Psychosocial work characteristics, burnout, psychological morbidity symptoms and early retirement intentions: a cross-sectional study of NHS consultants in the UK

Atir Khan,1 Kevin RH Teoh,2 Saiful Islam,3 Juliet Hassard4

ABSTRACT

Objectives The objectives of this study are twofold. First, to examine the direct effect of psychosocial work characteristics (as measured by job autonomy and work-related pressure) in relation to self-reported psychological morbidity symptoms and early retirement intentions among a sample of hospital consultants in the National Health Service (NHS). Second, to investigate burnout as a mediating variable (ie, indirect effect) of these postulated associations.

Design A cross-sectional observational study.

Participants 593 NHS consultants (male=63.1%) from hospitals in England, Scotland and Wales.

Measures Self-reported online questionnaires on work-related pressure and job autonomy (Job Demands Resources Questionnaire); emotional exhaustion and depersonalisation (Maslach Burnout Inventory); depressive and anxiety symptoms (State Trait Personality Inventory) and a single-item on early retirement intention.

Results This study observed high prevalence rates across all adverse health measures: emotional exhaustion (38.7%), depersonalisation (20.7%), anxiety symptoms (43.1%) and depressive symptoms (36.1%). Multiple linear regressions examined the postulated direct and indirect effects. Job autonomy had significant negative direct effects on the frequency of NHS consultants’ anxiety and depressive symptoms, and their intention to retire early. Both emotional exhaustion and depersonalisation mediated the relationships between the variables measured and early retirement intention.

This is the first study to demonstrate the mediating role of burnout between psychosocial work characteristics of National Health Service (NHS) consultants and their reported depressive and anxiety symptoms and intentions to seek early retirement.

INTRODUCTION

The National Health Service (NHS) is one of the world’s largest employers, with 1.3 million staff in England and Wales caring for an estimated 243 million patients annually.1 For this system to continue to provide safe, sustainable and patient-centred care, the well-being and retention of its workforce are critical considerations. The NHS performs comparatively worse across many measures of staff well-being; with sickness absence rates, on average, 27% higher than the UK public sector and 46% higher across all sectors.2 Understanding the nature and impact of psychosocial working conditions on medical
professionals’ work-related well-being is, we believe, of
clear empirical importance. In addition, its practical
value in the development of evidenced-based workplace
preventative solutions cannot be understated.

Psychosocial work characteristics and work-related well-
being
Exposure to poor psychosocial work characteristics (eg, poor
job autonomy, work-related pressures, injustice
at work, insufficient leadership) have been linked to a
myriad of work-related well-being (inclusive of physical,
psychological, behavioural and attitudinal) outcomes,
including, for example, poor mental health; increased
health impairing behaviours (eg, increased smoking;7
alcohol consumption8); poor physical health (eg, coro-
nary heart disease)7 8; reduced job satisfaction; intention
to quit; and diminished organisational commitment.11
In short, there is strong research to suggest that exposure
to poor psychosocial work characteristics poses a clear risk
to employees’ health and work engagement. However,
the nature and mechanisms underpinning such associa-
tions must be examined and understood at various levels
(eg, community, sectoral and organisational), and within
various vocational groups and occupational roles.12

Within the healthcare sector, much of the available
research has focused on a limited number of occupa-
tional groups (eg, nurses13 14; social workers15 16 and,
and, to a lesser degree, doctors17 18). The importance of focusing
on different occupational groups is evident in a study of
German intensive care units, where nurses, junior physi-
cians and senior physicians reported different levels of
burnout, turnover intention and perceived non-benefi-
cial patient treatment.19 While the extant literature examin-
ing doctors specifically is increasing, there has (to date)
been little attempt to examine the nature of this associa-
tion within a unique vocational subgroup: NHS hospital
consultants. These doctors are among the most experi-
enced and trained within this vocational group.20 Their
role as educators and supervisors of the next generation
of doctors and nurses means their organisational con-
tribution in the development of the current and future
healthcare workforce is imperative.21

The mediating role of burnout
Burnout is one of the most commonly studied well-being
constructs within the healthcare sector22; and, in partic-
ular, as a measure of work-related well-being among
doctors. Burnout refers to a prolonged psychological
response to chronic emotional and interpersonal stresses
related to work,23 24 and manifests through symptoms of
emotional exhaustion, depersonalisation and reduced
personal accomplishment. Emotional exhaustion denotes
being emotionally overextended and exhausted by work.
Depersonalisation refers to an impersonal feeling towards
people, and reduced personal accomplishment encum-
passes the reduced work effectiveness due to emotional
exhaustion and depersonalisation. Studies22 23 24 have
found strong and consistent support for the emotional
exhaustion and depersonalisation dimensional factors
of burnout; and are, therefore, typically viewed as its
core conceptual components. However, the evidence
surrounding professional accomplishment is compara-
tively mixed. Consequently, personal accomplishment is
generally viewed as a separate, but related entity.25

