship between job demands and GHQ caseness (Chi-square=43.8, $p<.001$).

Fig. 3.



Figures 4 and 5 show the interrelationships between demands and control and social support. The social support distribution was divided between those below the mean (low social support) and those above the mean (high social support). Figure 4 shows that in situations of low social support GHQ case rate appears to hinge on job demands rather than job control. However, in situations of high support (see Figure 5) the impact of both job control and job demands appear to be important i.e. the highest GHQ case rate was found where there was high demand and low control.

Fig.4.

Low Support (Big Band): GHQ Cases (%) by Demands & Control

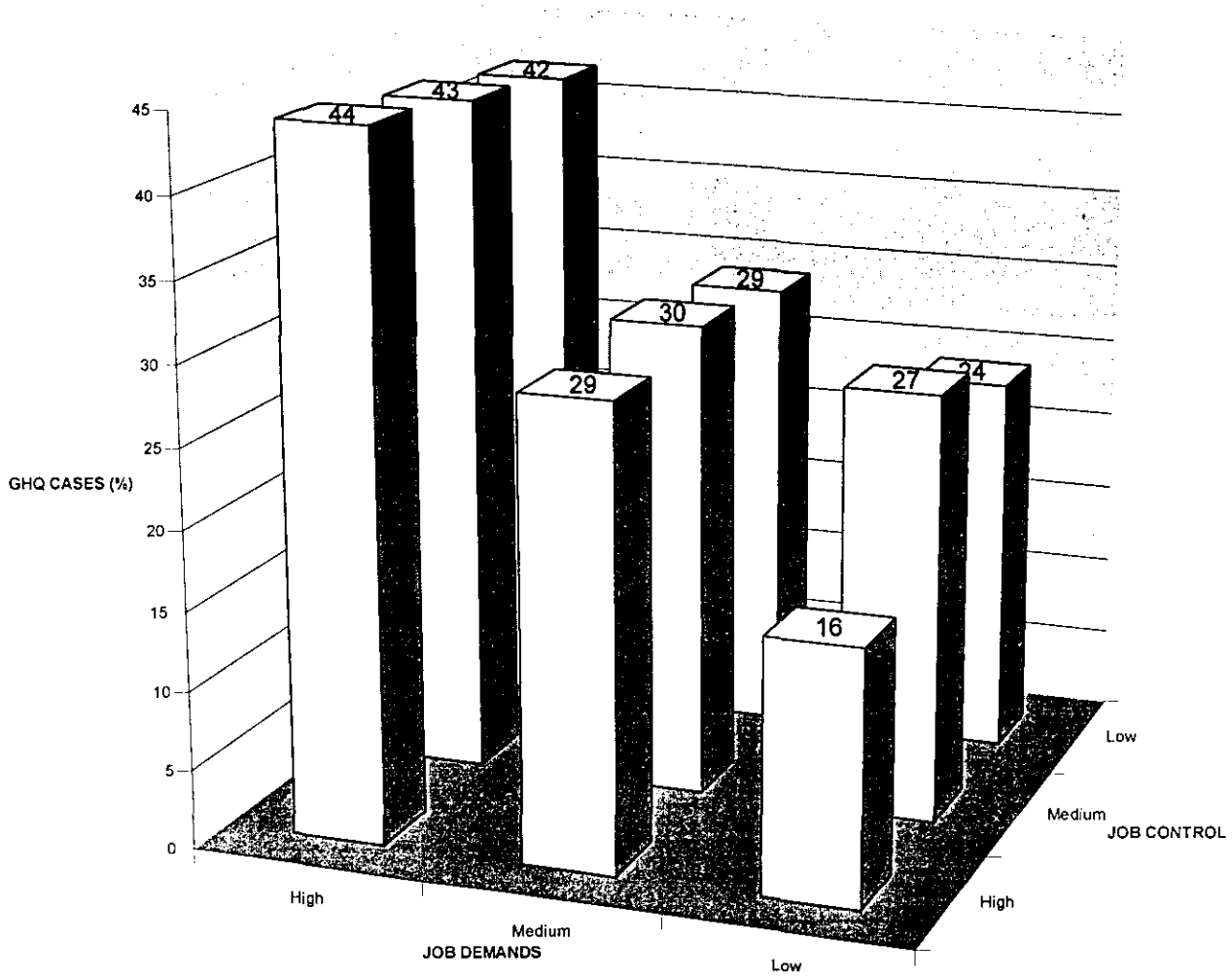
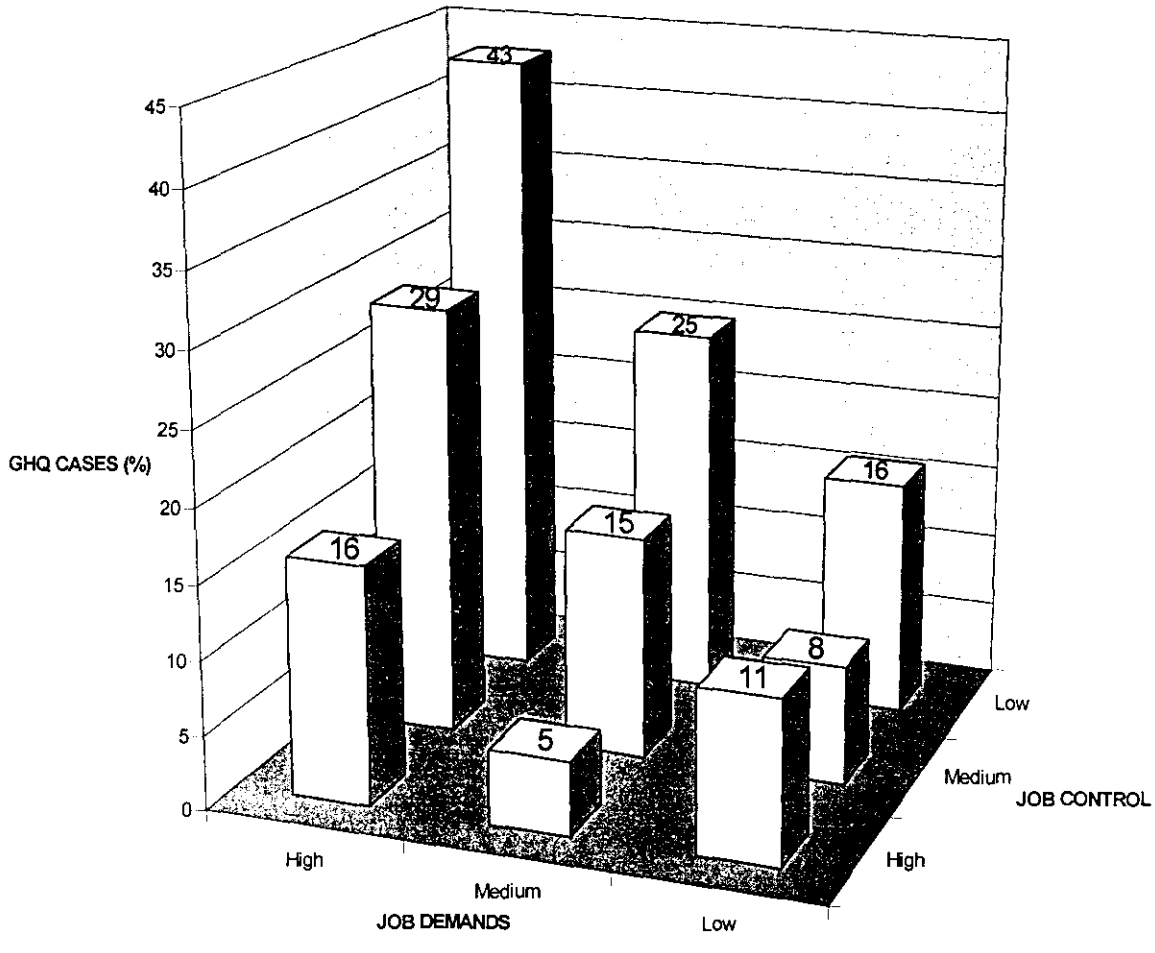


Fig. 5.

High Support (big band) - GHQ Cases (%) by Demands & Control

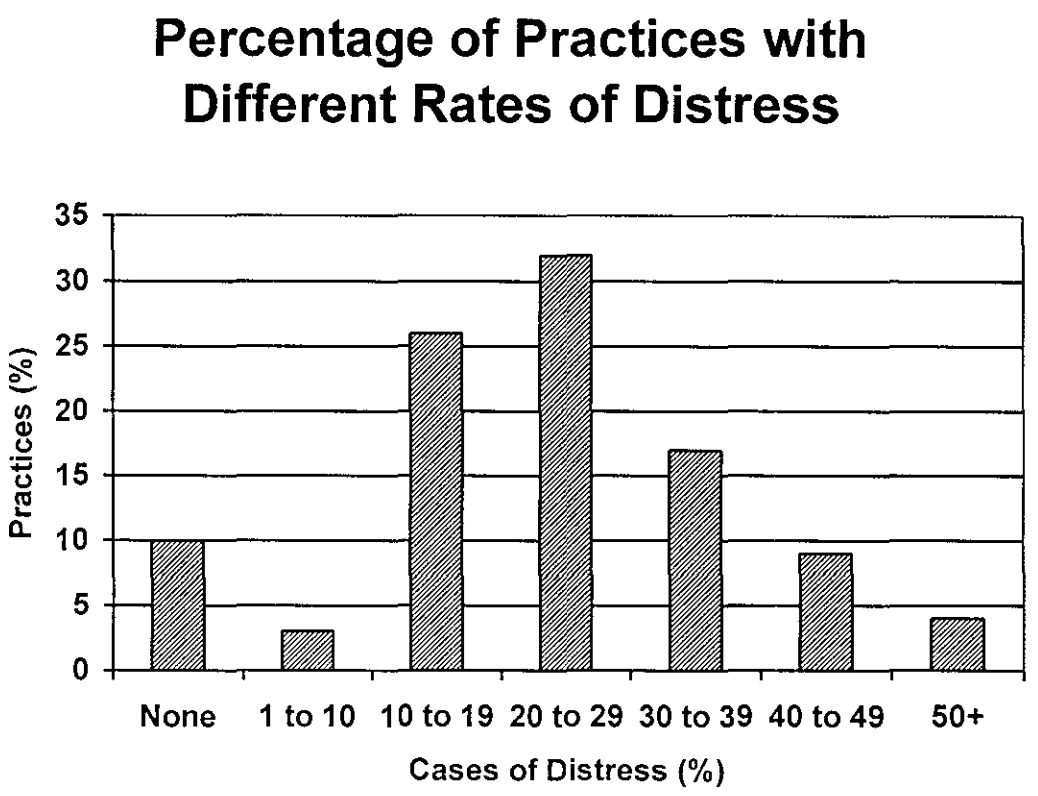


Having established significant differences in the rates of psychiatric distress and job strain, and also in different occupations, the analysis turned to an examination of the differences between practices, to see if stressed individuals were clustered in particular practices.

Stress at the practice level

Figure 6 shows that of the 81 practices participating in the study 10 (13%) had at least 40% of their staff reporting psychiatric distress as measured by the GHQ, while at the other end of the continuum 10 practices (13%) had less than 10% of their staff in this category. The question arises as to whether the different rates of psychiatric distress found between practices were simply a function of differences between occupations. For example, doctors were more likely to suffer psychiatric distress than were receptionists, thus differences in the percentage of staff suffering psychiatric distress at different practices might simply reflect differences in the ratio of doctors to receptionists, rather than an independent effect stemming from other practice characteristics. To test this a simple exploratory logistic regression analysis was carried out aimed at identifying the possible separate occupation and practice effects on GHQ caseness. The results indicate some level of independence between these two variables in the prediction of GHQ caseness - that is, controlling for occupation, working in a small number of practices did appear to influence caseness at the 5% significance level. However, to formally account for this variation at a practice level would require the use of multi-level modelling techniques and more information on practices. It should also be noted that partnership size (one measure of occupational mix) was not a significant predictor of GHQ caseness.

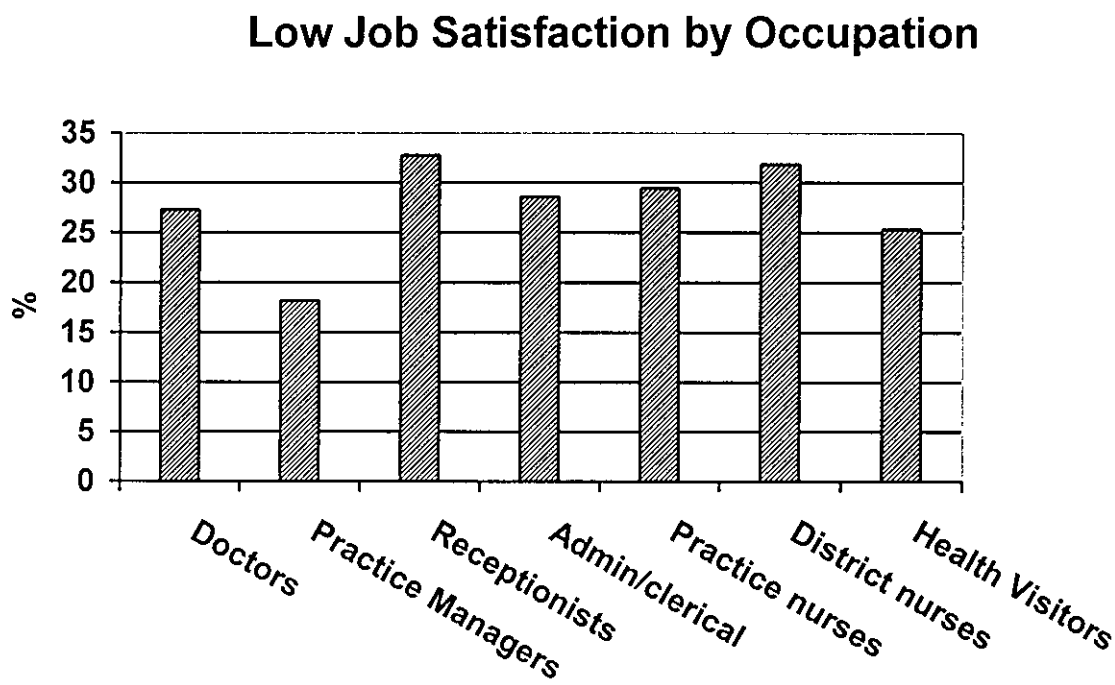
Fig. 6.



