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Working as a doctor when acutely ill: comments made by doctors responding to United Kingdom surveys

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Summary

Objectives: We undertook multi-purpose surveys of doctors who qualified in the United Kingdom between 1993 and 2012. Doctors were asked specific questions about their careers and were asked to comment about any aspect of their training or work. We report doctors' comments about working whilst acutely ill.

Design: Self-completed questionnaire surveys.

Setting: United Kingdom.

Participants: Nine cohorts of doctors, comprising all United Kingdom medical qualifiers of 1993, 1996, 1999, 2000, 2002, 2005, 2008, 2009 and 2012.

Main outcome measures: Comments made by doctors about working when ill, in surveys one, five and 10 years after graduation.

Results: The response rate, overall, was 57.4% (38,613/67,224 doctors). Free-text comments were provided by 30.7% (11,859/38,613). Three-hundred and twenty one doctors (2.7% of those who wrote comments) wrote about working when feeling acutely ill. Working with Exhaustion/fatigue was the most frequent topic raised (195 doctors), followed by problems with Taking time off for illness (112), and general comments on Physical/mental health problems (66). Other topics raised included Support from others, Leaving or adapting/coping with the situation, Bullying, the Doctor's ability to care for patients and Death/bereavement. Arrangements for cover due to illness were regarded as insufficient by some respondents; some wrote that doctors were expected to work harder and longer to cover for colleagues absent because of illness.

Conclusions: We recommend that employers ensure that it is not unduly difficult for doctors to take time off work when ill, and that employers review their strategies for covering ill doctors who are off work.

Keywords

Attitude of health personnel, physicians, workforce, medical, cost of illness

Introduction

The early postgraduate years can be stressful for doctors. They are working in new environments; studying for exams; learning new specialisms; interacting

with seniors, nurses, patients and families; working long and intensive hours; and trying to maintain a satisfactory work-life balance. Under pressure, the doctor's own well-being, both physical and mental, may be vulnerable. Some junior doctors experience stress,² fatigue,^{3,4} depression⁵ and burnout.^{5,6} In the United Kingdom, increasing numbers self-refer to a doctors' mental health support service. Doctors' ill health may negatively affect healthcare provided by their institutions and may reduce workplace productivity and patient safety.8 When doctors are ill, it is important that, within reason, they can take time off work. The United Kingdom National Health Service (NHS) Constitution states that 'The NHS commits to provide support and opportunities for staff to maintain their health, wellbeing and safety'.9

The aim of this paper is to report on comments spontaneously made to us by doctors about their experiences of working whilst acutely ill, or working with fellow doctors who are ill, and to report a thematic study of issues raised.

Methods

The United Kingdom Medical Careers Research Group has surveyed nine year of graduation cohorts of United Kingdom medical graduates between 1993 and 2012. We send (postal and email) questionnaires to each cohort one, five and 10 years after qualification. We report here on data one year after graduation for the cohorts of 2002, 2005, 2008, 2009 and 2012; at five years for the graduates of 1999, 2000, 2002, 2005 and 2008; and at 10 years for the graduates of 1993, 1996, 1999, 2000 and 2002. The earliest data used were collected in 2003 and the latest in 2013. We sent several reminders to non-respondents. Further methodological details are available elsewhere. 10,11

Our surveys were multipurpose and mainly contained closed questions about career choices, about career progression and about experiences and attitudes. At the end of each survey questionnaire, in a section

Counts					Percentages				
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Theme	ΥI	Y5	YI0	Total	YI (N=154)	Y5 (N=124)	Y10 (N=43)	Total (N=321)	Percentage of respondents (N=38,613)
Stress/exhaustion/pressure	95	69	31	195	61.7	55.6	72. I	60.7	0.5
Taking time off for illness	72	33	7	112	46.8	26.6	16.3	34.9	0.3
Physical/mental health problems	22	39	5	66	14.3	31.5	11.6	20.6	0.2
Support from others	36	22	4	62	23.4	17.7	9.3	19.3	0.2
Leaving/adapting/coping	21	26	9	56	13.6	21.0	20.9	17.4	0.1
Bullying	16	20	8	44	10.4	16.1	18.6	13.7	0.1
Doctor's ability to care	29	2	ı	32	18.8	1.6	2.3	10.0	0.1
Death/bereavement	5	1	- 1	7	3.2	0.8	2.3	2.2	<0.1
Other	1	0	0	1	0.6	0.0	0.0	0.3	<0.1