Evidence derived from reviews and meta-analyses
demonstrate a significant association between poor
psychosocial working conditions and doctors’ self-re-
ported burnout symptoms.17 18 Within the extant litera-
ture, burnout has predominantly been conceptualised
and investigated as the outcome of a poor psychosocial
work environment. However, there is increasing attention
being paid to the potential role of burnout as an antecedent
to a range of health-related, attitudinal and behavioural
outcomes, including; depression and anxiety;27 substance
abuse;28 work performance;29 turnover intention30 and
patient care.31 This is not surprising, as burnout depletes
workers’ energy and coping resources, which may results
in increased physiological and psychological strain.32
This may, in turn, trigger and exacerbate symptoms of
psychological morbidity and work disengagement; and,
consequently in the long term, interfere with perfor-
ance.33 The role of burnout has also been examined in
relation to turnover intention, notably where healthcare
workers’ working conditions34 and perceived non-benefi-
cial patient treatment19 were predictors. Focusing specif-
ically on doctors, to date limited research has sought to
examine burnout as a possible mediating variable in rela-
tion to doctors’ perceived working condition and their
psychological health and experienced work-related atti-
itudes. This study aims to address this gap in knowledge.

Study aims
The objectives of this study are twofold. First, to examine
the direct effect of psychosocial work characteristics
(job autonomy and work-related pressure) in relation to
self-reported psychological morbidity symptoms and
early retirement intentions among a sample of hospital
consultants in the NHS. Second, to investigate burnout as
a mediating variable (ie, indirect effect) of this postulated
association. Figure 1 provides a visual representation of
the study’s postulated direct and indirect effects among
independent and dependent variables.

METHOD
Study design and sample
A cross-sectional quantitative survey was carried out
between November and December 2015. The Human
Resources departments of all the Health Boards in Wales
(n=7) and Scotland (n=10) were approached to partici-

date in this study, along with 12 NHS Trusts from England.
All agreed to forward an electronic survey, administered
through Bristol Online Survey, to all their consultants. It
is not possible to determine how many consultants actu-
ally received the survey. We used the response from a
sample size of 500 consultants. This is based on a sample
size calculation using survey sample method that considered a total consultant population of 10,000 across these Health Board and Trusts (assuming a proportion of 50%, a 95% CI and allowing 5% margin of error). The calculation yielded a required sample of 370 responses. This was increased to a larger sample of 500 to obtain better representation of the overall population.

Measures
Surveyed consultants provided information on sociodemographic details (age, gender, specialty, country, tenure as consultant), work-related pressure, job autonomy, burnout, early retirement intention and anxiety and depressive symptoms.

Psychosocial work characteristics
Two specific psychosocial work characteristics were examined by the current study: job autonomy and work-related pressure. The decision to examine only two (out of myriad of possible psychosocial work characteristic) was based on what the contemporary literature repeatedly highlights as particularly salient work characteristics to NHS consultants. These also serve as proxies for the two dimensions of the Job Demand-Control Model. The English version of the Job Demands-Resources Questionnaire was used to assess work-related pressure and job autonomy. Work-related pressure consisted of four items and job autonomy three items. All items were rated on a Likert scale: 1 (never) to 5 (very often).

Burnout
The Maslach Burnout Inventory was used to quantify the two examined dimensions of burnout: emotional exhaustion (nine items) and depersonalisation (five items). Items were rated on a seven-point Likert scale (0, ‘never’ to 6, ‘every day’). All subscale items were summed to create two composite scores. Higher scores are indicative of increased emotional exhaustion or depersonalisation. The summed scores on the two used composite measures were used to stratify the sample into ‘high’ and ‘low’ reference categories, with established norm scores of health professionals used to inform the categorisation process. A composite score of 27 or higher on the emotional exhausted scale and 13 or higher on the depersonalisation scale were used to categorise participants in the ‘high’ group. The ‘low’ group consisted of those with a score of 13 or lower for emotional exhaustion, and 5 or lower for depersonalisation.

Psychological morbidity symptoms
Symptoms of trait depression and anxiety were measured by the State Trait Personality Inventory. This 80-item inventory contains eight scales that measures state and trait-related depression, anxiety, curiosity and anger. Only the 10-item scales pertaining to trait-related depression and anxiety were included in this study. The scales are among the most widely used for anxiety and depression with strong psychometric properties. The frequency

Figure 1 Postulated direct and indirect effects of job autonomy and work-related pressures.
of each item was rated on a four-point Likert scale (1, ‘almost never’ and 4, ‘almost always’), with high scores representing more frequent experience of anxiety and depressive symptoms. Although neither measure has clinically diagnostic cut-off points, participants in this study with scores higher than the 75th percentile of UK working norm scores were classed as high scoring (≥18 for anxiety; ≥20 for depression).