Occupational variation and other indicators of health status

The relationships between occupation and job satisfaction, physical health status, consultation (with a GP), and sick leave were also considered. The questionnaire contained eight questions relating to job satisfaction which were scored using a Likert scale. The scores were then added to give a single job satisfaction score. The bottom 29% of the distribution were defined as having comparatively low job satisfaction. Figure 7 illustrates the percentage of respondents from each occupational group that were classed as having low job satisfaction:

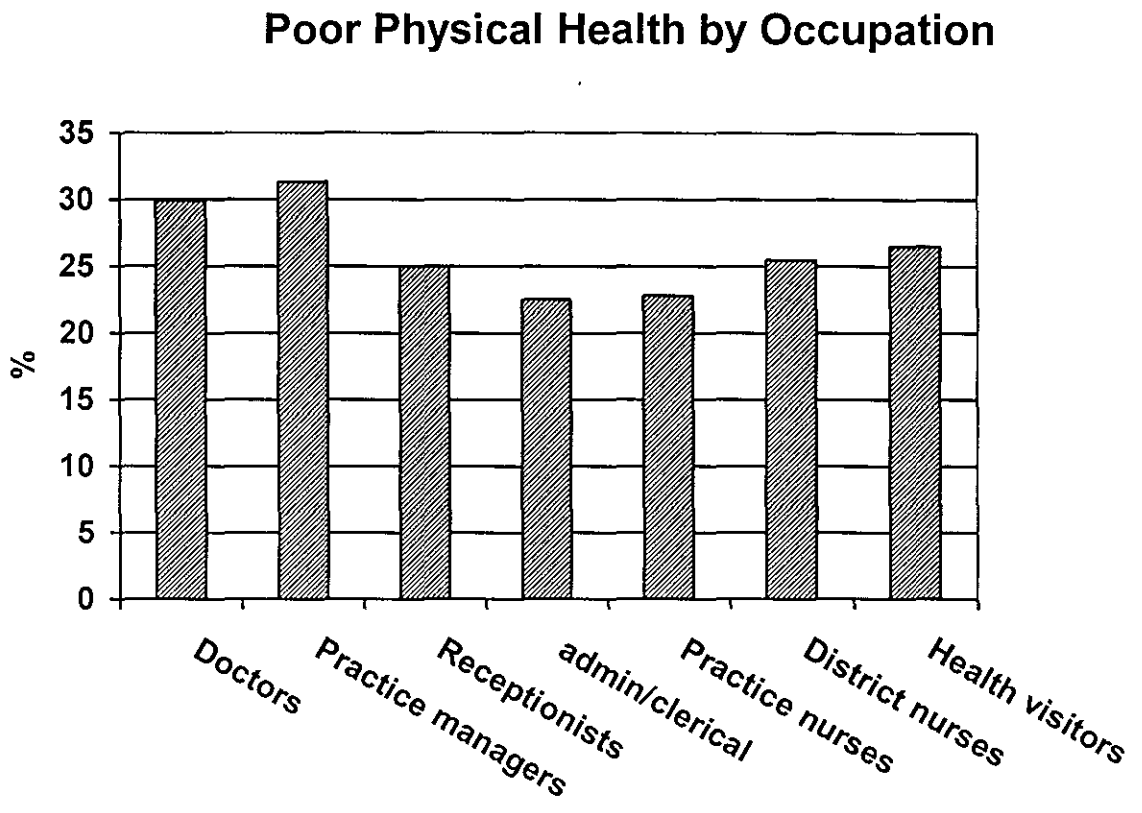
Fig.7



The variation in low job satisfaction between occupations was not great. Given their high job demands it is perhaps surprising that so few practice managers and doctors reported low job satisfaction.

Physical health status was measured using the physical component of the SF-36, which uses a battery of questions, which are aggregated to give a single score. The distribution was divided into quartiles, and the bottom quartile was labelled as relatively poor physical health. Figure 8 shows variations in the percentage of each occupational group that was found to have poor physical health:

Fig. 8.



Again, the variations in health status are small, although it is notable that practice managers and doctors due appear to be marginally more likely than their colleagues to appear in the poor physical health group. Interestingly, this variation did not appear to be reflected in consultation rates or sick leave. Figure 9 shows the percentage of respondents within each occupational group that had consulted their GP during the previous twelve months. The consultation is around 80% for all occupations except the doctors, who had a far lower rate (46%). This may reflect gender differences in consultation; men are generally less likely to consult than women, and most of the men in the survey were doctors. However, it may also reflect a tendency for doctors to self-treat, or to tolerate symptoms.

Fig.9.

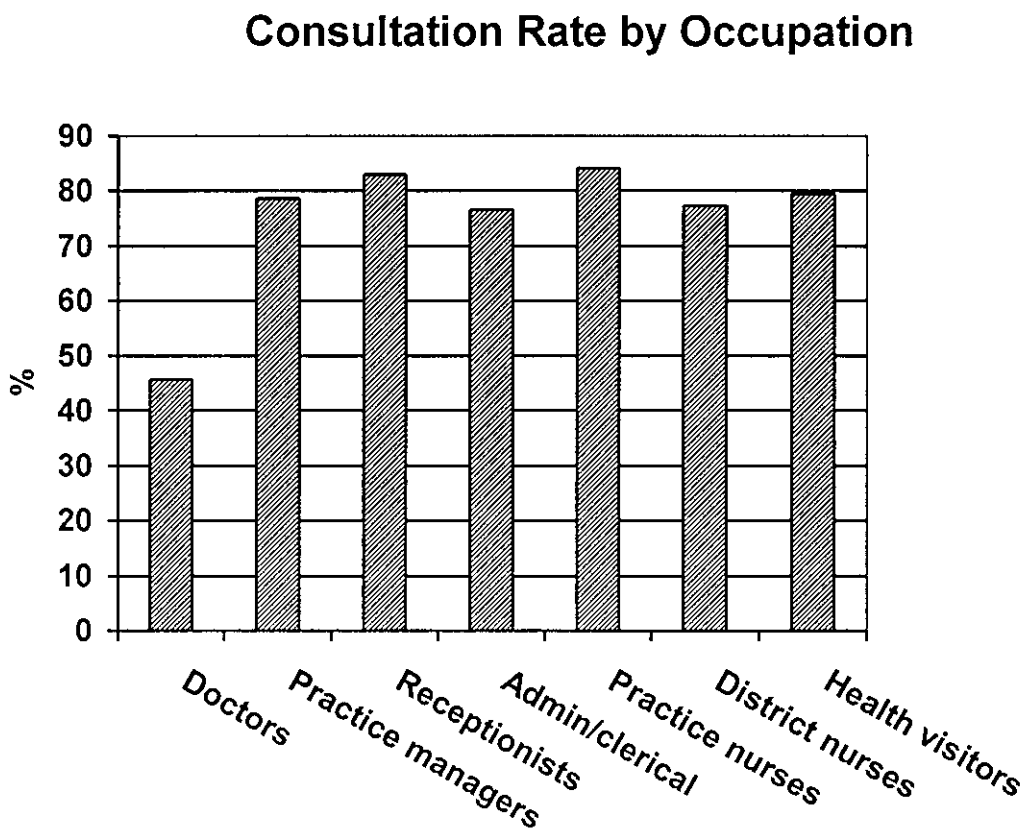


Figure 10 shows the percentage of respondents within each occupational group that had taken one or more days sick leave during the previous twelve months.

Fig. 10..

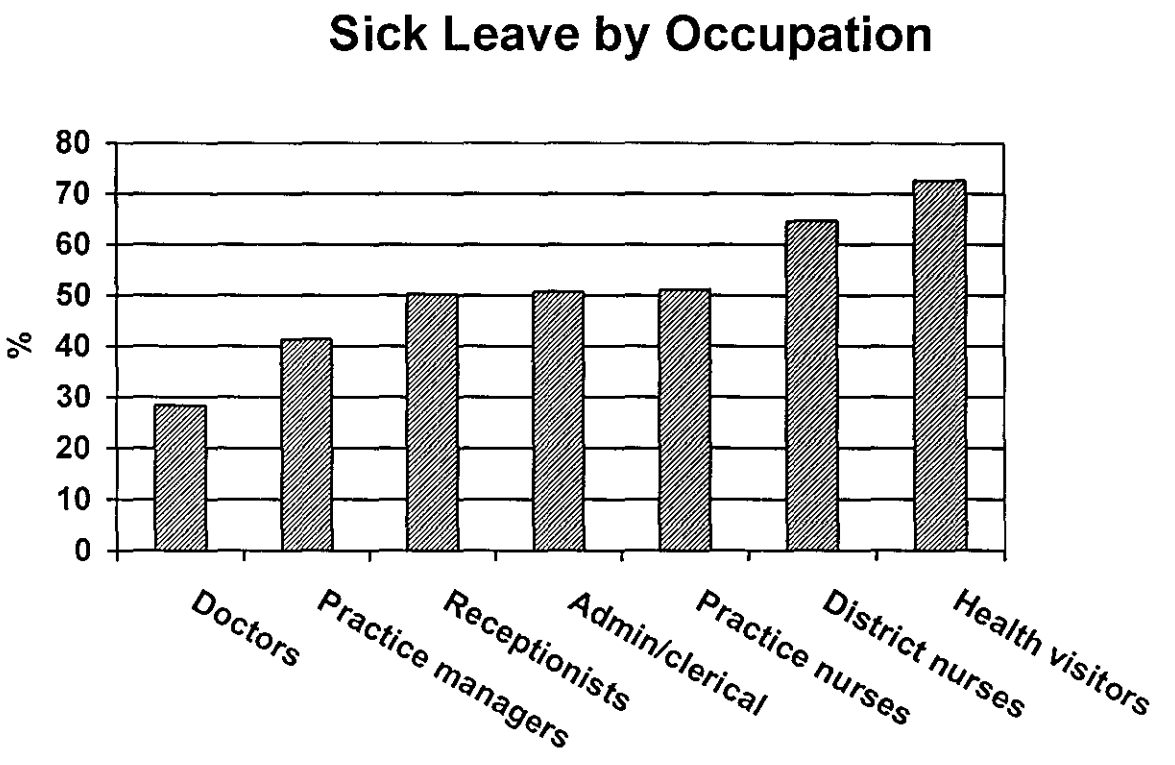


Figure 10 reveals substantial variations in the percentage of respondents in different occupational groups who had taken sick leave during the previous 12 months. As well as variations in morbidity, the pattern may also reflect the difficulty of taking leave in some occupational groups. Doctors face the difficulty of finding, and funding, locum cover, if they are ill, and their comparatively low rate of sick leave may reflect a tendency to go to work when ill. Practice managers may face similar problems, with no one to cover for them if they are ill. District nurses and health visitors, on the other hand, are employed by community trusts, and are usually part of a larger team which may be able to provide cover in the event of illness, which might account for their higher rate of absence.

Multi-variate analysis

The analysis reported above has concentrated mainly on bi-variate relationships. To gain further understanding of the complex relationship between stress levels (and other indicators of health status e.g. physical component scores, job satisfaction levels, absenteeism in the workplace, and formal GP consultations) and occupation, and with the job-strain variables, a series of logistic regression analyses explored the relationship between five dependent variables and work characteristics, allowing for the influence of other independent variables (see table 4). The methods used to estimate the various statistical models are described in section 2 of this report.

Table 4: Basic frequencies for model variables

Variable	*Mean*	*Std. Dev.*	*Missing (%)*
GHQ caseness (0=no case, 1=case)	0.23	0.42	1.7
Physical component score (0=bottom quartile, 1=rest)	0.74	0.44	4.9
Job satisfaction (0=low, 1=med to high)	0.71	0.46	4.7
Absenteeism (days this year) (0=none, 1=1 or more)	0.49	0.50	1.5
Formal GP consultations (0=this year, 1=last year)	1.26	0.44	0.8
Gender (1=male, 2=female)	0.86	0.34	0.1
Age bands (1=18-34, 2=35-44, 3=45-54, 4=55+)	2.64	0.94	0.1
Marital status (1=single (never married), 2=married or living as married, 3=widowed, 4=divorced)	2.2	0.73	0.3
Occupation (1=Doctor, 2=Practice manager, 3=Receptionist, 4=Admin/clerical, 5=Practice nurses, 6=District nurse, 7=Health visitor)	3.62	1.84	2.6
Health compared with last year (1=much better, 2=somewhat better, 3=about same, 4=somewhat worse, 5=much worse)	2.92	0.75	0.3
Job demand (1=bottom quartile, 2=middle quartiles, 3=top quartile)	1.9	0.81	7.2
Job control (code as for job demand)	2.04	0.73	10.4
Social support (code as for job demand)	2.11	0.77	20.0
Job affects family life (1=at least one problem, 2=rest)	1.76	0.43	0
Family life affects job (1=at least one problem, 2=rest)	1.10	0.29	0
Full or part-time status (1=full, 2=part)	1.57	0.50	0.4
Smoke (1=yes, 2=no)	1.88	0.32	0.4
Drink (0=heavy, 1=not heavy)	0.80	0.40	1.6
Weight (0=not over, 1=over)	0.58	0.49	0.8
Activity (last 2 weeks) (0=none, 1=yes)	0.67	0.47	0.6
Size of partnership (continuous, range 1-10)	4.43	2.58	0
% unemployment in area (continuous)	4.42	3.22	0

Results

Descriptive statistics

Table 4 presents the frequencies (mean, standard deviation and the percentage of missing values) for all variables used in the regression models. Mean statistics show that the sample is mainly: female[□]; in age band 35-44; married or living as married; receptionists or admin/clerical occupations; work part-time; and do not smoke or drink. On average, respondents also report that their health is about the same as last year, are overweight but have taken part in vigorous activities during the last 2 weeks. Means for job strain variables are functions of their derivation and so not reported here (quartile measures). The average size of practice partnership is just over 4, and average percentage of regional unemployment is 3.2.

An interesting contrast exists between two close but probably independent variables – family life affects job and job affects family life. Whereas 24% (2-1.76) report that their job interferes with family life, 90% (1-0.10) of respondents report that family life affects their job performance (time, distraction, sleep and relaxation). Given the high proportion of women in the sample and their mean age, this latter statistic is probably picking up working women who also care for children at home.

Column 3 in Table 4 reveals the extent of missing values for each variable. The highest figures are associated with the job strain model variables: job demand (7.2%), job control (10.4%) and highest for social support (20%). Further analysis of missing values (not tabulated) show that male doctors were more likely to *not* provide information on these variables. This finding should be taken into consideration when interpreting the regression results.

[□] This is because female workers make up by far the largest share of the selected occupations in general practice. In this survey 86% of the sample are female. This figure was checked against a similar (but not exact) set of occupations in the 1997 quarterly labour force survey. National survey results suggest that around 75% of the selected occupations are female. Female workers in this survey may therefore by slightly over-represented.