Table 1. Frequency distribution of coded comments* made by the doctors one, five and 10 years after graduation (N=321†).

headed 'Additional Comments', we asked respondents to 'Please give us any comments you wish to make, on any aspect of your training or work'. The request was accompanied by a large blank box for responders to write comments in their own words; the equivalent online version of the surveys featured a large scrolling text box to collect extended comments. The researchers assured doctors that their individual comments would remain confidential, and any identifying information was redacted. All handwritten comments were transcribed into our database exactly as written and were combined with the electronic comments entered directly by web responders.

A strategy based on keyword search supplemented by inspection of individual comments was used to identify comments which were relevant to working as a doctor while acutely ill. The criteria and process used are described in Appendix 1.

The identified comments were read by two researchers and a coding scheme was developed iteratively which reflected the main themes raised. The researchers agreed upon eight themes. Each researcher independently coded the comments, allocating up to five themes per doctor's comment (if more than one theme was raised). Any inter-coder differences were resolved through discussion.

Illustrative quotes for each theme are presented. We have endeavoured to provide quotes which are representative of the typical features of the themes raised, and we report the frequency with which each theme was raised.

The analysis was undertaken in Microsoft Excel and SPSS. Quantitative data were analysed by univariate crosstabulation and χ^2 statistics.

Results

Response

In year one, after excluding 939 doctors who declined to participate, were deceased or were untraceable, the response rate was 53.1% (14,560/27,414), 59.4% (12,624/21,254) in year five and 61.6% (11,429/18,556) in year 10.

In year one, comments were provided by 29.4% (4274/14,560) of respondents (15.1% of the cohorts), 31.7% (4004/12,624) of respondents (16.0% of the cohorts) in year five and 31.3% (3581/11,428) of respondents in year 10. In all, 3.6% (154/4274) of commenting doctors wrote about working while acutely ill in year one; 3.1% (124/4004) in year five and 1.2% (43/3581) in year 10.

Most comments were negative, but we have also presented some of the positive comments. The doctor's gender, years from qualification and survey year are presented alongside each quote which is reproduced exactly as made.

^{*}Some doctors gave more than one reason and we counted each reason.

[†]Number of doctors who commented upon illness, not the number of commenting doctors (N=11,859).

Smith et al. 3

Table 2. Frequency distribution of coded comments made by
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	Percentages		Counts	Counts	
Theme	Male (n = 94)	Female (n = 227)	Male (n = 94)	Female (n = 227)	
Stress/exhaustion/pressure	61	61	57	138	
Taking time off for illness	40	33	38	74	
Physical/mental health problems	17	22	16	50	
Support from others	14	22	13	49	
Leaving/adapting/coping	13	19	12	44	
Bullying	15	13	14	30	
Doctor's ability to care	10	10	9	23	
Death/bereavement	2	2	2	5	
Other	0	0	0	1	

Frequency of themes

The 321 doctors provided a total of 575 comments (Table 1). Comments fell into eight themes: Stress/exhaustion/pressure (60.7% of commenters who discussed illness raised this), Taking time off for illness (34.9%), Physical/mental health problems (20.6%), Support from others (19.3%), Leaving or adapting/coping with the situation (17.4%), Bullying (13.7%), the Doctor's ability to care for patients (10.0%) and Death/bereavement (2.2%). The number of different comments raised by men and women was similar (Table 2).

Stress/exhaustion/pressure

In all, 195 comments were made on this theme, which was the most frequently mentioned theme at years one, five and 10 after graduation. Long hours led to doctors working while exhausted. One doctor commented: 'I am 10 years post MBBS, still working every other weekend on-call, clocking up 60-90 hours/week, enduring chronic debilitating sleep deprivation' (female, Y10, survey of 2006). Another doctor wrote 'I consistently work 60-90 hours per week... My choice of career (Neurosurgery) is challenging, but the workload is immense at times... My health has suffered massively' (male, Y5, 2013). Exhaustion and fatigue were mentioned by recent graduates despite the European Working Time Directive (EWTD): 'I...frequently...finish work at least 2 hours over the time...Over the year this has led to me becoming increasingly exhausted' (female, Y1, 2010).