**Work-related attitudinal outcome: early retirement intention**

Depending on the type of scheme, NHS consultants have the option of retiring at age 60 (1995 section) or 65 years (2008 section). Therefore, early retirement intention was assessed through one Likert-based item commonly used in epidemiological surveys of the working population: “do you think you will be doing this job when you are 60 years old”. Anchored from 0 (“I would not even want to be”) to 6 ‘yes’.

**Statistical analysis**

Descriptive statistics and study measures’ internal consistency using Cronbach’s α were analysed. Subsequently, bivariate two-tailed parametric correlations were calculated to examine the statistical association between study variables. Three multiple linear regression models were then carried out to examine the direct effects of the study’s predictor variables (job autonomy, work-related pressure, emotional exhaustion and depersonalisation) on the three dependent measures: anxiety and depressive symptoms, and early retirement intention. Two additional multiple linear regressions tested the direct effects that job autonomy and work-related pressure had on emotional exhaustion and depersonalisation. Sociodemographic covariates (age, gender, specialty, country, tenure as consultant) were controlled for. Assumptions underlying multivariate linear regression were assessed by plotting residual errors and standardised residuals. Existence of multicollinearity was checked through variance inflation factors, and Durbin-Watson tests were conducted for correlated residuals. All these diagnostics fell within the acceptable ranges for each multiple linear regression model. SPSS (V.22) was used for data management and statistical analysis. Missing data were examined; with, in general, low levels observed (ie, 1.9% in gender and 0.7% for consultant specialty). Such data were excluded from the analysis due their non-significant size.

Hayes’46 PROCESS Model 4 macro was used to examine the indirect effects that psychosocial work characteristics (ie, job autonomy and work-related pressure) had on consultants’ psychological morbidity and turnover intention. Both emotional exhaustion and depersonalisation were examined as mediators within these relationships. This approach tests the indirect effect of both mediators, using a calculation of 1000 bias-corrected bootstrapped 95% CIs. Bootstrapping estimates model parameters and their SEs by the repeated sampling of the study sample. These do not assume that sampling distributions are normal, which is especially applicable for mediation analyses.47 Therefore, bootstrapping generates more accurate CIs than other more commonly used mediation methods. In total, six sets of analyses were carried out, with one set for each relationship between both predictors (work-related pressure, job autonomy) and the three outcome measures (anxiety symptoms, depressive symptoms, early retirement intention). Consultants’ gender, age, experience, country and specialty were included as covariates. The paper is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology statement.48

**RESULTS**

In total, 593 responses were completed. A full demographic breakdown is presented in table 1. The sample was relatively evenly split between England (32.5%), Wales (32%) and Scotland (35.4%). The majority of respondents were male (63.1%), and aged between 41–50 years (45.5%) and 51–60 years (31%). In total, eight specialty groups were represented, with the majority of respondents identifying as physicians (28.8%), surgeons (18.2%), anaesthetists (14%) and others (15.7%).

Table 1 provides an overview of the proportion of the sample that were categorised as scoring ‘high’ on the examined study variables. These comparisons are not based on inferential statistics and are only for descriptive purposes. A sizeable proportion of the survey sample reported a high level of depressive and anxiety symptoms. Four out of 10 consultants surveyed reported a high frequency of anxiety symptoms, and over a third of the sample were categorised as having a high degree of depressive symptoms. In relation to burnout, 38.7% of participants reported a high level of emotional exhaustion and 20.74% depersonalisation. The means, SD and internal consistency for all study variables are presented in table 2. All used composite measures demonstrated a satisfactory level of internal consistency. Bivariate two-tailed parametric correlations among the predictor and dependent measures are also provided in the same table.

**Direct effects between psychosocial work characteristics and psychological morbidities**

Fewer relationships involving sociodemographic variables were found. High frequency of anxiety symptoms associated with older consultants (β=0.17, p<0.01), consultants with less experience (β=−0.19, p<0.01) and being male (β=−0.12, p<0.01). Surveyed consultants from Wales had more frequent anxiety symptoms than compared with those sampled from Scotland (β=−0.08, p<0.05). For depressive symptoms, being older (β=0.18, p<0.01) and less experienced (β=−0.18, p<0.01) was associated with more frequent depressive symptoms. In terms of specialty,
obstetrics and gynaecology consultants reported less depressive symptoms ($\beta=-0.08, p<0.05$) than physicians. Surveyed consultants’ intention to seek early retirement was not associated with any of the sociodemographic variables measured.