One of the most useful aspects of the descriptive data is the frequency counts for the dependent variables. A general rule of thumb for regressions on dichotomous outcomes is that one category should ideally be approximately 20% of the sample (Greene, 1993). For the dependent variables used in this report, zero cases are 23% for the GHQ model, 26% for the physical component model, 29% for the job satisfaction model, 49% for the absenteeism model and 26% for the GP consultation model.

Model 1: GHQ caseness (Table 5)

Model specification

The survey used in this paper focused particularly on the relationship between GHQ scores and other explanatory factors. A number of modelling effects were noted before deciding on the final specification of the model to predict GHQ caseness:

- PCS was not considered to be an appropriate predictor of GHQ classification
- General health status did not perform as well as 'health compared to last year'
- Occupation status was insignificant but given the importance of this variable it was included in the final model. As expected the job strain model variables were more suitable predictors of GHQ caseness
- Full or part-time status does not predict GHQ classification and is weak for interpretation purposes
- Length of time in general practice loses significance when job demands are entered into the regression and was therefore excluded from the final model

- Job satisfaction reduces the significance of the job strain variable models and was therefore excluded from the final model

- Family life affects job performance and job affects family life are closely related variables but appear to exhibit independent effects in the model

For the GHQ model only, tests were also carried out for three main sets of interactions: between age and occupation, gender and occupation, and finally for the job strain variables and occupation. Using all categories for these variables (usually referred to as the full interaction dummy variable approach), univariate logistic results suggest that there is no evidence to support the hypotheses that younger and/or female doctors are more likely to be a GHQ case (in the former case, sometimes referred to as 'burn-out') – no significant interactions were found at the 5% or 10% level. Focusing on just the age categories and doctors only, univariate (not the full model specified) logistic results suggest that doctors between the age of 45-54 are more likely (OR = 1.95) to be a GHQ case compared with their counterparts in the age 55 plus group (significant at the 5% level). Categories for the younger age groups were not statistically significant.

The full interaction approach for the job strain variables and occupation status produces a large number of different categories (each job strain function has 3 categories, occupation has 7 categories, producing 21 different categories each for job demands, job control and social support functions). It is therefore difficult to interpret the individual univariate logistic results here, and particularly difficult to find a reference category for comparison.

Narrowing the interaction approach to account for job demands for doctors only does however reveal that doctors with high job demands are more likely to be a GHQ case (OR of 2.45). But again there is difficulty with this interpretation – the result is based on *controlling* for all other job demand/doctor interactions, and the comparison group is *not* being in this particular category – this group therefore

captures all other occupations and their corresponding categories of job demands. Ideally, the full interaction dummy variable regression approach should be based on a much larger sample such that all possible interactions between job strain functions and occupational status can be tested. But overall, the predicted probability of being a GHQ case can be derived in a similar way by using the partial effects associated with job strains and occupation variables (see method in appendix 1).

The final model specification is:

GHQ caseness (yes or not) = constant + gender + age group + marital status + occupation + health compared with last year + job demands + job control + social support + job affects family life + family affects job performance + partnership size + % unemployment in area + error or residual term

This model has acceptable coefficients (correct signs) and standard errors (not too large). Although not particularly meaningful, R^2 values range between 0.203 and 0.309 – very reasonable for this type of model and the cross-sectional nature of the data.

3.2.2 Logistic regression estimates

The final sample size for the GHQ caseness model is n=719. This reduction in sample size from the total sample (n=1089) is mostly due to missing values on the job strain variables indicated earlier (see Table 1). Focusing only on those variables significant at the 5% level, results show (controlling for all other factors) that respondents who:

- are divorced are just over twice as likely to be a GHQ case compared with those who are married or living as married – odds ratio of 2.142 (95% confidence interval of 1.1672 to 3.9307)

- self-report that their health compared with last year is better are less likely to be a GHQ case compared with those who report worse health. For example, the odds ratio for much better health is 0.019 which means just over a 1 in 52 chance of being a GHQ case (1/0.019). Alternatively, respondents who self-report much worse health are just over 52 times more likely to be a GHQ case compared with someone who reports much better health. The same calculation for self-report same health compared with much worse health reduces the odds to a 1 in 17 chance (1/0.0572)

- are in the bottom quartile for job demand score are less likely to be a GHQ case compared with respondents who report high job demand scores. The odds ratio of 0.4606 means just over a 1 in 2 chance (1/0.4606=2.2); or respondents with high job demands are just over twice as likely to be a GHQ case compared with those with low job demands

- are in the top quartile for job control score have a 1 in 2.05 (1/0.4876) chance of being a GHQ case compared with those with a low job control score – or respondents in the bottom quartile for job control are just over 2 times more likely to be a GHQ case compare with those who have a high job control

- are in the top quartile for social support scores have a 1 in 2.37 (1/0.4217) chance of being a GHQ case compare with those in the bottom quartile for social support scores; or low social support quartile is 2.37 times more likely to be a GHQ case compared with high social support quartile. Being in the middle quartiles for social support reduces this latter figure to 2 times more likely (1/0.5004).

- report their job responsibilities interfere with their family life are more likely to be a GHQ case. The odds ratio of 0.4212 means that those who report at least one major (defined using the category 'a great deal' on question 20)

problem are 2.4 times more likely to be a GHQ case compared with those who report no 'major' problems (1/0.4212)

- report their family life and family responsibilities interfere with their job performance are 1.87 times (1/0.5359) more likely to be a GHQ case compared with those who do not report such problems. The broad equivalence in odds ratios for job affecting family life and vice versa suggest that women who work and possibly care for children at home (see earlier discussion on descriptives) do not let pressures affect their health any more than those who bring their work pressures home with them.

Gender, age, size of partnership, and percentage of unemployment were not significant predictors of GHQ caseness at the 5% level. The multivariate analysis also shows that occupation does not exhibit a statistically significant effect on GHQ caseness and did not have a significant effect even when no other variables were controlled for. In fact there is a sign change on the coefficients such that, apart from receptionists, doctors are now the least likely to report stress levels. The sign change is mainly the result of a complex control of many other independent factors associated with self-reported stress. However, during the modelling process levels of social support appeared to impact most on the sign change.

The main reason for the lack of an occupational effect is probably because the disaggregated version of occupation was used in this analysis. However, when a dichotomous variable, to indicate occupation, i.e. doctor or not, practice manager or not, some statistical significance is evident.

Model 2: Physical Component Score (Table 6)

Model specification

Because the survey was not originally designed to focus on physical health the number of suitable variables are limited. The model in this paper is therefore

likely to be mis-specified and unlikely to represent the best model for predicting limiting health. A number of modelling effects were noted before deciding on the final specification of the model to predict the bottom quartile for PCS:

- marital status, occupation, length of time working in the practice, family and job effects were not considered to be appropriate explanatory variables and therefore excluded from the initial model

- health compared with last year was significant at the 5% level but not appropriate for the PCS model

- intuitively the job strain model variables would not be expected to be good predictors of physical health. However, given the interest in these variables and the fact that they cannot be totally excluded as explanatory variables, they are included in the final model

The final model specification is:

PCS (bottom quartile compared with remaining quartiles) = constant + gender + age group + drink + smoke + weight + activity + job demands + job control + social support + error or residual term

This model has acceptable coefficients (correct signs) and standard errors (not too large). Although not particularly meaningful, R^2 values range between 0.114 and 0.167 and reflects the general poor fit for this type of model and the cross-sectional nature of the data.

Logistic regression estimates

The final sample size for the PCS model is n=704. Using the same method of interpretation as for the GHQ model, results show that respondents who:

- are aged between 18 and 44 are less likely to be in the bottom quartile for PCS scores compared with respondents aged 55 plus. The 18-34 group are 1.9578 times and the 35-44 group 2.4358 times more likely to be outside the bottom quartile compared with the elderly group. The higher odds ratio for the 35-44 group compared with the 18-44 group is perhaps surprising but this may be due to differences in frequencies for these categories (n=325 and n=141 respectively)

- describe themselves as being a little (n=490) or very overweight (n=141) are less likely to be in the bottom quartile for PCS compared with those who report being under, about right or not sure about their weight (n=449). The latter group is almost 2.5 times more likely (1/0.4042) to be classified in the bottom quartile compared with the former.

- report that they have undertaken vigorous sport or recreational activities in the last two weeks are 1.7941 times more likely to be outside the bottom quartile for PCS.

- are classified as being in the bottom quartile for job demands at work are 1.7421 times more likely to be outside the bottom quartile for PCS

- are classified as being in the top quartile for social support at work are 1.6501 times more likely to be outside the bottom quartile for PCS

Gender, smoking and drinking variables were not significant predictors of PCS quartiles at the 5% level.

Model 3: Job satisfaction (Table 7)

Model specification

In many respects, although the original survey was not designed to focus on job satisfaction, the questionnaire included important information likely to be strongly

associated with job satisfaction – namely the job strain variables. Specific modelling effects were:

- length of time in practice was not a significant predictor of job satisfaction

- occupation status performs better in the job satisfaction model compared with previous models
- questions 16 to 18 of the survey are close proxies for job satisfaction and are therefore not included in the modelling process

- occupation and the job strain variables appear to exhibit independent effects

- family life effects on job performance was not considered appropriate for this model

The final specification for the model is:

Job satisfaction (low compared with medium to high) = constant + gender + age group + occupation + job demands + job control + social support + job affects family life + error or residual term

This model has acceptable coefficients (correct signs) and standard errors (not too large). Although not particularly meaningful, R^2 values range between 0.276 and 0.392 and reflects a very reasonable fit for this type of model, the cross-sectional nature of the data, and the inclusion of some important job characteristic variables.

Logistic regression estimates

The final sample size for the job satisfaction model is n=705. Results show that respondents who:

- are receptionists (OR=0.3520 or 2.84 times more likely), practice (OR=0.2948 or 3.39 times more likely) or district nurses (0.2997 or 3.34 times more likely), or health visitors (OR=0.3075 or 3.25 times more likely) experience lower levels of job satisfaction compared with doctors.

- are classified as being in the bottom quartile for job demand score are 2.0279 times more likely to have medium to high levels of job satisfaction compared with respondents classified as being in the top quartile for job demand score. The respective odds ratio for the middle quartile groups is 2.1219. This is a rather confusing result given that simple cross-tabulations reveal doctors to be more likely to be in the top quartile for job demands and for job satisfaction, yet higher job demands generally are associated with lower levels of job satisfaction.

- are classified as being in the top quartile for job control are 9.5620 times more likely to be in the medium to higher job satisfaction group compared with those in the lowest job control quartile. The respective figure for the middle quartiles of job control is 3.3917.

- are classified as being in the top quartile for social support at work are 9.9288 times more likely to be in the medium to higher job satisfaction group compared with those in the lowest social support quartile. The respective figure for the middle quartiles of social support is 4.1454.

- report their job does not interfere with their family life to any great deal are 2.0328 times more likely to be in the medium to high satisfaction group compared with those who report problems with their family life.

Gender and age did not exhibit any significant (5% level) effects on job satisfaction levels. Size of partnership was also insignificant and therefore excluded from the final model.

Model 4: Absenteeism from work (Table 8)

Model specification

As for the PCS model, the questionnaire was not designed to focus on absenteeism from work. The absenteeism model is therefore likely to be mis-specified. In particular there is little information on the extent of co-morbidities and their effects on absenteeism. Specific modelling effects were:

- marital status, drink, activity, smoke, family effects on job performance, weight, length of time in practice, job satisfaction (surprisingly), and general health were not significant predictors of absenteeism from work and were therefore dropped from the final model

- GHQ classification (using either the dichotomous or continuous version) is surprisingly not a significant predictor of absenteeism (confirmed by simple bivariate statistics). However, given the importance of this variable it was included in the final model

- occupation appears to exhibit some independent and significant effects on absenteeism but is not as strong as expected and likely to be affected by the job strain variables

- the inclusion of PCS and GHQ caseness raises the issue of endogeneity, that is, these variables have already been associated with many of the explanatory factors in the model. Given their general insignificance in this model, the problem of endogeneity may be reduced

The final specification for the model is:

Absenteeism (during this year or not) = constant + gender + age group + occupation + health compared with last year + job demands + job control + social

support + family life affects job performance + job affects family life + PCS + GHQ classification + full or part-time status + partnership size + % area unemployment + error or residual term

This model has acceptable coefficients (correct signs) and standard errors (not too large). Although not particularly meaningful, R^2 values range between 0.100 and 0.134 and reflects the general poor fit for this type of model and the cross-sectional nature of the data.

Logistic regression estimates

The final sample size for the absenteeism model is n=678. Results show that respondents who:

- are district nurses or health visitors are 2.4961 and 4.6209 times respectively more likely to have taken time off from work this year compared with doctors. Some caution should be taken with these results due to the smaller size of these occupational groups and the larger confidence intervals for the odds ratios.

- are classified as being in the middle (1/0.5908=1.69 times) or top (1/0.3695=2.70 times) quartiles for job control are less likely to have taken time off work this year compared with those in the lowest quartile for job control.

- work part-time are 1.439 (1/0.6949) times less likely to have taken time off work this year compared with those who work full-time.

Gender, age group, health compared with last year, social support at work, PCS, GHQ scores, and size of partnership did not predict absenteeism at the 5% level. The percentage of area unemployment was positive and significant at the 10%

level. This relationship is difficult to interpret - higher or lower unemployment can be associated with absence.

Model 5: Formal GP consultations (Table 9)

Model specification

The final model in this paper assesses the impact of some of the key variables already tested in previous models on the prediction of GP consultations. Given the limited focus on this aspect in the survey, the final model is likely to be mis-specified. Specific modelling effects were:

- marital status was not a significant predictor of GP consultations, but given the potential importance of this variable was included in the final model
- drink, smoke, weight, activity, and general health were not significant predictors of consultations and therefore dropped from the final model

- GHQ classification has a negative sign suggesting that poor health as measured by this scale is associated with a lower predicted probability of consulting

- PCS and GHQ caseness may be endogenous within this modelling framework

- Family life and job responsibility effects were not considered appropriate for this type of model

The final specification of the model is:

Formal GP consultations (during this year or not) = constant + gender + age group + marital status + occupation + health compared with last year + PCS + GHQ caseness + error or residual term

This model has acceptable coefficients (correct signs) and standard errors (not too large). Although not particularly meaningful, R^2 values range between 0.135 and 0.201 and reflects the general poor fit for this type of model and the cross-sectional nature of the data.

