

Job satisfaction and psychological morbidity in medical house officers

ABSTRACT – The aim of this study was to examine levels of job satisfaction and psychological morbidity in pre-registration house physicians working partial shift rotas, full shift rotas, or traditional on-call rotas. The study was carried out at two teaching hospitals in one city, and consisted of a prospective within-subject crossover study at hospital A and a parallel simple descriptive study at hospital B. Sixty preregistration house physicians were included in the study. At hospital A the house officers worked shifts for part of their post and traditional on-call rotas for the remainder. At hospital B the house officers worked a modified on-call rota throughout. The outcome measures used were the 30 item General Health Questionnaire and a self-report job satisfaction scale. Measures were administered at hospital A towards the end of each distinct rota period (on-call or shift) and simultaneously administered at hospital B. Results showed that full shifts were associated with greater psychological morbidity and lower job satisfaction than traditional on-call rotas. Partial shifts were rated more favourably but were nonetheless unpopular. There was a marked difference between hospitals. It would seem that some 'new deal' rotas may increase psychological morbidity and reduce job satisfaction.

Levels of psychological morbidity are higher amongst doctors than in the general population¹, particularly in the preregistration house officer year²⁻⁴. A possible explanation is occupational stress⁵.

Recent initiatives have concentrated on counselling for sick doctors^{6,7} but changing the way that doctors work might be just as effective. With this in mind the 'new deal' was introduced five years ago to reduce junior doctors' hours of work⁸. Manpower and financial constraints mean that new working patterns such as full shifts and partial shifts are increasingly common. Full shifts usually involve working a continuous 8-12 hour period at fixed times during the day or night. Partial shifts allow individuals to work normal daytime hours with intermittent rotation to work a shift system at night.

Early reports on these shift systems were favourable⁹⁻¹¹. However, the on-call rotas with which they were compared were arduous and it was difficult to separate the impact of reducing hours of work from

the impact of the changed pattern of work in the new rotas. Our personal experience suggests that many juniors dislike these new ways of working, a sentiment echoed by recent contributions to the *British Medical Journal's* letters page¹²⁻¹⁴, but there has been little systematic study in the area. A small-scale crossover study using non-standardised measures suggested partial shifts led to the demoralisation of house surgeons and disruption in the running of surgical firms¹⁵. Another study suggested shift working had a detrimental effect on house officers' job satisfaction, but again the number of subjects was small¹⁶.

In the present study we sought to clarify whether 'new deal' rotas for house officers are associated with reduced job satisfaction and greater psychological morbidity.

Methods

Subjects and setting

Two cohorts, each of 30 preregistration medical house officers, were studied (February 1995 to August 1995 and August 1995 to February 1996). This represented the entire 12-month intake for two large teaching hospitals in one city. The two hospitals were of a similar size, had a broadly similar case mix, were geographically close and were affiliated to the same medical school.

Working patterns at hospital A

Hospital A employed 18 medical house officers. New working patterns had been introduced six months previously. During the first six months of the study, nine house officers started by working an on-call system for three months and then changed to partial shifts. The other nine house officers started with a partial shift system and then changed to an on-call system (Fig 1). The on-call system was 1 in 6 with prospective cover. Partial shifts involved working a week of nights every month while for the rest of the month the house officers would work normal daytime hours. The weekends were divided into four 12-hour shifts.

Working practices were different in the second six months of the study. The house officers were divided into three groups of six. Each group worked in three two-month blocks of which two blocks were on-call working and one block was full shift working (Fig 1). The on-call rota was again 1 in 6 with prospective cover. Full shift house officers worked one of four

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shifts in 5-7 day blocks: an 8 am to 6 pm ward shift, a 2 pm to 10 pm shift split between an acute receiving room and the wards, and one of two night shifts (5 pm to 3 am or 9 pm to 9 am).