Table 3 presents the results from the five multiple linear regression analyses. Consultants’ job autonomy negatively predicted the level of consultant’s emotional exhaustion ($\beta=-0.26, p<0.01$) and depersonalisation ($\beta=-0.17, p<0.01$), as well as the frequency of their anxiety ($\beta=-0.10, p<0.01$) and depressive ($\beta=-0.17, p<0.01$) symptoms, and their early retirement intention ($\beta=-0.19, p<0.01$). Work-related pressure only predicted exhaustion ($\beta=0.38, p<0.01$) and depersonalisation

### Table 1: Sample distribution and the proportion of the sample categorised as ‘high’ on the examined study variables

<table>
<thead>
<tr>
<th>Sample characteristics</th>
<th>Burnout dimensions</th>
<th>Psychological morbidities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emotional exhaustion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Total sample</td>
<td>593 (100%)</td>
<td>38.70%</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>England</td>
<td>193 (32.5%)</td>
<td>37.82%</td>
</tr>
<tr>
<td>Wales</td>
<td>190 (32.0%)</td>
<td>40.21%</td>
</tr>
<tr>
<td>Scotland</td>
<td>210 (35.4%)</td>
<td>37.91%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>374 (63.1%)</td>
<td>37.43%</td>
</tr>
<tr>
<td>Female</td>
<td>208 (35.1%)</td>
<td>41.35%</td>
</tr>
<tr>
<td>Not specified</td>
<td>11 (1.9%)</td>
<td>26.09%</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–40</td>
<td>119 (20.1%)</td>
<td>41.18%</td>
</tr>
<tr>
<td>41–50</td>
<td>267 (45.5%)</td>
<td>35.58%</td>
</tr>
<tr>
<td>51–60</td>
<td>184 (31.0%)</td>
<td>42.93%</td>
</tr>
<tr>
<td>&gt;60</td>
<td>23 (3.9%)</td>
<td>26.09%</td>
</tr>
<tr>
<td>Tenure (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>25 (4.2%)</td>
<td>28.00%</td>
</tr>
<tr>
<td>1–5</td>
<td>135 (22.9%)</td>
<td>37.04%</td>
</tr>
<tr>
<td>6–10</td>
<td>154 (26.1%)</td>
<td>70.91%</td>
</tr>
<tr>
<td>11–15</td>
<td>112 (19.0%)</td>
<td>37.50%</td>
</tr>
<tr>
<td>16–20</td>
<td>86 (14.6%)</td>
<td>39.53%</td>
</tr>
<tr>
<td>&gt;21</td>
<td>78 (13.2%)</td>
<td>41.02%</td>
</tr>
<tr>
<td>Not specified</td>
<td>3 (0.5%)</td>
<td>26.09%</td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>171 (28.8%)</td>
<td>33.33%</td>
</tr>
<tr>
<td>Surgeon</td>
<td>108 (18.2%)</td>
<td>43.52%</td>
</tr>
<tr>
<td>Obstetrics/gynaecology</td>
<td>24 (4.0%)</td>
<td>37.50%</td>
</tr>
<tr>
<td>Anaesthesia</td>
<td>83 (14.0%)</td>
<td>28.92%</td>
</tr>
<tr>
<td>Radiology</td>
<td>41 (6.9%)</td>
<td>36.59%</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>47 (7.9%)</td>
<td>46.81%</td>
</tr>
<tr>
<td>Pathology/microbiology</td>
<td>22 (3.7%)</td>
<td>59.09%</td>
</tr>
<tr>
<td>Other</td>
<td>93 (15.7%)</td>
<td>44.09%</td>
</tr>
<tr>
<td>Not specified</td>
<td>4 (0.7%)</td>
<td>26.09%</td>
</tr>
</tbody>
</table>

Risk for emotional exhaustion (high≥27; low≤13) and depersonalisation (high≥13; low≤5) was based on composite score on the Maslach Burnout Inventory; high depressive (≥20) and anxiety (≥18) was based on composite score on the State Trait Personality Inventory representing more frequent experience of symptoms.