Logistic regression estimates

The final sample size for the GP consultation model is n=881. It is generally accepted that females consult their GP more regularly than males. Given the dominance of females in the sample it is therefore difficult to fully interpret the findings of this model. However, results show that respondents who:

- are female are 2.2336 times (1/0.4477) more likely to consult their GP in the last year compared with male colleagues.

- in the age group 35-44 are 1.8722 times more likely to have not consulted their GP this year compared with the reference group of age 55 plus

- practice managers are 2.6038 times (1/0.3801) more likely to have consulted their GP this year compared with doctors. In fact all other occupation groups compared with doctors are more likely to consult their GP: receptionists (1/0.2643 = 3.78 times); admin/clerical (1/0.3731 = 2.68 times); practice nurses (1/0.2172 = 4.60 times); district nurses (1/0.3726 =2.68 times); and health visitors (1/0.3113 = 3.21 times). Although doctors are predominantly male and drive these consultation results it is still evident that differences occur between different female-dominant occupations.

- are classified as being outside the bottom quartile are 1.9967 times more likely to have not consulted their GP this year compared with the bottom quartile for PCS.

Marital status, GHQ classification, and surprisingly health compared with last year were not significant predictors (at the 5% level) of GP consultations this year

Conclusions

Multivariate analysis (logistic regression) is carried out for 5 models: GHQ caseness, physical component scores, job satisfaction, absenteeism from work, and formal GP consultations. The results are based on regional data and caution must be taken when generalising results for the whole of the UK. This is because unobservable factors in the error terms of the respective equations may be directly related to regional factors not present in all regions of the UK.

Key findings for each model were:

- Poor mental health is strongly associated with a higher level of job demand, low job control, lower social support, job responsibilities that interfere with family life, and family life that interferes with job performance

- Poor physical health increases with age but is not well predicted by any of the explanatory variables in the PCS model

- Lower job satisfaction is associated with higher job demands, lower job control, lower social support. Despite the former, doctors appear to have the highest level of job satisfaction

- Absenteeism from work is associated more with district nurses and health visitors (occupations typically working outside of general practice), low job control, and full-time working. However, overall the absenteeism model does not perform that well

- Formal GP consultations are well predicted by occupational status with, unsurprisingly, doctors least likely to consult their own GP. This is probably

due to self-treatment. Other factors associated with an increased probability of consulting are: female (but sample driven) and poorer physical health. Overall, the GP model is not well specified

Table 5: Logistic regression model to predict GHQ caseness (n=719)

Variable	B	Sig	Odds Ratio	95% CI for OR
Female (Male is reference)	-0.0886	0.8496	0.9152	0.3662-2.2873
Age 18-34	0.6397	0.0907	1.8959	0.9035-3.9785
Age 35-44	-0.5169	0.1215	0.5964	0.3100-1.1472
Age 45-54	-0.0026	0.9929	0.9974	0.5582-1.7822
Age 55+ (reference)	*	**0.0079**	*	*
Married or Living as married (reference)	*	**0.0479**	*	*
Single (never married)	-0.5035	0.2707	0.6044	0.2467-1.4807
Widowed	0.4106	0.5099	1.5077	0.4446-5.1131
Divorced	0.7617	**0.0139**	**2.1420**	1.1672-3.9307
Doctors (reference)	*	0.2845	*	*
Practice managers	0.7449	0.1940	2.1061	0.6844-6.4812
Receptionists	-0.1373	0.8017	0.8717	0.2985-2.5458
Admin/clerical	0.4021	0.4718	1.4950	0.5000-4.4702
Practice Nurse	0.2876	0.6022	1.3333	0.4520-3.9324
District Nurse	0.5538	0.2958	1.7398	0.6161-4.9131
Health Visitor	0.6523	0.2596	1.9200	0.6176-5.9684
Health much better cf last year	-3.9610	**0.0000**	**0.0190**	0.0030-0.1192
Health somewhat better...	-2.9474	**0.0005**	**0.0525**	0.0100-0.2748
Health about the same...	-2.8603	**0.0002**	**0.0572**	0.0125-0.2616
Health somewhat worse...	-1.3032	0.1037	0.2717	0.0565-1.3054
Health much worse... (reference)	*	**0.0000**	*	*
Job demands – bottom quartile	-0.7752	**0.0053**	**0.4606**	0.2670-0.7947
JD: middle quartiles	-0.2748	0.2822	0.7597	0.4603-1.2537
JD: top quartile (reference)	*	**0.0185**	*	*
Job control: bottom quartile (reference)	*	0.1034	*	*
JC: middle quartile	-0.3579	0.1874	0.6992	0.4107-1.1903
JC: top quartile	-0.7182	**0.0332**	**0.4876**	0.2518-0.9443
Social support: bottom quartile (reference)	*	**0.0038**	*	*
SS: middle quartile	-0.6924	**0.0058**	**0.5004**	0.3059-0.8185
SS: top quartile	-0.8634	**0.0024**	**0.4217**	0.2413-0.7370
Job affects family life	-0.8647	**0.0005**	**0.4212**	0.2596-0.6832
Family life affects job	-0.6237	**0.0172**	**0.5359**	0.3208-0.8955
Size of partnership	-0.0591	0.1684	0.9426	0.8665-1.0253
Area unemployment %	0.0462	0.1642	1.0473	0.9813-1.1176
Constant term	5.1669	**0.0000**	*	*

Cox & Snell R^2 = 0.203, Nagelkerke R^2 = 0.309

Table 6: Logistic regression model to predict PCS (n=704)

Variable	B	Sig	Odds Ratio	95% CI for OR
Female (Male is reference)	0.6341	0.0614	1.8853	0.9701-3.6638
Age 18-34	0.6718	**0.0402**	**1.9578**	1.0305-3.7197
Age 35-44	0.8903	**0.0010**	**2.4358**	1.4312-4.1456
Age 45-54	0.1961	0.4127	1.2167	0.7610-1.9453
Age 55+ (reference)	*	**0.0031**	*	*
Drink (Heavy is reference)	0.3200	0.1643	1.3771	0.8772-2.1619
Smoke (0,1)	0.0826	0.7667	1.0861	0.6293-1.8744
Weight (Under/not sure is reference)	-0.9057	**0.0000**	**0.4042**	0.2712-0.6025
Activity (0,1)	0.5845	**0.0024**	**1.7941**	1.2306-2.6156
Job demands – bottom quartile	0.5551	**0.0190**	**1.7421**	1.0956-2.7703
JD: middle quartiles	0.3229	0.1550	1.3811	0.8850-2.1553
JD: top quartile (reference)	*	0.0627	*	*
Job control: bottom quartile (reference)	*	0.2180	*	*
JC: middle quartile	0.1258	0.5722	1.1341	0.7329-1.7549
JC: top quartile	0.4418	0.0907	1.5556	0.9323-2.5956
Social support: bottom quartile (reference)	*	**0.0076**	*	*
SS: middle quartile	-0.2058	0.3649	0.8140	0.5215-1.2705
SS: top quartile	0.5008	**0.0566**	**1.6501**	0.9860-2.7615
Constant term	-1.3084	0.1438	*	*

Cox & Snell R^2 = 0.114, Nagelkerke R^2 = 0.167

Table 7: Logistic regression model to predict Job satisfaction (n=705)

Variable	B	Sig	Odds Ratio	95% CI for OR
Female (Male is reference)	0.8582	0.0731	2.3590	0.9228-6.0303
Age 18-34	0.2424	0.5096	1.2743	0.6200-2.6192
Age 35-44	-0.0979	0.7503	0.9068	0.4963-1.6568
Age 45-54	-0.2466	0.3904	0.7814	0.4451-1.3719
Age 55+ (reference)	*	0.4800	*	*
Doctors (reference)	*	0.1044	*	*
Practice managers	-0.0612	0.9226	0.9406	0.2733-3.2366
Receptionists	-1.0441	**0.0570**	**0.3520**	0.1201-1.0316
Admin/clerical	-0.7713	0.1808	0.4624	0.1495-1.4307
Practice Nurse	-1.2214	**0.0284**	**0.2948**	0.0989-0.8790
District Nurse	-1.2050	**0.0281**	**0.2997**	0.1022-0.8787
Health Visitor	-1.1791	**0.0470**	**0.3075**	0.0960-0.9847
Job demands – bottom quartile	**0.7070**	**0.0077**	**2.0279**	1.2054-3.4116
JD: middle quartiles	0.7523	**0.0033**	**2.1219**	1.2845-3.5050
JD: top quartile (reference)	*	**0.0065**	*	*
Job control: bottom quartile (reference)	*	**0.0000**	*	*
JC: middle quartile	1.2213	**0.0000**	**3.3917**	2.0657-5.5691
JC: top quartile	2.2578	**0.0000**	**9.5620**	4.8955-18.677
Social support: bottom quartile (reference)	*	**0.0000**	*	*
SS: middle quartile	1.4220	**0.0000**	**4.1454**	2.5803-6.6600
SS: top quartile	2.2954	**0.0000**	**9.9288**	5.6127-17.564
Job affects family life	0.7094	**0.0038**	**2.0328**	1.2577-3.2857
Constant term	-3.8432	**0.0000**	*	*

Cox & Snell R^2 = 0.276, Nagelkerke R^2 = 0.392

Table 8: Logistic regression model to predict absenteeism (n=678)

Variable	B	Sig	Odds Ratio	95% CI for OR
Female (Male is reference)	0.7030	0.0987	2.0198	0.8768-4.6530
Age 18-34	0.1763	0.5661	1.1928	0.6531-2.1787
Age 35-44	0.2352	0.3503	1.2652	0.7723-2.0726
Age 45-54	0.0169	0.9418	1.0171	0.6458-1.6018
Age 55+ (reference)	*	0.7079	*	*
Doctors (reference)	*	**0.0030**	*	*
Practice managers	0.0864	0.8596	1.0903	0.4185-2.8406
Receptionists	0.3424	0.4353	1.4083	0.5958-3.3287
Admin/clerical	0.5638	0.2180	1.7574	0.7166-4.3097
Practice Nurse	0.4707	0.2926	1.6012	0.6663-3.8476
District Nurse	0.9147	**0.0403**	**2.4961**	1.0412-5.9837
Health Visitor	1.5306	**0.0015**	**4.6209**	1.7931-11.908
Health much better cf last year	0.9703	0.2136	2.6388	0.5720-12.174
Health somewhat better...	-0.1271	0.8654	0.8807	0.2027-3.8256
Health about the same...	0.0590	0.9334	1.0608	0.2661-4.2291
Health somewhat worse...	0.3080	0.6730	1.3607	0.3256-5.6868
Health much worse... (reference)	*	0.0892	*	*
Job demands – bottom quartile	0.00007	1.0000	1.0001	0.6446-1.5515
JD: middle quartiles	0.1186	0.6063	1.1260	0.7326-1.7305
JD: top quartile (reference)	*	0.7746	*	*
Job control: bottom quartile (reference)	*	**0.0014**	*	*
JC: middle quartile	-0.5263	**0.0169**	**0.5908**	0.3837-0.9097
JC: top quartile	-0.9957	**0.0003**	**0.3695**	0.2154-0.6338
Social support: bottom quartile (reference)	*	0.3918	*	*
SS: middle quartile	-0.2993	0.1761	0.7413	0.4805-1.1438
SS: top quartile	-0.1636	0.4874	0.8491	0.5351-1.3473
Family life affects job	-0.1962	0.3975	0.8219	0.5217-1.2947
Job affects family life	-0.3590	0.1208	0.6984	0.4437-1.0992
Physical component score (0 is bottom quartile, 1 rest)	-0.3703	0.0815	0.6906	0.4553-1.0474
GHQ caseness (0 is no case, 1 is case)	-0.1046	0.6373	0.9007	0.5831-1.3913
Full/part-time status (1 is full, 2 is part)	-0.3640	0.0697	0.6949	0.4689-1.0298
Size of partnership	0.0112	0.7384	1.0112	
Area unemployment %	0.0472	0.0915	1.0484	
Constant term	0.2448	0.5553	*	*

Cox & Snell R^2 = 0.100, Nagelkerke R^2 = 0.134

Table 9: Logistic regression model to predict formal GP consultations (n=881)

Variable	B	Sig	Odds Ratio	95% CI for OR
Female (Male is reference)	-0.8035	**0.0073**	**0.4477**	0.2489-0.8056
Age 18-34	-0.1632	0.6423	0.8495	0.4267-1.6911
Age 35-44	0.6271	**0.0193**	**1.8722**	1.1074-3.1652
Age 45-54	0.3867	0.1349	1.4721	0.8867-2.4441
Age 55+ (reference)	*	**0.0168**	*	*
Married or Living as married (reference)	*	0.5556	*	*
Single (never married)	-0.5456	0.2165	0.5795	0.2439-1.3767
Widowed	-0.3159	0.2277	0.7291	0.4364-1.2182
Divorced	-0.4749	0.4410	0.6220	0.1859-2.0812
Doctors (reference)	*		*	*
Practice managers	-0.9673	**0.0120**	**0.3801**	0.1787-0.8087
Receptionists	-1.3307	**0.0000**	**0.2643**	0.1439-0.4853
Admin/clerical	-0.9860	**0.0034**	**0.3731**	0.1929-0.7214
Practice Nurse	-1.5271	**0.0000**	**0.2172**	0.1072-0.4401
District Nurse	-0.9873	**0.0041**	**0.3726**	0.1900-0.7305
Health Visitor	-1.1671	**0.0027**	**0.3113**	0.1450-0.6680
Health much better c.f. last year	0.7760	0.5007	2.1727	0.2271-20.7895
Health somewhat better...	1.2228	0.2745	3.3966	0.3789-30.4516
Health about the same...	1.8873	0.0807	6.6015	0.7943-54.8640
Health somewhat worse...	0.8539	0.4452	2.3487	0.2623-21.0347
Health much worse... (reference)	*	**0.0012**	*	*
Physical component score (0 is bottom quartile, 1 rest)	0.6915	**0.0036**	**1.9967**	1.2529-3.1821
GHQ caseness (0 is no case, 1 is case)	**-0.1532**	0.5007	0.8580	0.5494-1.3399
Constant term	-0.9046	0.4498	*	*

Cox & Snell R^2 = 0.135, Nagelkerke R^2 = 0.201

Scenario analysis for GHQ equation

Using any logistic regression a profile of a particular respondent can be plugged into the regression to estimate the final predicted probability of the dependent variable. The following is an example for the GHQ equation (Table 2):

Profile: Female, aged between 35-44, married, practice manager, self-reported health is about the same as last year, high job demand, high job control, low social support, job interferes with family life, and family life affects job performance, partnership size of 4 (the mean), and a regional unemployment rate of 4% (the mean)

Using the regression from Table 1, the probability of an event is defined as

$$\{1/1 + e^{-z}\}$$

where e is the base of the natural log, and z is the linear combination of the constant and explanatory terms from the full GHQ equation.