Another doctor felt that

the consultants always know when their team are consistently working over their rota hours, but unfortunately it seems that there is so much pressure from management that they turn a blind eye. The loss of free accommodation I think is going to have dangerous repercussions [because of not being able to sleep in the hospital]... I have fallen asleep at the wheel driving home [after a long shift]. (female, Y1, 2009)

A year 5 doctor commented that 'Unlike my SHO/HO days I get tired quicker and a week of nights destroys me' (female, Y5, 2004).

Pressure of work and exhaustion had led to stress in some cases. Here are some typical comments: 'Have been off work for over a year with severe mental health problems. Contributing factors likely work stress, poor working conditions, fatigue and exhaustion from shift work and poor social support/network from having moved around the country so much' (female, Y5, 2013). One doctor attributed stress to high workload: 'feeling I have too much to do and that things are going to go wrong... I end up sneaking round the hospital trying to finish my work' (male, Y1, 2003). Another wrote: 'Work stress has increased during my time as a GP' (male, Y10, 2012). Another doctor added: 'I feel we are always on the edge of getting struck off/reprimanded for one of the many forms we may have mistakenly [as a result of fatigue attached our signatures to' (male, Y1, 2013).

Box 1. Some comments made by first-year doctors in 2013 about needing time off for illness

'There is not enough slack in system to cover leave/absences' (female)

'Inadequate staff cover when doctors on annual leave or sick' (female)

'When there have been sick members of staff we have been made to work or just expected to. Or the directorate would not cover the sickness and expect the team to just cope' (female)

'Cover for absent doctors is extremely poor and more often than not, non-existent' (male).

'Even when doctors are unwell they will often come to work because they know that if they don't their colleagues will have to pick up the slack' (male)

'Junior doctors at my Trust often feel pressured into working through sickness, because rota management is so poorly organised that departments are usually under-staffed, so absent doctors make the working environment dangerous' (male)

'Members of staff off sick are rarely replaced' (female)

'Culture of not taking a break/not allowed to be off sick' (female)

Taking time off for illness

This was the second most common topic commented on, with 112 comments. Doctors at all career stages complained about difficulties surrounding taking time off, but most such comments came from junior doctors (Table 1). There were complaints about sick leave cover: 'cover for absent doctors is extremely poor...management simply do not care, despite the pressure it puts on remaining staff and on patient care' (male, Y1, 2013), and medical staffing managers were variously described as 'uncaring', 'unhelpful' and 'poorly managed'.

Some doctors wrote about a low level of acceptance of illness among doctors, by management and what they saw as the 'Unspoken but obvious belief of many consultants that time taken off sick is inappropriate and probably thought to be fraudulent' (male, Y5, 2010). One doctor was 'even asked to cover my own on-call when on sick leave' (female, Y5, 2007).

There were comments about guilt, and not wanting to burden the team by taking time off: 'It is accepted in the NHS that you can't be off sick or you will drop your colleagues in trouble' (male, Y5, 2004). Another doctor observed that '...when one person is ill, the rest of the (overworked) team have to take the slack. This can make people feel very guilty, & come to work when they are too ill' (female, Y1, 2009).

There was resentment expressed about having to cover for their absent colleagues. A female Y1 2008 graduate complained about a colleague who, upon her return to work '...had an "easy timetable" whereby she did 2.5 days a week... myself and other FY1s... had to work doubly hard to cover her absence'. 'There is no doubt that I felt stressed... and in the end my training suffered' (female, Y1, 2009). Another wrote:

One night I had to cover 300+ medical patients as my colleague had called in sick. It was a hellish night and come 9am I spoke to management about the lack of

locum help due to sickness—the reply I got was (and I quote) life is tough—get used to it. (male, Y1, 2003)

Comments along these lines were made across the years covered by our analysis. To illustrate that these are not problems that are now solved, we reproduce some comments from recent qualifiers in Box 1.