*After excluding missing values.*
A large and growing research literature has examined the impact of psychosocial work characteristics in relation to a myriad of work-related well-being measures.5 7 8 12 This Table 2 Descriptive statistics, correlations and reliability coefficients among study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Internal consistency (Cronbach’s α)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job autonomy</td>
<td>0.88</td>
<td>6.15 (3.04)</td>
<td>−0.01</td>
<td>−0.23**</td>
<td>−0.15**</td>
<td>−0.26**</td>
<td>−0.33**</td>
<td>0.108</td>
<td>−0.01</td>
<td>−0.21**</td>
</tr>
<tr>
<td>2. Work-related pressure</td>
<td>0.90</td>
<td>11.71 (3.78)</td>
<td>0.40**</td>
<td>0.15**</td>
<td>0.20**</td>
<td>0.18**</td>
<td>−0.04</td>
<td>−0.06</td>
<td>0.10*</td>
<td></td>
</tr>
<tr>
<td>3. Emotional exhaustion</td>
<td>0.92</td>
<td>23.38 (1.67)</td>
<td>0.53**</td>
<td>0.57**</td>
<td>0.61**</td>
<td>0.02</td>
<td>−0.01</td>
<td>0.21**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Depersonalisation</td>
<td>0.85</td>
<td>5.70 (5.74)</td>
<td>0.40**</td>
<td>0.40**</td>
<td>−0.03</td>
<td>−0.08</td>
<td>0.14**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Anxiety symptoms</td>
<td>0.84</td>
<td>8.53 (4.84)</td>
<td>0.81**</td>
<td>−0.09*</td>
<td>−0.04</td>
<td>0.16**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Depressive symptoms</td>
<td>0.91</td>
<td>8.92 (5.36)</td>
<td>−0.04</td>
<td>0.01</td>
<td>0.21**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Tenure</td>
<td>—</td>
<td>11.27 (7.29)</td>
<td>0.87**</td>
<td>−0.10*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Age</td>
<td>—</td>
<td>47.63 (7.47)</td>
<td>−0.11**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Early retirement</td>
<td>—</td>
<td>1.58 (1.40)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean (SD) are reported diagonally.

*P<0.05 level (two-tailed), **p<0.01 level (two-tailed).
Table 3  Multiple linear regression analyses—dependant variables: anxiety symptoms, depressive symptoms and early retirement intention