Working patterns at hospital B

Hospital B employed 12 medical house officers. A modified 1 in 6 on-call rota had been introduced six months previously. The house officers worked the same system for the duration of their house job and working practices at hospital B remained unchanged throughout the 12-month study period. In addition to their normal working hours they would work 1 in 12 'on take' and 1 in 12 'on cover'. The 'on take' house officer took acute medical admissions from 5 pm to 12 pm and then was second on-call from home. The 'cover' doctor covered the wards until midnight and then took all acute calls until the next morning, but had the next day off.

Measures

A self-report questionnaire was used to collect basic demographic data. The house officers were asked to estimate how many hours they actually worked in an average week. Subjects also completed the 30-item version of the General Health Questionnaire¹⁷ and a validated job satisfaction scale¹⁸ previously used in health-care settings^{19,20}. The General Health Questionnaire is a measure of psychological morbidity and is scored 0-30. Higher scores imply greater morbidity and an individual with a score of greater than 4 is regarded as a probable 'case' of unspecified psychiatric disorder. The job satisfaction scale has 15 items, each scored on a seven-point Likert scale (total maximum score 105). Higher scores imply greater job satisfaction. It yields

subscales of intrinsic and extrinsic job satisfaction (see appendix).

In addition to Likert scales measuring job choice and autonomy, work pressure and relationship with consultant were included. These were obtained from the Institute of Work Psychology in Sheffield in a form modified from the original scales²¹⁻²³. They have proven reliability and were recently used in a survey of working in the Health Service²⁴. The respondents were also invited to rate their overall satisfaction with their work rota, the effect of their rota on free time, and implications of their rota for continuity of care. These three items were grouped together as a 'rota satisfaction scale'. All items were scored 1-5, with 5 being the most favourable response.

The measures were administered to subjects at hospital A towards the end of each distinct rota period (see Fig 1). They were administered to subjects at hospital B at three and six months (first cohort) and two and six months (second cohort). A telephone reminder was necessary in some cases and the questionnaires were returned by internal post.

At hospital A, the opinions of 14 consultant physicians and 30 nursing staff who had direct experience of the new working practices were sought by means of a semistructured questionnaire. One hundred and thirty final year medical students were given a questionnaire at a careers fair which asked them for views on the new work rotas.

Analysis

At hospital A, scores for house officers towards the end of their on-call period were compared with scores for those same individuals towards the end of their period of partial shifts (first six-month cohort) or full shifts (second six-month cohort) using Wilcoxon's matched