A few doctors felt well supported: 'I (had) to take a 2-month period off due to illness in my GP training. My training was arranged round my illness and what I wanted to do. This... made a difficult time much easier to cope with' (female, Y5, 2004).

Workplace problems in seeking help for physical/mental health

We found 66 comments on this theme. Several doctors felt that work culture did not support their seeking help: 'I have recently developed a health problem and have found it extremely difficult to get time off work to visit my own doctor, therefore this problem is still ongoing' (male, Y1, 2006).

One doctor found it difficult to negotiate flexible hours when ill: 'I injured my shoulder, I was given a working choice of all or nothing—this was disappointing' (male, Y1, 2003). Others found locum cover was inadequate: 'Locum cover for sick leave has been very poor throughout my training. I have been very unwell and had to phone and beg with the other doctors to cover my night on-call' (female, Y5, 2004).

Some doctors were doubted by management when ill:

... when I broke my shoulder 3 weeks ago while at work I continued working for a week until I couldn't stand the pain because I was under so much pressure...[part of the pressure was not to take] more time off after a day case operation which left me with a bowel perforation. (female, Y1, 2009)

Smith et al. 5

Another doctor complained that she was 'always made to feel very guilty about taking a day off when genuinely sick' (Y5, 2010). A relatively senior doctor '... had taken a week's bereavement leave—as enforced by my GP—this happened to coincide with my week of nights as a registrar. When I handed my sick note in I was told not to malinger and report back at work at once' (Y10, 2006).

Support from others

We found 62 comments on this theme. Several doctors were told that things had improved: 'There has been lack of support from my seniors... regarding the ridiculous working hours. "We had it worse in our day" is commonly the response' (female, Y5, 2013). Similarly, a doctor commented that 'This work is not appreciated by our seniors...we are constantly reminded how the house-man of old could perform appendectomies solo and how we are so unskilled now' (male, Y1, 2013). Another doctor hinted at a health implication of not receiving adequate support for stress: '[There are] very limited mechanisms in place to assist in dealing with emotional and personal aspects of a stressful period' (female, Y1, 2003). A junior doctor became ill: 'I had to take 6 weeks off during my first post with depression/anxiety as job unsupported and very busy... management did not respond efficiently to my concerns' (female, Y1, 2003).

Leaving/adapting/coping

The 56 doctors who commented on this theme included some who had left the United Kingdom: 'Since coming to New Zealand...I've lost weight, stopped smoking, and am able to enjoy my specialty again' (male, Y5, 2013); others who had changed career specialty: 'General practice has been a breath of fresh air, where doctors actually think about how they learn and nurture colleagues and avoid burnout' (female, Y5, 2005); 'my confidence was so eroded I made the decision to leave and do public health' (female, Y5, 2013); and others who had considered leaving medicine entirely: 'I spend a lot of my time thinking about other jobs that work less and pay more' (female, Y5, 2005).

Doctors discussed coping mechanisms or using annual leave to recover from exhaustion:

Despite EWTD, FY1s at my current hospital still do seven 12 hour days in a row, and would be expected to return to work the following week without a day off. Almost all FY1s use their annual leave to simply recover from these runs of long days. (male, Y1, 2013)

One doctor observed that 'quite a few FY1s ended up with insomnia relying on zopiclone most nights to get them to sleep' (female, Y1, 2008).

Bullying

Bullying was mentioned 44 times. Some who raised this drew a link between bullying and sickness: 'aggressive bullying atmosphere by registrars causing multiple staff sickness and impacting on patient safety' (female, Y1, 2013). Another reported: 'Claims of bullying & harassment by Paediatric Consultant not taken seriously and not acted upon immediately by trainers despite requests for alternative consultant, until I needed sick time off work' (male, Y5, 2005).

We also found comments about bullying by more senior doctors: 'In my surgical job there was a lot of bullying from members of the team senior to me, including the SHO, registrar & consultant' (male, Y1, 2013); by nurses: 'The most stressful part of my first F1 job was dealing with nursing staff who were rude, unhelpful, tried to take advantage of or bully first year doctors' (female, Y1, 2006); and by other staff: 'Medical staffing [Human Resources] and secretarial staff also bullied doctors when ill. Medical staffing were totally unsupportive and I felt persecuted and bullied' (female, Y5, 2010).