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Anxiety symptoms</th>
<th>Depressive symptoms</th>
<th>Early retirement intention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B/ β (95% CI)</td>
<td>B/ β (95% CI)</td>
<td>B/ β (95% CI)</td>
<td>B/ β (95% CI)</td>
<td>B/ β (95% CI)</td>
</tr>
<tr>
<td>(Constant)</td>
<td>19.74</td>
<td>−0.021</td>
<td>−0.84</td>
<td>2.89</td>
<td></td>
</tr>
<tr>
<td>Job autonomy</td>
<td>−0.99**/0.26 (−1.29 to −0.69)</td>
<td>−0.15*/−0.1 (0.027 to −0.04)</td>
<td>−0.30*/−0.17 (−0.42 to −0.17)</td>
<td>−0.09*/−0.19 (−0.13 to −0.05)</td>
<td></td>
</tr>
<tr>
<td>Work-related pressure</td>
<td>1.19**/0.38 (0.96 to 1.45)</td>
<td>0.22**/0.14 (0.09 to 0.34)</td>
<td>−0.03/−0.02 (−0.012 to 0.07)</td>
<td>−0.07/−0.07 (−0.17 to 0.03)</td>
<td>0.01/0.03 (−0.02 to 0.05)</td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>0.19*/0.47 (0.16 to 0.23)</td>
<td>0.25*/0.54 (0.21 to 0.29)</td>
<td>0.02*/0.13 (0.01 to 0.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>0.14*/0.16 (0.07 to 0.20)</td>
<td>0.11**/0.12 (0.04 to 0.18)</td>
<td>0.01/0.02 (−0.02 to 0.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pathology or microbiology</td>
<td>6.58**/0.10 (0.33 to 12.06)</td>
<td>−1.19*/−0.04 (−3.60 to 1.38)</td>
<td>0.97/0.04 (−0.84 to 2.78)</td>
<td>0.71/0.02 (1.22 to 2.64)</td>
<td>−0.17/−0.02 (−0.82 to 0.48)</td>
</tr>
<tr>
<td>Surgery</td>
<td>2.00/0.07 (−0.54 to 4.52)</td>
<td>1.84/0.12 (0.45 to 3.33)</td>
<td>−0.75*/−0.06 (−1.72 to 0.22)</td>
<td>−0.53/−0.04 (−1.56 to 0.50)</td>
<td>−0.09/−0.02 (0.43 to 0.27)</td>
</tr>
<tr>
<td>Anaesthesia</td>
<td>−0.03*/−0.01 (−2.95 to 2.98)</td>
<td>0.81/0.05 (−0.60 to 2.32)</td>
<td>−0.28*/−0.2 (−1.34 to 0.78)</td>
<td>0.28/0.02 (−0.85 to 1.41)</td>
<td>−0.13/−0.03 (−0.51 to 0.25)</td>
</tr>
<tr>
<td>Radiology</td>
<td>−2.72*/−0.06 (−5.67 to 0.66)</td>
<td>−1.09*/−0.05 (−2.88 to 0.79)</td>
<td>0.60/0.03 (−0.74 to 1.95)</td>
<td>0.46/0.02 (−0.97 to 1.90)</td>
<td>−0.08/*−0.01 (−0.56 to 0.41)</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>2.97/0.07 (−0.58 to 0.66)</td>
<td>0.04/0.01 (−1.58 to 1.72)</td>
<td>0.34/0.02 (−0.94 to 1.63)</td>
<td>−0.27*/−0.01 (−1.64 to 1.10)</td>
<td>0.27/0.05 (−0.19 to 0.73)</td>
</tr>
<tr>
<td>Obstetrics/gynaecology</td>
<td>−1.68*/−0.03 (−6.04 to 3.04)</td>
<td>−0.40*/−0.01 (−2.83 to 2.41)</td>
<td>−1.64*/−0.07 (−3.31 to 0.03)</td>
<td>−2.01*/−0.08 (−3.79 to −0.22)</td>
<td>0.13/0.02 (0.48 to 0.73)</td>
</tr>
<tr>
<td>Other</td>
<td>1.87*/−0.03 (−0.54 to 4.80)</td>
<td>0.32/0.02 (−1.14 to 1.73)</td>
<td>−0.62*/−0.05 (−1.61 to 0.37)</td>
<td>−0.36*/−0.02 (−1.42 to 0.69)</td>
<td>−0.16*/−0.04 (−0.52 to 0.20)</td>
</tr>
<tr>
<td>Physician (ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>−2.11*/−0.14 (−3.95 to −0.27)</td>
<td>−2.80*/−0.28 (−2.97 to −1.01)</td>
<td>0.17*/0.27 (0.08 to 0.26)</td>
<td>0.18*/0.25 (0.08 to 0.27)</td>
<td>−0.03/−0.13 (−0.06 to 0.01)</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>−0.17/–0.07 (−3.70 to 0.01)</td>
<td>0.16/0.01 (−0.84 to 1.17)</td>
<td>−1.17*/−0.12 (−1.87 to −0.47)</td>
<td>−0.02/0.01 (−0.77 to −0.73)</td>
<td>−0.12/–0.04 (−0.37 to 0.14)</td>
</tr>
<tr>
<td>Work experience (years)</td>
<td>0.30*/0.19 (0.08 to 0.50)</td>
<td>0.18*/0.22 (0.07 to 0.28)</td>
<td>−0.19*/−0.29 (0.29 to −0.10)</td>
<td>−0.18*/−0.25 (−0.28 to −0.08)</td>
<td>0.01/0.05 (−0.02 to 0.04)</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wales</td>
<td>−0.64 (−2.69 to 1.52)</td>
<td>0.13/0.23 (−1.18 to 1.03)</td>
<td>−0.82*/−0.08 (−1.59 to −0.04)</td>
<td>−0.69/−0.06 (−1.52 to 0.14)</td>
<td>0.04/0.01 (−0.24 to 0.32)</td>
</tr>
<tr>
<td>England</td>
<td>−0.80 (−2.95 to 1.30)</td>
<td>−0.12*/−0.01 (−1.18 to 1.03)</td>
<td>−0.24*/−0.02 (−1.03 to 0.56)</td>
<td>−0.01/0.01 (−0.86 to 0.84)</td>
<td>−0.14/−0.04 (−0.42 to 0.15)</td>
</tr>
<tr>
<td>Scotland (ref)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F (df)</td>
<td>12.82</td>
<td>3.64</td>
<td>21.94</td>
<td>26.26</td>
<td>3.48</td>
</tr>
<tr>
<td>df</td>
<td>14 569</td>
<td>14 568</td>
<td>16 568</td>
<td>16 568</td>
<td>16 561</td>
</tr>
</tbody>
</table>

*P<0.05, **p<0.01.
hazard–harm relationship is within the general working population strongly evidenced. However, it is important to understand the nature and driving mechanisms of this hazard-harm association within its given vocational and organisational contexts. In consideration of this, the current study examined the nature and underpinning mechanisms of such postulated associations within a unique, and grossly under researched vocational group: NHS hospital-based consultants.

Approximately 40% of this sample were categorised as ‘high’ on emotional exhaustion, depressive symptoms and anxiety symptoms. These figures are higher than those reported by previous studies of NHS consultants, and are similar to equivalent surveys of junior doctors. It is, however, important to note that these comparison figures are drawn from studies that used different sampling approaches, and different measures for depressive and anxiety symptoms, or did not publish the cut-off points used. The latter is important considering that different studies using the same measures have used different cut-off points from each other. These descriptive findings highlight the importance of considering the psychological health of doctors (at various stages of their career) as an imperative occupational health issue that necessitates targeted workplace intervention. This descriptive finding highlights, we believe, the importance of considering consultants as a particularly at-risk occupational group in regard to burnout and symptoms of psychological morbidity.