Using the code values for each variable (note that if the profile is the reference group or the value of an indicator variable is 0 these are dropped), the calculation is thus:

Z = (2)(-0.0886) + (1)(-0.5169) + (1)(0.7449) + (1)(-2.8603) + (1)(-0.7182) + (1)(-0.8647) + (1)(-0.6237) + (4)(-0.0591) + (4)(0.0462) + (5.1669) = -0.0992

$e^{-z} = e^{0.0992} = 1.104$, therefore, 1/1+1.104 = 0.48 or the probability of the above profile being a GHQ case is p = 0.48.

Changing the profile such that job demand is low (bottom quartile score) changes the above calculation to Z = -0.8744 (-0.0992– 0.7752) and the overall predicted probability to p = 0.29.

In other words, when the above profile is altered by changing the level of job demand from the highest quartile to the lowest quartile, the probability of being a GHQ case falls by p=0.19

4. Findings from the follow-up interviews

Aims

The importance of Karasek & Theorell's demands/control model in understanding work stress was discussed in the background section of this report. Essentially, the model predicts that workers facing high job demands, particularly in conjunction with low job control and low levels of social support at work, are at greater risk of suffering psychiatric distress and some physical health problems. The model was extensively explored in the postal survey and subsequent qualitative analysis, and the predictions about the relationship between job strain and psychiatric distress were broadly supported by the findings. However, although statistical models of work stress are valuable, they tell us little about how work stress is experienced by the individual. What do people working in general practice consider to be the main causes of work-stress? How do people go about coping with work-stress, and are there any other factors that appear to ameliorate its apparent effects. And what effect does work-stress have on people's lives; do they see it as a major problem?

The follow-up interviews were designed to address the above questions by examining the perceptions, attitudes and beliefs of people working in general practice. A detailed account of the methodology employed in the follow up study is given in section 2 of this report.

Work-stress as high job demands

The key variable in Karasek's model is 'JOB DEMANDS' which he defines in terms of the pressure and intensity of work. Thus, a worker with a heavy workload compounded by time constraints, would be classified as having high job demands. High job demands, particularly in the absence of job control or social support, are indicative of job strain and may lead to psychiatric distress and physical health problems. Many of the informants, (from all of the occupational groups), mentioned heavy workload and time constraints as causes of stress, suggesting that Karasek's conception of job demands is highly salient to work in general practice. The following comment from a District Nurse is typical:

> *"On the good days, I think I can do a really good job and really make a difference. On the bad days, when we are very, very busy and stressed with perhaps terminally ill patients, that can really impact on my feelings about the job because if you are really busy you feel you can't always give these patients the time that they need and that is not satisfying at all, that is quite distressing when you feel that you wanted to give more but you have got so much to do that you can't."*

As the above quotation suggests, the strain associated with heavy workload, is not only caused by fatigue, but by the belief that it might compromise job performance, in this instance by reducing the quality of care given to patients. Many of the clinicians expressed concern that pressure of work might cause them to make mistakes in diagnosis or treatment, obviously with injurious consequences for the patient, but also for the clinician in terms of loss of self-esteem, loss of respect from colleagues, and the threat of litigation.

Although Karasek's conception of job demands in terms of the pressure and intensity of work was highly salient to people working in general practice, the informants mentioned other job demands that were not addressed by Karasek's model, and which may be specific to the caring professions, or at least to occupations that entail a high degree of contact with the public. The first of these

additional demands was dealing with difficult patients. There were two aspects to this problem: dealing with rude/abusive patients, and dealing with inappropriate demands.

The problem of rude or abusive patients varied substantially depending on the location of the practice and the demographic characteristics of the patient list. In affluent areas the problem was mainly one of verbal abuse from irate patients, for example, if they had to wait a long time for an appointment. However, for urban practices, serving a more deprived population, particularly where there was a high concentration of drug addicts and mentally ill patients, the threat of violence and physical assaults were a constant concern. This from a receptionist:

> *"It is upsetting, of course it is, you have people screaming at you, you know, abuse, swearing at you and abuse, nobody likes that [...] I have had to call the police because I thought somebody was going to attack us, we had to lock ourselves in a room once, four of us including the cleaning lady."*

As the first point of contact between patient and practice, receptionists often bore the main brunt of abuse from patients, and it was frequently observed that patients could be abusive to reception staff, but then extremely polite and deferential to the doctor. However, there were also instances of doctors being attacked in their surgery, and one practice had installed 'panic buttons' and surveillance cameras. The risk of assault was particularly acute for staff making home visits. District nurses and health visitors often had procedures for minimising risk, for instance, sharing information on patients who had exhibited threatening behaviour and, if necessary, accompanying each other on visits. Doctors often had similar informal strategies, particularly regarding out of hours home visits, one doctor regularly asked his driver (supplied by the out-of-hours co-operative) to accompany him into the patients home, if there was a perceived threat.

Constant exposure to rude patients, and the occasional threat of physical violence, were considered by many informants to be one of the more significant demands associated with working in general practice. Although this was often perceived to be a cause of stress, many informants had developed strategies for dealing with it and for minimising its effect on their self-esteem. It was also suggested that those who were unable to cope with such demands were likely to be selected out of general practice.

The second aspect of the demand created by difficult patients related to inappropriate demands. Several of the doctors presented anecdotal evidence of grossly inappropriate demands for out-of-hours home visits, but inappropriate attendance at surgery was also viewed as a problem. There is obviously considerable scope for disagreement between doctor and patient as to whether particular symptoms are sufficiently severe to warrant a consultation. However, inappropriate demand was defined not simply in terms of insignificant symptoms. Ironically, public awareness of psycho-social models of stress and health meant that doctors were often presented with social problems that they felt lay beyond their remit, for example:

> *"I had somebody here today that was basically in floods of tears because she wanted me to write the letter that would get her off the assignment that she was supposed to have done for her degree, well, you know, that is not really appropriate and I have written her a letter and it is up to the tutor whether they take it seriously or not"*

The job demands arising from difficult patients, either because of their rude or abusive behaviour or their inappropriate requests for treatment were often claimed as a source of stress, partly because they were distressing and increased the workload, but there was also a moral dimension to the problem, that often manifested itself in a distinction between 'deserving' and 'undeserving' patients. Many informants suggested that the relationship between health workers and patients had deteriorated over time. Patients were perceived to be less concerned about wasting the doctor's time, more assertive in demanding

their rights, more willing to present with social or relationship problems, and more likely to resort to verbal abuse if their needs were not met promptly. There were several theories as to why these changes had occurred. Some felt that the consumerist policies of the 1980s, particularly the Patients' Charter, had raised unreasonable expectations, and that the then government's attitude towards the medical profession had eroded public support.

Another job demand experienced by people working in general practice that is not addressed by Karasek's model concerns the emotional demands of caring for people who are severely or even terminally ill, or who have severe social problems. Several informants felt that female health workers received a greater proportion of emotionally demanding work than their male colleagues, partly because community nurses (who tend to be female) have greater exposure to these stressors (because they are more intensively involved in caring for the terminally ill and because in visiting patients at home they have direct experience of social problems) but also because women are seen as more sympathetic than men. This from a woman GP:

> *"women on the whole are more open to listening to people's problems. I have got a friend, a male GP who does a lot of locuming [...] and he hates being locum for the women. He says, he gets no medicine at all, he just gets social problems, misery, unhappiness, sadness, personal conflicts within families. [...] patients choose who they want to go to, if they have got a simple problem they go and see the men, who have a simple straight forward surgery and get out at six o'clock and if they have got a complicated problem they'll wait and choose to see the women and the women have just got droves of tears in front of them all day."*

Coping with emotional demands is complicated by the need to strike a balance between empathy and detachment. It was often suggested that the traditional model of professional objectivity was no longer appropriate, for instance a district nurse commented:

> *"When I did my training thirty years ago we were always told, "Oh don't get emotionally attached to patients", which I think perhaps in a hospital*

setting is okay to say but [...] in the community we are guests in people's homes, we get not only to know the patient but the carer, the relatives, the family [...] and you can't help giving something of yourself in that situation. I feel that you can't stay completely detached and give really good care and I think there is a degree of emotion that's involved there."

Although many informants felt that there was a tension between empathy and detachment, which in particular circumstances might be a cause of stress, (for instance, the death of a young person, or if they felt that they had not done enough for the patient), no one reported that this was a major problem. There are several possible reasons for this. It might be that the informants were reluctant to admit to what they might have thought of as emotional weakness, or that those who were affected had declined to be interviewed. Certainly, some of the informants knew of colleagues who had been unable to cope with the emotional demands of the job, some of whom had left general practice as a result. Most of the informants, however, described mechanisms or attributes that they felt enabled them to cope with such demands. Many described formal and informal support from colleagues, i.e. mentoring and group discussions about particular patients, and sharing the care of terminal or distressing cases. Others relied on informal support from family and friends, (within the bounds of medical confidentiality). Those who appeared to cope best with the emotional demands were those who had the ability to 'compartmentalise' their feelings; being able to adopt an expressive and sympathetic approach where necessary, but also able to maintain sufficient detachment to act professionally and avoid the emotional consequences of over involvement. This ability is illustrated in the following response from a general practitioner, when asked if the emotional demands of the job distressed him:

"It causes me, I am afraid to say, no emotional stress whatsoever. You do have to learn to develop, it sounds horrible I know, but you do have to develop a detached professional relationship. I mean you can be upset because they are nice people and you see them suffer, I think as a doctor if you begin to let that affect you personally then you are finished, you would then become stressed yourself, depressed and your energy would

burn out and eventually you'd have to give up practising medicine. I think you can help patients far better if you remain unemotional. I don't rule out emotion, I think you have got to be warm and empathetic, you should be warm and friendly and even touch them, put your arm around them and nice warm human things like that, but when they leave the room you've got to be able to either move onto the next patient or go home..."

The belief that the ability to maintain an appropriate degree of emotional detachment was not only good for the clinician but also for the patient, was held by many informants. It seems that for occupations with a clinical role in general practice there are inevitably emotional demands, particularly regarding the tension between empathy and detachment, but that with appropriate support, and sufficient emotional resilience, these demands can be satisfactorily managed.

Work-stress as low job control

The second variable in Karasek's job strain model is job control, which he defines by reference to two characteristics: skill discretion – the opportunity to use a wide range of skills in varied and interesting ways; and decision latitude – being able to make decisions about how the work is done. Karasek predicts that a high degree of job control can reduce stress, and ameliorate the adverse psychological consequences of a highly demanding job. As with the job demands variable, there was evidence that Karasek's conception of low job control was highly salient to many of the informants, several of whom raised the issue without prompting. However, definitions of what constituted low job control were varied and subjective, for instance, two single-handed GPs, of a similar age, with similar list sizes, and serving similar populations, made quite different assessments of the variety and interest of work in general practice:

1st GP - *"you never know what is going to come through the door next. [...] there is always going to be the unexpected"*

2nd GP - *"It is a repetitious job but then a lot of jobs are repetitious, it isn't high brow intellectually [...] so that intellectual thing doesn't become a*

stimulus after a few years. I think that somehow you have got to get that mental frame, that you are in for long haul dealing with patients, in a mundane way day in day out through your career, and not have very high expectations that it's going to be very stimulating or challenging."

One would expect the GPs quoted above to have broadly similar experiences at work, yet their subjective assessments of the variety of their work are very different. The same disparity could be found in the other job strain variables, or any variables derived from self-reported data – the problem is that there may be a divide (of unknown size) between objective conditions and the individual's subjective assessment and report of them. This problem severely undermines empirical tests of Karasek's model that rely on self-reported data. Subjects who report high job demands, low control and low support, may tend to report higher levels of psychiatric distress, but it may be their state of mind that leads them to give a negative assessment of their job rather than vice versa.

Karasek's definition of job control in terms of skill discretion and decision latitude appeared to be highly salient to many of the informants, however, there was also evidence that the content of the variable was not exhausted by these aspects. For many informants, (particularly GPs), control over their own work could not meaningfully be separated from managerial and clinical responsibilities, not least because their degree of decision latitude had consequences for colleagues and patients. In this sense, the job control variable could be extended to include:

- control over the 'business' (particularly for single-handed GPs and senior partners);
- control over healthcare resources
- control over patients' health
- control over colleagues

Even if the job control variable is expanded to include the above factors, there was still evidence to suggest that a high degree of control could bring greater job satisfaction. This from a GP who had relinquished his senior partnership:

> *"I used to do the finances of the old practice and [...] I felt that in running the business side, the financial side, as well as the other work one really had one's finger on the pulse of the practice. You knew where the money was going. You knew where it was coming from and I enjoyed it."*

However, although there is a strong impetus for the GP (particularly) to take control, both managerially and clinically, the responsibility that accompanies this may be a cause of anxiety or stress, and several informants who appeared to enjoy a high degree of job control also complained about the burden of management, financial worries, fear of clinical mistakes and litigation. Therefore, if a broader definition of job control is taken, which includes the clinical and managerial responsibilities described above, then Karasek's claim that greater job control inevitably leads to reduced stress, cannot be supported. It appears that in general practice the relationship is much more complex, and some aspects of high job control may actually contribute to stress and anxiety.

The ambiguous character of job control was handled differently by different GPs, for example, some reported opting for single-handed practice because they wanted the high degree of control that they perceived it to confer, while others chose group practice because they felt the weight of managerial burden would be less. More importantly, it influenced two key working relationships: the doctor/nurse relationship, and the doctor/practice manager relationship.