One doctor suggested that 'how to approach the situation of the colleague who doesn't pull their weight, or the under-performing colleague, or the bullying senior, or noticing someone with health issues' should be covered in medical school (female, Y1, 2013).

Doctor's ability to care for patients

Patient safety was a concern for 32 doctors, almost all of them Year 1 doctors, as a consequence of doctors' exhaustion. One wrote:

Attempts at the working time directive are a bad joke. I was recently working 13 hour shifts, some with less than 11 hours between shifts. While this is a horrific shift pattern to have to work it is also highly detrimental to patient care... I worked one 13 hour shift with only a 10 minute break, 12 hours after I had started. (female, Y1, 2009)

Death/bereavement

Although there were only seven comments on this theme, they were among the most distressing.

A doctor who had suffered bereavement was critical of treatment she had received:

My father was diagnosed with cancer and deteriorated and passed away within 5 weeks. I initially found it difficult to get special leave in order to attend oncology appointments etc and found the administrative staff unsympathetic and even scathing. This experience really affected my work morale. (female, Y1, 2010)

Another who had lost both parents within a year found it difficult to get back into work:

For the past two years I have been looking after my mother...I have found it extremely hard to reintegrate myself into my career and feel slightly marginalised in that I was not allowed the opportunity to return to work [when I wished]. I was never offered the opportunity of flexible training. (female, Y5, 2004)

A third doctor received no support after a friend's death: 'a close friend at medical school committed suicide—the medical school did not offer us support to deal with her death' (female, Y1, 2009).

Discussion

Main findings

Doctors with an acute illness were critical of arrangements for taking time off. When colleagues were ill, the remaining doctors said that they were asked to work harder and for longer. Ill doctors frequently commented that they felt guilty, if they took time off work, about making more work for their colleagues.

Strengths and weaknesses of the study

The response rate of 57% over 15 surveys is good. Almost one-third of respondents provided comment, and 3% of doctors who commented provided relevant comment about doctors' working while acutely ill. However, some doctors with views about working when ill may have chosen not to provide comments. There is also evidence that survey participation may be suppressed if the topic generates negative thoughts in a respondent. ¹²

Comparison with existing literature

Many doctors who commented were dealing with stress, exhaustion and depression: all have been documented elsewhere amongst doctors. 1,2,4,5

Our respondents also perceived a lack of support and respect from colleagues and management; and a lack of gratitude from management for doctors who worked beyond the call of duty to cover for absent sick colleagues. This pattern of over-commitment and effort–reward imbalance was found to be predictive of chronic stress in young doctors.²

Many doctors wrote that it was difficult to take time off for illness or to seek help. A systematic review found that most barriers to seeking help with illness are systemic, rather than individual (e.g. doctors facing a cultural pressure from others to be healthy, human resources not providing locums).¹³ Doctors in one study wanted acceptance that doctors get ill and recognition that doctors must take better care of themselves.¹⁴

Implications

Doctors have the same right to health, and to respond appropriately to their own illnesses, as other people, and their illnesses should be accommodated. Our respondents did not want to burden colleagues by being ill and were stressed and exhausted when cover for absent colleagues was not provided. Workplaces need to address lack of cover, especially when it feeds into the ill health of doctors, which in turn creates more demand for cover. We recommend that employers should ensure that it is not unduly difficult for doctors to take time off work when ill. We also recommend that employers should ensure that strategies for covering ill doctors, off work, are adequate.

Unanswered questions and future research

This study of its nature deals with spontaneous comments made by a minority of responding doctors. It is therefore hard to judge whether their reported experiences are representative. Future research could include sensitively worded and carefully designed studies which elicited information from all doctors about their experiences of working whilst ill or of taking time off work whilst ill.

Declarations

Competing interests: All authors have completed the Unified Competing Interest form at www.icmje.org/coi_disclosure.pdf (available on request from the corresponding author) and all authors want to declare: (1) financial support for the submitted work from the Policy Research Programme, Department of Health. All authors also declare: (2) no financial relationships with commercial entities that might have an interest in the submitted work; (3) no spouses, partners, or children with relationships with commercial entities that might have an interest in the submitted work; (4) no non-financial interests that may be relevant to the submitted work.