Table 4  Estimated coefficients for mediation model with job autonomy as the predictor

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Outcome</th>
<th>Effect of predictor on mediator (a)</th>
<th>Effect of mediator on outcome (b)</th>
<th>Indirect effect of predictor on outcome (a×b) with 95% CI</th>
<th>Total effect of predictor on outcome (c)</th>
<th>Direct effect of predictor on outcome (c')</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional exhaustion</td>
<td>Anxiety symptoms</td>
<td>−1.04**</td>
<td>0.19**</td>
<td>−0.20 (−0.27 to 0.12)</td>
<td>−0.40**</td>
<td>−0.16**</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Anxiety symptoms</td>
<td>−0.34**</td>
<td>0.14**</td>
<td>−0.05 (−0.09 to 0.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>Depressive symptoms</td>
<td>−1.04**</td>
<td>0.24**</td>
<td>−0.24 (−0.33 to 0.15)</td>
<td>−0.60**</td>
<td>−0.31**</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Depressive symptoms</td>
<td>−0.34**</td>
<td>0.11**</td>
<td>−0.04 (−0.08 to 0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>Early retirement intention</td>
<td>−1.03**</td>
<td>−0.02**</td>
<td>0.02 (0.01 to 0.04)</td>
<td>0.11**</td>
<td>0.09**</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Early retirement intention</td>
<td>−0.34**</td>
<td>−0.01</td>
<td>0.01 (−0.01 to 0.01)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gender, age, experience, country and specialty were included as covariates. *P<0.05, **p<0.01.

Table 5  Estimated coefficients for mediation model with work-related pressure as the predictor

<table>
<thead>
<tr>
<th>Mediator</th>
<th>Outcome</th>
<th>Effect of predictor on mediator (a)</th>
<th>Effect of mediator on outcome (b)</th>
<th>Indirect effect of predictor on outcome (a×b) with 95% CI</th>
<th>Total effect of predictor on outcome (c)</th>
<th>Direct effect of predictor on outcome (c')</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional exhaustion</td>
<td>Anxiety symptoms</td>
<td>1.22**</td>
<td>0.20**</td>
<td>0.25 (0.18 to 0.33)</td>
<td>0.24**</td>
<td>−0.04</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Anxiety symptoms</td>
<td>0.23**</td>
<td>0.14**</td>
<td>0.03 (0.01 to 0.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>Depressive symptoms</td>
<td>1.22**</td>
<td>0.27**</td>
<td>0.33 (0.25 to 0.42)</td>
<td>0.26**</td>
<td>−0.09</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Depressive symptoms</td>
<td>0.23**</td>
<td>0.11**</td>
<td>0.03 (0.01 to 0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional exhaustion</td>
<td>Early retirement intention</td>
<td>1.24**</td>
<td>−0.02**</td>
<td>−0.03 (−0.05 to 0.01)</td>
<td>−0.04*</td>
<td>−0.01</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>Early retirement intention</td>
<td>0.23**</td>
<td>−0.01</td>
<td>−0.01 (−0.01 to 0.01)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gender, age, experience, country and specialty were included as covariates. *P<0.05, **p<0.01.
The negative impact of poor job autonomy and work-related pressures has been strongly evidenced in relation to psychological morbidity symptoms and work-related attitudinal outcomes within the general working population.\(^4\)\(^9\)\(^10\) Like previous findings, poor job autonomy was found to directly predict the increased frequency of depressive and anxiety symptoms among surveyed consultants and increased intentions to seek early retirement. Furthermore, this observed association was partially mediated by reported burnout symptoms. According to the conservation of resources theory (COR),\(^34\) a depletion of energy and coping resources due to burnout can result in a downward spiral that exacerbates resource loss in other areas, including physiological and psychological resources that may trigger depressive and anxiety symptoms.\(^35\) Similarly, COR theory postulates that when faced with exhaustion, energy depletion and depersonalisation, doctors experiencing burnout may view leaving the profession as a mechanism in which to protect their remaining resources.\(^24\) Doctors leaving presents a significant loss of skill, knowledge and experience to the health service.\(^35\)\(^36\)

To our knowledge, this is the first study to examine burnout symptoms (ie, emotional exhaustion and depersonalisation) as a potential mediator between psychosocial work characteristics and psychological morbidity symptoms and work-related attitudinal outcomes as perceived by NHS consultants. However more broadly, these empirical findings contribute to a small, although growing, research domain within the wider burnout literature. It provides evidence of burnout’s contributory role to work-related well-being as both an outcome, and an intervening variable. We would speculate that the nature of this association would also, by extension, be predictive of work-related behaviours (eg, leaving the profession) and performance among medical professionals. However, this speculation remains untested but remains an important avenue for future research.