The doctor/nurse relationship

The role of the community nurse (including health visitors, district nurses and practice nurses) is changing, with many beginning to take over some of the

clinical responsibilities previously held by doctors. Some GPs welcomed this change as a way of sharing workload and responsibility. Others were more reluctant to relinquish control, either because they lacked trust in the nurses' competence, feeling that they would remain clinically responsible, or because they felt that there status and income was threatened. The GP quoted below expressed his concerns very forthrightly:

> *"I think it's a good thing really but it isn't if they're gaining power and gaining the income that you're gaining and all that sort of thing when they're asking for enormous monies and everything. So I think if that's going to happen they can forget about it. We don't want them taking over our jobs and money and position and all the rest of it but otherwise I think it's a good thing. The idea of triaging I think that's what we're going to have to do much, much more, that the nurses are going to have to deal with the trivial stuff. But the fear is having got their boot in the door, they're very mercenary and they want more money and more position and they'll get to our position. But these highly trained GP's should be more specialist and you should get the nurses to do the ordinary mundane stuff."*

Many nurses were also reluctant to see their role expanded, and felt uneasy about the boundary between the roles of doctor and nurse becoming blurred. Others were much more enthusiastic and had taken additional training to enable them to increase their responsibilities, with some becoming 'nurse practitioners.' Even here, the nurses ability to put his/her new skills into practice depended very much upon the compliance of the GP, and this was not always forthcoming. This from a practice nurse:

> *"...he [doctor] is very territorial [...] after I finished my diabetic course I said to him, I can take over some of these diabetic patients. I said, if there is a problem, you know I will get back to you about it. He said, yes, yes, yes I will think about that.*
> *DW-And he hasn't?*
> *No, and he has came to me and said, I'm sorry, I will do at some stage. I said, yes, I know what you are like, [...] he likes to keep his finger on the pulse shall we say. But another GP, he thinks, "the less I do the better", so the nurse can do that, do this. [...] and then you will get another one that*

thinks we are still the hand maiden and expects us to trot round and they know best"

In many instances the relationship between doctor and nurse was characterised by a struggle over job control, but the terms of this struggle reflected the contradictory nature of job control; in some instances doctors were eager to offload work onto nurses who were reluctant to take on additional responsibilities, but in other practices well-trained and highly motivated nurses, eager to expand their remit, were at loggerheads with their more conservative doctors. This boundary dispute over job control between doctors and nurses in general practice can be a cause of tension, anxiety, and low job satisfaction, but at least it seems to be fairly self-contained and has little effect on the rest of the organisation. This is not the case with the relationship between doctor and practice manager.

The doctor/practice-manager relationship

Among the practices included in the follow-up study, the role and responsibilities of the practice manager varied substantially. In some the practice-manager was like the chief executive of a small company, freeing the doctors to concentrate on clinical matters. More often though, the practice-manager was little more than a senior receptionist or administrative assistant, and the doctors did most of the management. Given their heavy clinical workload, why is it that so many doctors feel the need to be involved in management? The following quotation from a manager captures the contradiction:

"These GP's have been bleating about how stressed they are and then they want to hang on to this power. [...] Now nobody other than a doctor they tell us can do the consulting work [...] fine, get on and do the consulting work. Are you telling me that you haven't got enough to fill your week doing consulting work and therefore have got spare time to do management which other people could do? No, they'll tell you, they've got to do it in the evenings. Well is that very sensible? There are enough skilled people around. There are people who are skilled in lobbying, in negotiating, in managing situations, organisations, money who would probably do a hell of a lot better than the GP's who are playing at it."

So why do so many GPs retain a high degree of managerial responsibility? First, there is a long history of independent contractor status, during which single-handed doctors in particular were responsible for managing their own affairs without formal managerial input. There is, therefore, a tradition of independent decision-making amongst doctors in general practice, with the doctor's wife often providing clerical and administrative support. The growth of group practice, and particularly the introduction of fundholding, enabled the role of practice manager to develop, but particularly in smaller practices, where funding for managerial pay is limited, it is difficult to recruit well-trained and experienced managers. Recruitment is often done informally, and the doctor's wife or the senior receptionist are often 'slotted in' to the post without going through a formal appointment procedure. At some of the practices participating in the follow-up study this had worked well, but it was often the case that the practice manager had limited managerial expertise and little credibility – still being seen as the doctor's administrative assistant rather than an autonomous manager. The following quotation from a practice-manager illustrates the above points:

> *"When I first started in general practice which was thirty odd years ago, there was no such thing as a manager. You had a doctor, invariably it was in his house, his wife answered the phone, you went in to do a bit of the admin/reception, if you were a short hand typist you could perhaps type a few letters for him, but it has evolved, mainly over the last twenty years, or, fifteen [...] [the doctor] likes to handle his own finances so I don't get involved with finances, I pay some of the bills, but that's always been his baby, but that suits me, I've no argument about it. I would probably do anything, cut the flowers and give him a vase of flowers, I will do what he wants really."*

Whether because of historical precedent, difficulty in recruiting sufficiently competent managers, or simply the desire to be in charge, many GPs retained a significant share of managerial work. As well as increasing the GPs workload, this could also create frustration for practice managers several of whom felt that they were not allowed to develop or fully utilise the managerial skills that they had. As with the doctor/nurse relationship, the doctor/practice-manager

relationship was often characterised by a struggle over job control, with the doctors eager to delegate some of the managerial workload, but reluctant to relinquish decision-making authority. As well as causing a degree of antagonism between doctor and manager, the scarcity of fully empowered and competent managers often meant that practices were under-managed and relied on 'muddling through' rather than on proactive strategic planning and well structured operational management. In some instances this could undermine the cohesion of a practice, causing problems for many of the staff.

Work stress as low social support at work

The final variable in Karasek's job strain model is social support at work, which he defines in terms of the availability of information and help from colleagues and managers. As with job control, high levels of social support are thought to ameliorate the stress associated with high job demands. Again, evidence from the follow-up study revealed the salience of this variable to people working in general practice; this from a receptionist:

> *"You know that if you need to get away then somebody will cover for you. Everybody mucks in and if someone's on holiday and so on and so forth. The majority of us are similar ages. We're mature females who all muck in together and hopefully back each other up."*

Although the recipients of social support at work may benefit from it, Karasek's model fails to take account of the fact that providing such support may entail a cost to the individual in terms of increased job demands, this from a practice manager:

> *"There's another potential big stress for practice managers, which is actually very similar to the ward sister syndrome, which is that you don't get, or you rarely get, more than about 30 seconds of concentration on any one thing because you are all things to all people. Patients want you, the partners want you, the practice nurses want you, the staff want you, people on the telephone want you because you are seen as the hub of the*

organisation, and that is how it should be, but there is an immediate corollary to that which is that you're going to be in high demand."

Many informants wanted to receive social support at work, but not everyone was prepared to give it because it would add to their job demands. Practice meetings were an example of this, many felt that they were an essential means of communication and support, but they were often not held because of the demands they raised. So again, the relationship between social support at work and stress reduction is not quite as straightforward as Karasek's model suggests.

The follow-up study also revealed other aspects of supportive social relations at work that were not fully covered by Karasek's model. Particularly, it was not just the provision of information or help, but the whole organisational culture of the practice that appeared to influence informants' perceptions of social support. Many mentioned the importance of a 'family atmosphere' that they associated with working in a small organisation, (compared to private corporations, or even NHS Trusts, the largest group practices are relatively small). When prompted, informants described this 'family atmosphere' as a kind of bond that went beyond the formal obligations of the employment contract. Some of the practices made a conscious effort to cultivate this bond, by arranging 'away days' and other social activities. This bond appeared to be well developed in smaller practices where staff turnover was low and most staff had been in post for a number of years. Some practices that had undergone 'stressful experiences' like a change of premises, also claimed that their experiences had strengthened solidarity.

Where the organisational culture gave rise to a 'family atmosphere', i.e. to a cohesive social bond between staff, the relations between staff appeared to be less antagonistic and more supportive. This may be because, as was noted above, social support is experienced as a benefit to the recipient but a cost to the provider, thus where a strong bond exists between staff they may be more willing to incur the costs of providing support to their colleagues, and less likely to risk the bond by refusing support.

There was no evidence to suggest that the promotion of a 'family atmosphere' was in any sense compromised by the provision of more formal managerial devices, such as, job descriptions, grievance procedures and detailed contracts. In fact, in many instances relations between staff appeared to be strengthened by clarity about expectations, responsibilities and entitlements. The key factor appeared to be that such formal mechanisms should be introduced and administered flexibly and with sensitivity. Managerial style, or the ability to work with 'emotional intelligence' was essential for this balance between formal and informal methods of regulating social relations at work. Where managers (and partners) were able to empathise with their staff and relate to them in ways which enhanced motivation, performance, flexibility, and cohesion, there appeared to be greater job satisfaction, and possibly increased resilience in the face of high job demands.

Demonstrably valuing the contribution of colleagues was also important, particularly in the doctor/nurse and doctor practice-manager relationships. A strong commitment to the values of patient care also enhanced job satisfaction, and not just amongst clinicians, for example, many receptionists were acutely sensitive to the way in which clinicians treated their patients, not just because dissatisfied patients might be abusive to them, but also because their reasons for working in general practice were at least partly altruistic and they were not happy to work in an organisation that they felt had an uncaring approach to patients.

Where the above factors were present they appeared to greatly enhance people's experiences at work, and reduced stress from inter-personal strife:

> *"I think if the relationship that you have with the people that you work with is fine and everything is fine then it doesn't really matter that it's a heavy workload because you get on with the people. But I think if there's a sort of personality clash within the staff then I think it doesn't matter how quiet it is at the end of the day, it's still very stressful to go into work. I think it's*

more important the way the people, the staff gel together and how that works."

It might be assumed that the development of an organisational culture that enhances supportive social relations at work could be explained purely in terms of the personalities of the team members, or, that it simply entailed giving in to all demands. However, the practices in the follow-up study that appeared to have the most satisfactory and supportive social relations were those where the manager and/or doctors had highly developed managerial and social skills, and their approach was characterised as 'firm but fair'. Under these circumstances staff were aware of their duties and responsibilities, (and their rights and entitlements), but were prepared to work flexibly and supportively, because they knew that they would be treated in the same way by their colleagues and employers. The effective combination of formal managerial procedures with social and inter-personal skills is illustrated in the following quotation from a practice-manager:

"I've just [...] produced a grievance procedure. Most people will look at that and they will know that they'll never need to use it because the informal mechanisms within the practice are based on the principle of being fair, but if push comes to shove and they felt aggrieved [...] [the practice] will listen [...] and have to respond. So I think [one should] introduce those things in a humanistic way."

The importance of creating an organisational culture that engenders supportive social relations might seem like obvious 'common-sense', however, the follow-up study yielded many instances where this approach was not adopted. The following example describes a practice-manager who lacked the necessary emotional intelligence or inter-personal skills:

[she] *"was a very directive type of manager, very authoritarian, very immature. She* [...] *had not got the life experience to say sometimes the right thing to do is a u-turn. Sometimes the right thing to do is to just back off. Sometimes the right thing to do is to say I'm sorry, I goofed and lay yourself open to the staff saying you stupid cow. She couldn't do that. She*

would have hung herself before she would have done any of those things [...] she would spend a lot of time in and around reception and had got the sort of management style of [saying to the receptionists] *I've told you when you pick up a phone you must say: 'Good Morning* [name] *Surgery'. But she's saying that when the member of staff is on the phone having the conversation. You don't do that. But she couldn't understand that."*

Relating to patients

Many of the factors that engendered supportive social relations between general staff were also important in developing a satisfactory relationship with patients. Single-handed GPs particularly, spoke about the bond they developed with their patients, suggesting that it reduced unreasonable demands, aggressive behaviour and the threat of litigation. In the following quotation a single-handed GP describes the way in which emotional intelligence can be deployed to avoid a formal complaint:

"I think I have got a good antenna to know when people are going to be awkward or not happy with what I am doing, [...] *I immediately say look, have a second opinion if you're not happy, and try and defuse the situation straight away. If I think someone is a little bit disgruntled, I will say, I can see you are not happy, what happened, what upset you,* [...] *if they walk out of my room crying or unhappy which does happen, once they get home, I will pick up the phone and say, you left me in a very unhappy state, look I am really sorry, lets deal with it, what would you like me to do? And that would defuse a possible litigation."*

Many informants felt that such a bond could best be developed in a single-handed practice, or in a group practice where each doctor had an individual list of patients.

There is then, evidence to suggest that Karasek's conception of social support at work, as information and help from colleagues, is salient to people working in general practice, but consideration should also be given to the demands that the provision of support can place on others, and at other aspects of organisational culture that can engender supportive social relations at work.

In this section evidence from the follow-up study has been presented to assess how well Karasek's job strain model fits the experiences of those working in general practice. The variables of job demands, job control, and social support at work, as they are conceived by Karasek, were salient to many of the informants. However, the content of the variables had to be substantially expanded to accommodate the particular work characteristics of general practice. Similarly, the relationship between the job strain variables and psychiatric distress was more complicated than Karasek's model predicted. This was partly because of the factors relating to work characteristics described above, but also because of the amorphous and sometimes contradictory character of the 'stress' category. It is to the informants' accounts of 'stress' that the analysis now turns.

Perceptions of 'stress'

Karasek predicts that those with high job demands, low job control, and low social support at work, are more likely to suffer psychological, or even physical, health problems. We were interested in how closely this model fitted with informants' experiences and perceptions of work-stress, and began by asking people to define the term. Many informants reported factors which were consistent with Karasek's job strain variables, such as: having a very heavy workload, lack of control over work, and inter-personal strife (presumably the other side of the coin to social support). Often, it was merely the presence of these factors that constituted work-stress, but other informants suggested that work-stress was about the inability to cope with such factors, or the physical or psychological consequences of failing to cope. There was, therefore, a degree of inconsistency about whether work stress referred to work characteristics or their affect on the individual. This is an important distinction, because it often effected informant's beliefs about whether stress was positive or negative experience, for instance, some informants defined stress in terms of having a highly demanding and challenging job, in which case they were likely to see stress as an exciting stimulus to action, rather than as a cause of illness. Even here though, there was often an awareness of the importance of job control, and also the claim that

people have different thresholds or breaking points. This perspective on work-stress is illustrated in the following quotation from a practice manager:

> *"Oh, it's what keeps me going. It's what gets me out of bed in the morning. I'm lucky because I have got a job which I feel in control of most of the time. I'm in control of enough of it to not feel adversely stressed. I feel positively stressed but there's a fine line there. There are days when it definitely spills into God I'm going to pull my hair out here, I can't do this anymore. But most of the time it's about the buzz. It's about the not quite knowing what's around the corner. It's about what keeps you sharp, but people have such different thresholds and I think that's something which people need to take into account when making appointments because if you put somebody in a post where they feel they're stretched beyond their capacity, if they feel they actually haven't got the prospect of achieving this safely then that's got to be an adverse stress."*

The belief that stress can be good, and that people have different thresholds of resilience, points to a subjective element in the pathway from work characteristics to ill-health, that is not fully explored in Karasek's model, which tends to treat the worker as a passive subject, who is simply injured by a combination of objective influences. However, this conceptualisation does not fit well with the perceptions of some of the informants. The suggestion is that this 'threshold' between good and bad stress is not purely determined by objective working conditions, but by a subjective assessment of one's ability to cope. This assessment may be influenced by factors such as job control or social support, but such factors also have a subjective element, regarding how much control or support an individual needs in order to cope. This subjective assessment of the ability to cope, or, resilience, is not just shaped by the characteristics of a particular job, or the conditions that prevail in a particular practice, but by a wide range of social and cultural factors. One GP blamed the medical press:

"I think they [GPs] are a very over complaining lot. And I made the decision some years ago to not read Pulse, GP, or, Medi-Economics. [...] every week [they] go on about all the hours that GPs put in, how stressed they are, [...] they complain all the time, so I think why read them. They make you feel unhappy, so the only magazine that I read is the BMJ which I enjoy!"