Fig 1. Working patterns at hospital A: first and second cohorts

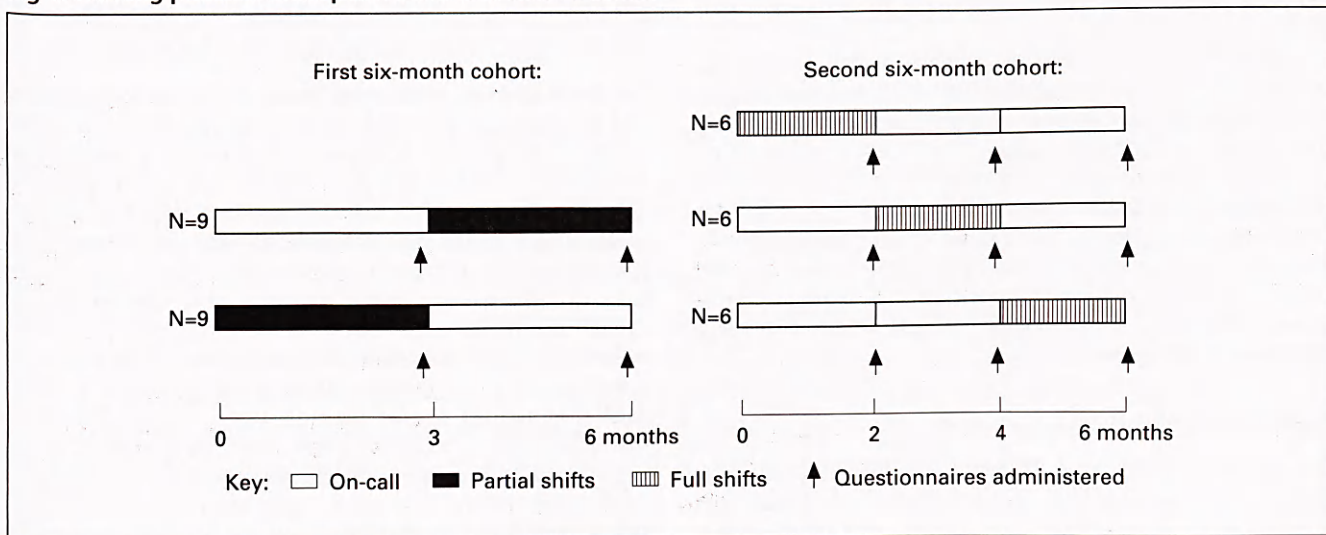


Table 1. Correlation matrix listing Kendall's (tau) correlation coefficient for related variables

		EJS	IJS	JC	WP	RCON	RSAT	GHQ
Extrinsic job satisfaction	EJS	●						
Intrinsic job satisfaction	IJS	0.41*	●					
Job choice and autonomy	JC	0.34*	0.36*	●				
Work pressure	WP	0.26*	0.2*	0.24*	●			
Relationship with consultant	RCON	0.23*	0.31*	0.09	0.11	●		
Rota satisfaction	RSAT	0.36*	0.24*	0.24*	0.31*	0.28*	●	
General Health Questionnaire score	GHQ	-0.29*	-0.28*	-0.35*	-0.40*	-0.17	-0.28*	●

* $p < 0.01$.

pairs test. Comparisons between hospitals (both at two or three months – 'early scores' – and at six months – 'late scores') and between partial shifts and full shifts were made using the Mann-Whitney U test. Kendall's (tau) correlation coefficient was calculated for the General Health Questionnaire score and other variables.

Results

For the 36 house officers approached at hospital A, 18 complete responses were obtained in the first six months of the study and 17 complete responses in the second six months. (One house officer in the second cohort resigned before completing her house job.) At hospital B all 24 house officers completed responses. Thirty-eight house officers were male and 22 were female. The mean age was 25.6 (standard deviation (SD) 3.4, range 22–40).

The house officers' estimates of the hours they worked during an average week varied between hospitals and different rota systems (mean (SD): hospital A on-call 72.7 (6.7); hospital A partial shift 65.0 (5.7); hospital A full shift 59.8 (6.0); hospital B on-call 63.8 (6.9)).

Two or three months into their house job approximately half the house officers (29/60) endorsed sufficient items on the General Health Questionnaire to be identified as probable cases of psychiatric disorder (scoring > 4). A quarter of house officers (15/59) were identified as probable cases at six months.

All aspects of job and rota satisfaction were positively correlated with one another (Table 1). Scores on the General Health Questionnaire were negatively correlated with other variables – that is the more job satisfaction, the less distress.

Effect of working pattern at hospital A

As shown in Table 2, full shifts were associated with significantly lower extrinsic job satisfaction, rota satisfaction, and sense of job choice and autonomy when

compared with on-call. Subjects also had higher General Health Questionnaire scores and rated their relationship with their consultant as worse when working full shifts. Partial shifts were associated with significantly reduced rota satisfaction scores but not with any of the other variables. Some indication of the degree of distress underlying these results is shown by the comments added to the forms by the house officers at hospital A; 27/36 house officers commented specifically on the shift systems (Box 1). Only one house officer had anything positive to say about the new rotas and even he expressed some reservations.

When partial shifts were compared to full shifts, no significant differences were detected.

Effect of hospital

Two or three months into their house job the house officers at hospital A scored significantly higher on the General Health Questionnaire and significantly lower on the other measures than did their counterparts at hospital B. Most of these differences were still apparent at six months (Table 3).

Views of consultants, nursing staff and medical students

Twelve out of the 14 consultant physicians responded at hospital A. Most (10/12) considered all forms of shift working had detrimental effects on quality of training, team working, continuity and quality of patient care. One consultant felt that shifts 'dehumanised medicine'. Responses were received from 25 nurses, 19 of whom felt the new rotas had detrimental effects on patient care and the working environment.