Smith et al. 7

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References

- Rogers ME, Creed PA and Searle J. Emotional labour, training stress, burnout, and depressive symptoms in junior doctors. J Voc Educ Train 2014; 66: 232–248.
- Buddeberg-Fischer B, Stamm M, Buddeberg C and Klaghofer R. Chronic stress experience in young physicians: Impact of person- and workplace-related factors. Int Arch Occup Environ Health 2010; 83: 373–379.
- 3. Morrow G, Burford B, Carter M and Illing J. Have restricted working hours reduced junior doctors' experience of fatigue? A focus group and telephone interview study. *BMJ Open* 2010; 4: e004222. DOI: 10.1136/bmjopen-2013-004222.
- Tucker P, Brown M, Dahlgren A, Davies G, Ebden P, and Folkard S. The impact of junior doctors' worktime arrangements on their fatigue and well-being. Scand J Work Environ Health 2010; 36: 458–465.
- Pereira-Lima K and Loureiro SR. Burnout, anxiety, depression, and social skills in medical residents. *Psychol Health Med* 2014; 20: 353–362.
- Paice E and Hamilton-Fairley D. Avoiding burnout in new doctors: Sleep, supervision and teams. *Postgrad Med J* 2013; 89: 493–494.
- Meerten M, Rost F, Bland J and Garelick AI. Selfreferrals to a doctors' mental health service over 10 years. Occup Med 2014; 64: 172–176.
- Wallace JE, Lemaire JB and Ghali WA. Physician wellness: A missing quality indicator. *Lancet* 2009; 374: 1714–1721.
- Department of Health. The Handbook to the NHS Constitution. Department of Health. London: Department of Health, 2013.
- Goldacre MJ, Davidson JM and Lambert TW. Career choices at the end of the pre-registration year of doctors who qualified in the United Kingdom in 1996. *Med Educ* 1999; 33: 882–889.

 Lambert TW, Goldacre MJ, Edwards C and Parkhouse J. Career preferences of doctors who qualified in the United Kingdom in 1993 compared with those of doctors qualifying in 1974, 1977, 1980, and 1983. *Br Med J* 1996; 313: 19–24.

- Groves RM, Couper MP, Presser S, Singer E, Tourangeau R, Acosta GP, et al. Experiments in Producing Nonresponse Bias. *Public Opin Quart* 2006: 70: 720–736.
- Kay M, Mitchell G, Clavarino A and Doust J. Doctors as patients: A systematic review of doctors' health access and the barriers they experience. Br J Gen Pract 2008; 58: 501–508.
- George S, Hanson J and Jackson JL. Physician, heal thyself: A qualitative study of physician health behaviors. *Acad Psychiatry* 2014; 38: 19–25.

Appendix 1: Keyword search method

We created a list of keywords which we believed to be relevant. All of the researchers contributed to this initial list, which used formal language, abbreviations and colloquialisms (e.g. absent, off work). We also searched the academic literature for possible keywords. Doctors' own comments would often yield an unthought of word: therefore the keyword list expanded as the coding process proceeded.

The list of keywords used was as follows:

absent, accident, acute, 'back to work', bull*, burnout, condition, deficienc*, disease, disorder*, dyslexia, exhaust, fatigue, hearing, injur, ill*, invincible, mental, mood, 'my health', 'off work', 'own health', 'own staff', pressure, recurrent, 'reduced health', 'return to work', sleep, sick, sight, stigma, strain, stress, symptom, tired, 'to leave', unwell, vision, visual, weak.

In some cases a word stem was used so that the search would include variations of a word (e.g. 'ill' was used to search for 'ill' and 'illness'). This method also therefore included plurals of words. A preceding space was included for certain words (such as 'stress') to reduce false positives (such as 'distress').

The process was iterative. Any keywords which resulted in over 100 'hits' were examined for false positives and were altered or deleted accordingly. A random 2% of comments which were not hits in the keyword search were examined for relevance to the topic of the paper: this did not yield any more relevant comments.