It would be wrong to conclude that work-stress is something entirely conjured up by the press. The evidence from this study suggests that high demands, coupled with low control and low support, can at least lower morale and make people unhappy in their work. However, whether or not they lead to more serious psychological or physical health problems appears to depend upon a wide range of personal, social and cultural factors that determine an individual's resilience. This raises the question of whether there is anything intrinsic to work in general practice that poses a threat to mental or physical well-being. Certainly, the findings of this study suggest that work in general practice can be extremely demanding, and that in some practices changes could be introduced to engender more supportive social relations between staff and between staff and patients, that might well improve morale and job satisfaction. Whether such conditions are sufficient to cause psychological or physical illness amongst a significant number of staff, independently of the other personal and cultural influences on resilience, is difficult to establish.

There may well be people whose experiences of working in general practice have caused them very serious problems, but they are difficult to access in studies of this kind, because they may have left general practice, be on sick leave, or refuse to participate in the study. What can be said is that of the 9 practices which participated in the follow-up study, some of which had performed poorly on the job strain and mental health measures, none seemed to have extreme problems with work-stress amongst their staff. This is not to suggest that they were not extremely busy, or, that job satisfaction and morale could not

be improved, only that most informants appeared to be coping with their work and did not expect their physical or psychological health to be impaired by their job.

The conclusion that work stress is not a major problem for most people working in general practice is reinforced by the finding that many informants saw their job as a refuge, either from stress encountered at home, or from an earlier more stressful job. This from a practice nurse who had previously worked in A&E:

> "A&E was very, very stressful, especially towards the end, [...] when I left it about 1991, it was at the real apex of people on trolleys in Casualty for days, not hours, days. No beds, the volume of work was unbelievable, [...] and after a while I sort of thought, I am just getting through a shift and the patients are just getting through a shift, touch wood. And I am not able to actually give them the nursing care that they deserve and I suppose after twenty years that you do get a little bit jaundiced and I thought of practice nursing and I thought that is a boring job but I will have a go, it will just keep me ticking over, it is going to be mostly leg ulcers but never mind"

Many informants also felt that their work had a beneficial effect on their psychological health and well-being, through social contact, and enhanced self-esteem from coping with a demanding job.

5. Discussion &Conclusion

Work-Stress, Health & Methodological Artefact

The first objective of this study was to identify variations in mental and physical health status between members of the general practice workforce and between practices. The data on physical health status showed no marked variations. This was surprising, because there is a growing body of evidence to suggest that job strain is associated with a number of illnesses, and particularly with coronary heart disease.[21] There are several possible reasons why such an association was not picked up in this study. First, the measures of physical health may not have focussed on the particular types of morbidity associated with job strain. Secondly, the physical effects of job-strain may substantially lag behind exposure to stressors; so those experiencing job strain at the time of the survey might not exhibit physical health problems until much later. Thirdly, the respondents were all working at the time of the survey, so those whose physical health problems were sufficient to warrant sick leave, or, even early retirement on medical grounds were not included in the study. And finally, 30% of the sample did not respond to the survey, and their physical health may have been worse than that of the respondents.

The above factors might also have led to an underestimate of psychiatric morbidity. The study found that nearly a quarter (23%) of all responders could be classified as cases of psychiatric distress, (according to the GHQ-12 methodology). This appears to be slightly lower than that found in hospitals (27%) but markedly higher than that found in surveys of the general population which appear to vary between 14% and 18%.[20] The study also showed marked differences between occupations with practice managers reporting the highest level of stress, and receptionists, and admin. & clerical staff the lowest. Compared with data from studies in hospitals,[8] the GHQ case rate for managers in general practice (30%) was slightly lower than that of their counterparts in hospitals (33%), but the case rate for general practitioners (30%) was higher than

that for hospital doctors (25%). Case rates for other members of staff were on the whole lower than their counterparts in hospital. However, comparison with data from the British Household Panel survey suggests that doctors, managers and nurses had case rates that were on the whole higher than their counterparts in similar occupations in other settings.[8] There was also some evidence of variations in levels of stress by practice, irrespective of the mix of occupations, although this could not be explained by size of practice or by deprivation levels of the local population as measured by levels of unemployment.

What are the explanations for these results? One possibility is that the rates of stress were artificially inflated by the methodological approach. McManus[20] has suggested that studies which are explicitly concerned with work stress 'prime' the respondent to exaggerate the reporting of psychiatric symptoms, compared with studies where the emphasis is less on work stress and more on 'health in general'. In a study which did not prime respondents, McManus found that stress levels in doctors were equivalent to those in the general population, (the case rate for GPs, at 15.7%, was even lower than the 18.1% found amongst hospital doctors). This suggests that the stress levels in the health service are not particularly marked or peculiar to that particular work setting and implies that the concern with 'doctors' mental health might be largely unfounded. However, in this study respondents were not primed in a way that might inflate reporting of psychiatric symptoms - the title of the questionnaire did not refer to work stress, and the GHQ questions appeared after the questions on physical health but before the work related questions. It, therefore, seems unlikely that the findings can be explained in terms of methodological artefact.

Work-Stress & Work Characteristics

Another interpretation of the data takes the pattern of findings at face value and suggests the sources of variation in stress levels can be explained, at least in part, by the characteristics of the work setting. This leads into the second objective of the study, which was to examine the relationship between work

characteristics and mental and physical health status. Once again, the focus is on mental health status as there was little evidence of variation in physical health status by work characteristics.

The findings of the statistical analysis suggest Karasek's job strain model has considerable value in explaining the causes of stress in general practice. The bivariate analysis indicated a degree of consistency in the patterns of work characteristics and stress, according to occupation, for instance, practice managers tended to report high levels of job strain and also had a high rate of cases of psychiatric distress. The multivariate analysis supported the conclusion that occupational variations in stress were mainly explained by the three dimensions of the job content instrument, i.e. job demands, job control, and social support at work. However, it would obviously be wrong to conclude that the job strain variables are the only influence on mental health status, for example, the study also found that marital status and perceived change in health status were also powerful predictors of psychiatric distress. The reporting of stress in the context of work does not necessarily mean that work is the major source of this stress as the results from the multivariate analysis also suggested. Thus there remains the possibility that situational variables, or even other job strain variables, that were not included in the survey, may have an equal or even greater influence on workers' health.[22]

Work-Stress, Social Relations at Work, & Effort-Reward Imbalance

Evidence from the qualitative follow-up study suggests that although the three variables of the Job Content Instrument were highly salient to the informants, there were other powerful influences on work stress that were not picked up by the limited range of questions that underpin Karasek's framework. Moreover, the relationship between exposure to particular work characteristics and the onset of psychiatric distress appears to be far more complex than a simple cause and effect model would suggest.

The Job Content Instrument was designed to be broadly applicable to a wide range of occupations,[30] however, this generalizability inevitably means that factors that are specific to particular occupations may be overlooked. Thus, there is no place in Karasek's model for stress caused by dealing with difficult patients, or the emotional demands of caring for the dying. That such factors are overlooked, may invalidate inter-occupational comparisons. When the categories of job demands, job control, and social support at work, are broadened to include additional factors, then the relationships posited by Karasek become questionable. If, for example, job control is broadened to include clinical and managerial responsibility, then an increase in job control can no longer be assumed to inevitably reduce stress, because such responsibilities might weigh heavily on those that shoulder them.

The double-edged character of job control, (i.e. that it appears to carry psychological costs as well as benefits), became apparent when the relationships between doctors and nurses, and doctors and practice-managers were considered. The power to make decisions may enhance self-esteem and bring positive regard from others, but when it comes heavily freighted with responsibility then it can also become a source of anxiety – hence the ambivalence expressed by the informants. Ambivalence is not a state of mind that is easily captured by quantitative methods, and it took a qualitative approach to reveal the careful weighing of costs and benefits that informs a doctor's decision to delegate responsibility to a nurse, or, to a practice manager.

Siegrist's effort-rewards imbalance model is clearly pertinent to this process and there is evidence that this approach could complement the job-strain model.[31] Relinquishing job control (responsibility) to a nurse or practice manager may reduce the effort required to perform the doctor's role, but it may also reduce the entitlement to rewards, if not financially, then in terms of self-esteem and status. By the same token, a doctor's reluctance to delegate can be a potent source of frustration for the nurse or practice-manager, particularly where the effort of

acquiring additional training and competencies is not rewarded by greater job control. Notions of an effort-reward imbalance, may also shed light upon why it is that patients' rudeness or inappropriate demands, are experienced as a source of stress by clinicians, because such incidents deny the rewards of status and esteem that are felt to have been earned by the effort invested in training and job performance. This seemed to be particularly acute around the issue of litigation, where clinicians were not just concerned about the financial or career consequences, but by the threat posed to positive regard from their peers, and by the fact that litigation was felt to be an inappropriate reward for their efforts to act in their patients' best interests, even if a mistake had been made.

As the above examples illustrate, how social relations at work are managed can have a significant influence on subjective assessments of stress. It has been suggested[13] that small enterprises tend to have more personalised social relations which reduce perceived polarisation between the interests of employers and employees, and that this may encourage employees to adopt a more optimistic view of their health status, responding quite differently to apparently similar working conditions and to apparently similar health experiences. There is a need, therefore, to examine the subjective process by which the general practice workforce comes to identify the major causes of their work stress and why some people appear to be protected and others vulnerable to their effects.

Evidence from the follow-up study suggests that notions of supportive social relations at work extend far beyond the provision of information and help from colleagues that Karasek's model describes. As Eakin & MacEachin[13] suggest, the development of a strong inter-personal bond between workers, often described as 'family atmosphere', was widely perceived to smooth out potential sources of inter-personal strife and confer a degree of protection from other stressors. Clarity regarding obligations and entitlements enhanced these benefits, particularly when accompanied by flexible and emotionally intelligent management.

The apparent importance of supportive social relations at work on assessments of job strain and stress, reveals the highly subjective character of the work-stress phenomenon. It is not simply the case that a given set of work characteristics will automatically produce mental or physical health problems. What the individual makes of his/her situation, how they define and interpret their experiences, and their assessments of their own mental resilience, also appear to have an effect. Moreover, the extent to which mental resilience is valued, (or inability to cope is stigmatised), varies historically and culturally, and may have an impact on an individual's perceptions of what is expected of them.

The suggestion is that an accurate assessment of the extent to which work-stress is a problem for people working in general practice, cannot be made simply by examining a limited range of work characteristics and health indicators. Rather than treating the individual as a passive responder to objective circumstances, it is important to treat the subject as a reflexive actor, constantly assessing and interpreting his/her circumstances, within a broader social and cultural context. The qualitative component of this study, began this process by asking informants to describe their experiences of work stress.

As noted above, it should be borne in mind that the 'victims' of work stress may have been selected out of the workforce, or, at least have refused to participate in this study. Even so, it should be noted that although the practices that participated in the follow-up study were often extremely busy and placed high demands on their staff, (several of whom exhibited low morale or low job satisfaction), few of the informants felt that their work was intrinsically damaging to their mental or physical health. The impression given, was that general practice was frequently a demanding environment in which to work, but not that the pressures were so great that individual's were regularly pushed beyond their ability to cope, or, that the organisation was near to the point of serious disruption. This might simply reflect a reluctance to admit to symptoms that

could be interpreted as signs of personal frailty, or fear of medicalisation. However, if this is not the case, and a large majority of workers in general practice really do not suffer a serious adverse response to the pressures and strains of their work, then this has important implications for methodology and policy.

First, it raises questions about the use of the General Health Questionnaire to assess the effects of job-strain – does the accepted threshold for caseness give an accurate representation of the prevalence of work stress? Our study found that, according to the GHQ, nearly a quarter of the workforce could be classified as cases of psychiatric distress, giving the impression that general practice is experiencing an epidemic of work stress. But what proportion of those cases will go on to develop serious social, behavioural, psychological, or physical health problems? Further research is required to answer this question, and ascertain the extent to which work stress poses a significant problem for those working in general practice, and for those who rely on their services.

Secondly, in terms of policy, few would argue with the claim that general practice can be a stressful working environment, or that where the causes of stress can be addressed without diminishing patient care, or incurring substantial financial costs, preventive action should be taken, (if only to improve morale and job satisfaction). However, if only a very small proportion of people working in general practice are seriously affected by work stress, then a question arises as to whether resources should be spent on radically reducing stress levels, for example, by reducing workload, or whether it would be more efficient to reinforce the coping strategies of the small number that do have difficulty.

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APPENDIX I

HEALTH AND RELATED BEHAVIOUR WITHIN GENERAL PRACTICE IN SOUTH THAMES

The following questions ask for your views about your health, how you feel and how well you are able to do your usual activities. Do not spend too much time in answering as your immediate response is likely to be the most appropriate.

1. In general, would you say your health is:

excellent	☐	very good	☐	good	☐
fair	☐	poor	☐		

2. **Compared to one year ago**, how would you rate your health in general now?

much better now than 1 year ago	☐	somewhat better now than 1 year ago	☐
about the same now as 1 year ago	☐	somewhat worse now than 1 year ago	☐
much worse now than 1 year ago	☐		

3. The following questions are about activities you might do during a typical day. Does your health limit you in these activities? If so, how much? (*Please tick one box on each line*)

	yes, limited a lot	yes, limited a little	no, not limited at all
a) **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling or playing golf	☐	☐	☐
b) Climbing **several** flights of stairs	☐	☐	☐

4. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities **as a result of your physical health**? (*Please answer yes or no to each question*)

	yes	no
a) **Accomplished less** than you would like	☐	☐
b) Were limited in the **kind** of work or other activities	☐	☐

5. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)? (*Please answer yes or no to each question*)

	yes	no
a) **Accomplished less** than you would like	☐	☐
b) Didn't do work or other activities as **carefully** as usual	☐	☐

6. During the **past 4 weeks**, how much did **pain** interfere with your normal work (including both outside the home and housework)?

not at all	☐	little bit	☐	moderately	☐
quite a bit	☐	extremely	☐		

7. These questions are about how you feel and how things have been with you during the past 4 weeks. (For each question please indicate the one answer that comes closest to the way you have been feeling)

How much time during **the past 4 weeks:**	all of the time	most of the time	a good bit of the time	some of the time	a little of the time	*none* of the time
a) Have you felt calm and peaceful?	☐	☐	☐	☐	☐	☐
b) Did you have a lot of energy?	☐	☐	☐	☐	☐	☐
c) Have you felt downhearted and low?	☐	☐	☐	☐	☐	☐
d) Has your **health limited your social activities** (like visiting friends or close relatives)?	☐	☐	☐	☐	☐	☐

Well-Being

8. How have you been feeling over the past few weeks? Remember that we want to know how you are feeling nowadays, not how you were in the past. You should compare yourself recently with how you have usually felt in the past few years.