In this study, the surveyed consultants’ reported symptoms of emotional exhaustion and depersonalisation were both observed to fully mediate the relationship between their perceived work-related pressures and reported psychological morbidities. This is consistent with previous studies, using nurses\(^34\) or mixed occupational groups,\(^19\) that have found burnout to mediate this relationship where turnover intention was the outcome measure. It is important to highlight that the findings derived from the mediation analysis are based on cross-sectional data. However, it does suggest that while excessive and chronic work-related pressures may not be directly associated with surveyed consultants’ psychological health, instead it appears that the experience of burnout may play an important role facilitating its detrimental impact. However, it is plausible that the relationship between job autonomy, burnout, depressive and anxiety symptoms and work-related stress may be reciprocal in nature. Therefore, such postulations of directionality and causality require further systematic longitudinal investigation.

Despite the mediating role of the burnout dimensions, depersonalisation did not operate as a mediator where early retirement intention was an outcome. This is perhaps not surprising, as depersonalisation is defined as withdrawal from fully engaging with their current role.\(^22\) Therefore, it may be that some consultants who cope at work through depersonalisation may be less inclined to see early retirement as a method to leave their work environment, evidenced by an absence of this relationship in the analysis above. Nevertheless, the relationship that depersonalisation has with both depressive and anxiety symptoms suggests that this is not a healthy coping mechanism. It is also plausible that the resource and energy draining nature of emotional exhaustion means it is a stronger driver of NHS consultants looking to retire early.

**Practical implications**

Although reviews\(^55\)\(^56\) have highlighted that individual-level cognitive, behavioural and mindfulness based interventions can be effective in coping with burnout in the healthcare sector, our findings highlight the value of workplace health interventions targeted at adapting working conditions and proactively managing burnout among the NHS staff. One approach to improve the psychosocial work environment is job crafting which has been found to improve medical specialists’ well-being and performance.\(^57\) Sociodemographic variables had some relationship with consultants’ psychological morbidity symptoms, which warrants further exploration in future research. Nevertheless, psychosocial work characteristics remain better predictors of the study outcomes used. Consequently, comprehensive interventions that simultaneously target organisational, material and work-time-related conditions may be more beneficial to worker’s health, than interventions only targeting the individual.\(^58\)

Government and healthcare leaders need to consider how future organisational decisions in the NHS may further impact on consultants’ psychosocial work characteristics and, in turn, their work-related well-being. Although the NHS is under increasing demand and financial strain, greater dialogue between consultants, hospital managers and government officials, at both the local and national level, will go some way in influencing how work-related pressure and job autonomy are perceived and managed.\(^30\)\(^37\)

**Strengths and limitations**

This study, to the best of our knowledge, is the first to demonstrate the mediating role of burnout between psychosocial work characteristics of NHS consultants and their reported depressive and anxiety symptoms and intentions to seek early retirement. Using a broad range of standard psychometric measures with reported cut-off scores allows for comparison with other studies of this (and other) professional groups. Also, Hayes’ PROCESS Model 4 macro with bootstrapping was used to test mediations, which generates more accurate CIs than other more commonly used mediation methods.

In addition to the issue of cross-sectional data already discussed, a number of further limitations need to be
CONCLUSION

The findings from the current study contribute to the small, but growing research area, namely: the examination of NHS consultants’ work-related well-being and the contributing role of their psychosocial working environment. Another important empirical contribution of this study is the observed evidence of experienced burnout symptoms mediating (either partially or fully) the observed relationship between job autonomy and work-related pressures in relation to surveyed consultants’ psychological morbidity symptoms. This highlights the salient role of burnout as an intervening variable, and is especially concerning given the high prevalence of consultants scoring as ‘high’ on the burnout and psychological morbidity symptom measures. These findings emphasise the importance of preventing and mitigating burnout, and the cultivation of skill discretion and autonomy among consultants as an important organisationally focused preventive strategy. This is important for the NHS’ ability to provide safe and high-quality care, and to maintain and retain a healthy and productive workforce.

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Contributors

AK and JH conceived the study concept and design. AK and KT drafted the first version of the manuscript. KT and JH provided critical revision of the manuscript as it went through the revision process. SI and KT did the data management and statistical analyses. All authors contributed to the content and critical revision of the report, and agreed to submit the report for publication.

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Competing interests

None declared.

Patient consent

Not required.

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