Please tick one box on each line

Have you recently been able to concentrate on whatever you are doing?	better than usual ☐	same as usual ☐	less than usual ☐	much less than usual ☐
Have you recently lost sleep over worry?	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently felt that you are playing a useful part in things?	more so than usual ☐	same as usual ☐	less useful than usual ☐	much less useful ☐
Have you recently felt capable of making decisions about things?	more so than usual ☐	same as usual ☐	less capable than usual ☐	much less capable ☐
Have you recently felt constantly under strain?	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently felt that you couldn't overcome your difficulties	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently been able to enjoy your normal day-to-day activities?	more so than usual ☐	same as usual ☐	less so than usual ☐	much less than usual ☐
Have you recently been able to face up to your problems?	more so than usual ☐	same as usual ☐	less able than usual ☐	much less able ☐
Have you recently been feeling unhappy and depressed?	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently been losing confidence in yourself?	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently been thinking of yourself as a worthless person?	not at all ☐	no more than usual ☐	rather more than usual ☐	much more than usual ☐
Have you recently been feeling reasonably happy all things considered?	more so than usual ☐	about the same as usual ☐	less so than usual ☐	much less than usual ☐

Work characteristics

9. The following questions are about your work. For each please tick the one answer that best describes your job or the way you deal with problems occurring at work.
(Please answer all questions)

Concerning your particular work:	often	sometimes	seldom	never/ almost never
a) Do you have to work very fast?	☐	☐	☐	☐
b) Do you have to work very intensively?	☐	☐	☐	☐
c) Do you have enough time to do everything?	☐	☐	☐	☐
d) Do you have the possibility of learning new things through your work?	☐	☐	☐	☐
e) Does your work demand a high level of skill or expertise?	☐	☐	☐	☐
f) Does your job require you to take the initiative?				
g) Do you have to do the same thing over and over again?	☐	☐	☐	☐
h) Do you have a choice in deciding **HOW** you do your work?	☐	☐	☐	☐
i) Do you have a choice in deciding **WHAT** you do at work?	☐	☐	☐	☐

10. About your position at work - how often do the following statements apply?
(Please answer all questions)

	often	sometimes	seldom	never/ almost never
a) Others take decisions concerning my work	☐	☐	☐	☐
b) I have a good deal of say in decisions about my work	☐	☐	☐	☐
c) I have a say in my own work speed	☐	☐	☐	☐
d) My working time can be flexible	☐	☐	☐	☐
e) I can decide when to take a break	☐	☐	☐	☐
f) I have a say in choosing with whom I work	☐	☐	☐	☐
g) I have a great deal of say in planning my work environment	☐	☐	☐	☐

11. About consistency and clarity regarding your job *(Please answer all questions)*

	often	sometimes	seldom	never	not applicable
a) Do different groups at work demand things from you that you think are hard to combine?	☐	☐	☐	☐	☐
b) Do you get sufficient information from line management? (your superiors)	☐	☐	☐	☐	☐
c) Do you get consistent information from line management? (your superiors)	☐	☐	☐	☐	☐

12. Regarding job involvement	often	sometimes	seldom	never	not applicable
a) Does your job provide you with a variety of interesting things?	☐	☐	☐	☐	☐
b) Is your job boring?	☐	☐	☐	☐	☐

13. Regarding team working

	often	sometimes	seldom	never	not applicable
a) Does your job involve working closely with colleagues?	☐	☐	☐	☐	☐
b) Do you attend team meetings?	☐	☐	☐	☐	☐

14. When you are having difficulties in your work

	often	sometimes	seldom	never	not applicable
a) How often do you get help and support from your colleagues?	☐	☐	☐	☐	☐
b) How often are your colleagues willing to listen to your work related problems?	☐	☐	☐	☐	☐
c) How often do you get help and support from your immediate superior?	☐	☐	☐	☐	☐
d) How often is your immediate superior willing to listen to your problems?	☐	☐	☐	☐	☐

15. About your job in general. How satisfied have you been with the following:

	very satisfied	satisfied	dissatisfied	very dissatisfied
a) Your usual take home pay	☐	☐	☐	☐
b) Your work prospects	☐	☐	☐	☐
c) The people you work with	☐	☐	☐	☐
d) Physical working conditions	☐	☐	☐	☐
e) The way your department is run	☐	☐	☐	☐
f) The way your abilities are used	☐	☐	☐	☐
g) The interest and skill involved in your job	☐	☐	☐	☐
h) Your job as a whole taking everything into consideration	☐	☐	☐	☐

16. Do you agree with the following statements? ***If you agree, by ticking 'Yes', to what extent are you distressed by it?***

			not at all	to some extent	a great deal	not applicable
a) I have constant time pressure due to a heavy work load	no ☐	**yes** ☐➢	☐	☐	☐	☐
b) I have many interruptions and disturbances in my job	no ☐	**yes** ☐➢	☐	☐	☐	☐
c) I have a lot of responsibility in my job	no ☐	**yes** ☐➢	☐	☐	☐	☐
d) I am often pressured to work overtime	no ☐	**yes** ☐➢	☐	☐	☐	☐
e) I have experienced or expect to experience an undesirable change in my work situation	no ☐	**yes** ☐➢	☐	☐	☐	☐
f) My job promotion prospects are poor	no ☐	**yes** ☐➢	☐	☐	☐	☐
g) My job security is poor	no ☐	**yes** ☐➢	☐	☐	☐	☐
h) I am treated unfairly at work	no ☐	**yes** ☐➢	☐	☐	☐	☐

17. Do you agree or disagree with the following statements?

	agree	somewhat agree	somewhat disagree	disagree
a) If a task has to be done well I'd better take care of it myself	☐	☐	☐	☐
b) I can get very upset when someone hinders me in my duties	☐	☐	☐	☐
c) As soon as I get up in the morning, I start thinking about work problems	☐	☐	☐	☐
d) When I come home, I can easily relax and 'switch off' work	☐	☐	☐	☐
e) People close to me say I sacrifice myself too much for my job	☐	☐	☐	☐
f) For me, family or private life comes first, then work	☐	☐	☐	☐
g) Work rarely lets me go, it is still on my mind when I go to bed	☐	☐	☐	☐
h) Every once in a while I like it when others hold me back from working	☐	☐	☐	☐
i) If I postpone something that I was supposed to do today, I will have trouble sleeping at night	☐	☐	☐	☐

18. Do you agree with the following statements? ***If you disagree, by ticking 'No', to what extent are you distressed by it?***
(please note the order of 'Yes, 'No' is changed)

		not at all	somewhat	rather	very distressed
a) Considering all my efforts and achievements, my work prospects are adequate	yes ☐ **no** ☐➢	☐	☐	☐	☐
b) I receive the respect I deserve from my superiors and colleagues	yes ☐ **no** ☐➢	☐	☐	☐	☐
c) I experience adequate support in difficult situations	yes ☐ **no** ☐➢	☐	☐	☐	☐
d) Considering all my efforts and achievements, I receive the respect and prestige I deserve at work	yes ☐ **no** ☐➢	☐	☐	☐	☐

19. To what extent does your family life and family responsibilities interfere with your performance on your job in any of the following ways? Would you say:-

	not at all	to some extent	a great deal	not applicable
a) Family matters reduce the time you can devote to your job	☐	☐	☐	☐
b) Family worries or problems distract you from your work	☐	☐	☐	☐
c) Family activities stop you getting the amount of sleep you need to do your job well	☐	☐	☐	☐
d) Family obligations reduce the time you need to relax or be by yourself	☐	☐	☐	☐

20. To what extent do your job responsibilities interfere with your family life? Would you say:-

	not at all	to some extent	a great deal	not applicable
a) Your job reduces the amount of time you can spend with the family	☐	☐	☐	☐
b) Problems at work make you irritable at home	☐	☐	☐	☐
c) Your job involves a lot of travel away from home	☐	☐	☐	☐
d) Your job takes so much energy you don't feel up to doing things that need attention at home	☐	☐	☐	☐

Next, some questions about smoking

21. Do you smoke cigarettes?

Yes ☐
No ☐ ☛ **Please go to Q22**

If yes, how many cigarettes do you usually smoke per day? _____

Next, some questions about the use of alcohol

22. How often do you drink alcohol?

Every day ☐
on five or six days a week ☐
in three or four days a week ☐
on one or two days a week ☐
less than once a week ☐ ☛ **Please go to Q24**
I don't drink alcohol at all ☐ ☛ **Please go to Q24**

23. How many drinks, on average, do you have throughout the whole week?

Please use the following formula in your answer

Half pint (beer, cider)	=1 drink
1 pint (beer, cider)	= 2 drinks
1 glass wine, sherry, vermouth	= 1 drink
1 measure short (whiskey, gin, vodka, etc)	= 1 drink
Double measure short (whiskey, gin, vodka, etc)	= 2 drinks

1 or 2 drinks per week ☐
3 or 4 drinks per week ☐
5 to 8 drinks per week ☐
9 to 14 drinks per week ☐
15 to 21 drinks per week ☐
More than 21 drinks per week ☐

24. Compared to 5 years ago, would you say on the whole you drink more, less or about the same nowadays?

More nowadays ☐
About the same ☐
Less nowadays ☐

25.What is your height (without shoes) ? ☐ feet ☐☐ inches
or ☐ metres ☐☐centimetres

26.What is your weight (lightly dressed)? ☐☐ stones ☐☐ pounds
or ☐☐☐ kilograms

27. Which of the following best describes you?

I am underweight	☐
I am about the right weight	☐
I am a little overweight	☐
I am very overweight	☐
I am not sure about my weight	☐

28. In the last two weeks, how many times have you undertaken vigorous sport or recreational activities which have made you breathless and made you sweat? *Please write 'nil' if you have not exercised in the last two weeks.*

(Examples include brisk walking, cycling, jogging, dancing, racquet sports. Team sports, swimming, heavy gardening and similar activities)

☐ times in the last two weeks

Sickness absence and consultations with a doctor

29. How many days sick leave have you taken in the last year? Number of days _____

30. Have you ever continued to work even where it might have been better to take sick leave?

Yes	☐
No	☐

If so, why did you continue to work?

31. Are you registered with a GP Yes ☐
No ☐ ☛ **Please go to Q33**

32. Does this GP work within the practice where you work? Yes ☐
No ☐

33. When did you last consult a doctor?

in the last month	☐
in the last 3 months	☐
in the last 6 months	☐
in the last 12 months	☐
one year or more ago	☐

34. Was this with

your own GP	☐
another doctor	☐

35. Was this a formal consultation?

yes	☐
no	☐

36. In the last 3 years have you used any of the following services in relation to any physical psychological or stress related disorder? (*Please tick all that apply*)

	no contact	yes satisfactory	yes adequate	yes unsatisfactory
My own GP	☐	☐	☐	☐
Another doctor	☐	☐	☐	☐
Occupational Health Service	☐	☐	☐	☐
A counsellor	☐	☐	☐	☐
A telephone help line	☐	☐	☐	☐
An informal discussion with my supervisor	☐	☐	☐	☐
Family and/or friends	☐	☐	☐	☐
Priest, Rabbi or other spiritual adviser	☐	☐	☐	☐
Other	☐	☐	☐	☐

Finally, some questions about yourself

37. What is your sex?
- Male ☐
- Female ☐

38. What is your age?
- 18-23 ☐
- 24-34 ☐
- 35-44 ☐
- 45-54 ☐
- 55-64 ☐
- 65+ ☐

39. What is your marital status?
- Single (never married) ☐
- Married or living as married ☐
- Widowed ☐
- Divorced or separated ☐

40. What is your job title? _____

41. Do you work full-time or part-time?
- Full-time ☐
- Part-time ☐ ➢ number of hours per week worked_____

42. How long have you been working in general practice?
- Less than 1 year ☐
- 1 year, less than 2 years ☐
- 2 years, less than 5 years ☐
- 5 years, less than 10 years ☐
- 10 years, but less than 15 years ☐
- 15 years, less than 20 years ☐
- 20 years or longer ☐

Appendix 2: Karasek's Job Content Instrument measuring the dimensions of the job strain model (as modified by Marmot et al)

Questions (coding of responses*)	Intermediate variables	Final variables
Do you have a choice in deciding how you do your work (3-0) Do you have a choice in deciding what you do at work (3-0) Others take decisions concerning my work (0-3) I have a good deal of say in decisions about my work (3-0) I have a say in my own work speed (3-0) My working time can be flexible (3-0) I can decide when to take a break (3-0) I have a say in choosing with whom I work (3-0) I have a great deal of say in planning my work environment (3-0)	Σ x 100 ÷ 27 = DECISION AUTHORITY	Σ ÷ 2 = JOB CONTROL (aka decision latitude)
Do you have to do the same thing over and over again (0-3) Does your job provide you with a variety of interesting things (3-0) Is your job boring (0-3) Do you have the possibility of learning new things (3-0) Does your work demand a high level of skill or expertise (3-0) Does your job require you to take the initiative (3-0)	Σ x 100 ÷ 18 = SKILL DISCRETION	
Do you have to work very fast (3-0) Do you have to work very intensively (3-0) Do you have time to do everything (0-3) Do different groups at work demand things from you that you think are hard to combine (3-0)		Σ x 100 ÷ 12 = JOB DEMANDS
How often do you get help and support from your colleagues (3-0) How often are colleagues willing to listen to your work related problems (3-0) How often do you get help or support from your immediate superior (3-0) How often is your immediate superior willing to listen to your problems (3-0) Do you get sufficient information from line managers (your superiors) (3-0) Do you get consistent information from line management (your superiors) (3-0)		Σ x 100 ÷ 18 = SOCIAL SUPPORT AT WORK

*respondents can answer: often, sometimes, seldom, or, never, the responses are coded 0,1,2,3, or, 3,2,1,0, depending on whether the question is negative or positive