Seventy-two questionnaires were returned by the medical students (approximately half the year); 50% said they would prefer on-call systems and 12% shift systems. Type of work rota was rated as the third most important of ten factors influencing house job choice (only amount of practical experience and quality of teaching being rated higher).

Table 2. The effect of working pattern on job satisfaction, elements of job perception and general health questionnaire (GHQ) scores at hospital A. Within-subject comparison of on-call and partial shifts and on-call and full shifts using Wilcoxon's matched pairs test. Mean (standard deviation) and median (range) scores are given for each of the measures. The potential range of scores for each of the measures is also shown. In all cases higher scores indicate a more favourable outcome with the exception of GHQ scores where higher scores indicate greater psychological morbidity

Measure (potential range)	First six months of study			Second six months of study		
	Partial shifts (n = 18)	On-call (n = 18)	p value for difference	Full shifts (n = 17)	On-call (n = 17)	p value for difference
Total job satisfaction (15-105)						
Mean (SD)	57.2 (11)	58 (9.9)		60.2 (13.8)	64.7 (11.1)	
Median (range)	59.5 (41-81)	56.5 (42-74)	0.67	59 (36-83)	64 (43-79)	0.23
Intrinsic job satisfaction (7-49)						
Mean (SD)	26.7 (5.7)	27.4 (6.3)		29 (7.9)	31 (5.6)	
Median (range)	27 (23-41)	28 (17-41)	0.57	31 (14-43)	31 (21-42)	0.25
Extrinsic job satisfaction (8-56)						
Mean (SD)	30.2 (6.2)	30.7 (5.9)		31.1 (7.4)	35 (6.1)	
Median (range)	31 (21-40)	30.5 (23-41)	0.46	32 (21-45)	33 (21-45)	< 0.05
Job choice and autonomy (6-30)						
Mean (SD)	15.9 (3.6)	18.1 (4.7)		16.8 (4.3)	19.1 (3.8)	
Median (range)	16.5 (9-21)	17.5 (10-25)	0.09	16 (8-26)	19 (12-27)	< 0.05
Work pressure (6-30)						
Mean (SD)	17.2 (4.8)	17.9 (6.1)		17.2 (4.2)	18.7 (3.8)	
Median (range)	17.5 (9-26)	17 (9-27)	0.65	16 (11-25)	19 (11-25)	0.16
Relationship with consultant (6-30)						
Mean (SD)	14.1 (5.6)	14.9 (5.8)		15.9 (3)	18.9 (5.8)	
Median (range)	14.5 (6-22)	14(8-28)	0.53	17 (8-19)	21 (6-27)	< 0.05
Rota satisfaction (3-15)						
Mean (SD)	6.1 (2.3)	8.9 (2.6)		5.4 (2.1)	11.6 (2.1)	
Median (range)	6.5 (3-11)	9 (4-13)	< 0.05	4 (3-10)	12 (6-15)	< 0.005
GHQ score (0-30)						
Mean (SD)	5.1 (4.9)	7.4 (7.8)		6.2 (5.9)	3.8 (5.2)	
Median (range)	3.5 (0-17)	5.5 (0-24)	0.32	4 (0-20)	1(0-18)	< 0.01

Too much clerking . . . Partial shifts – poor continuity and follow-up. No experience . . . Crap training – all the ill patients are sorted out . . . Personnel are useless with cover shifts when someone's off sick . . . A thankless task . . . I hate the partial shift system – only the Trust benefits . . . I'm not part of the team . . . Partial shift rotas have a mind of their own. You can't change them . . . The job is shit, I don't learn anything, I hate the nurses, I get zero gratitude The job is just about survivable but the partial shift is bloody awful . . . I'm a nobody that does six wards rounds a day Compulsory annual leave on shifts . . . I feel like a very small fish, I feel very low . . . No continuity of care . . . Full shifts are okay sometimes but weekends are loony! . . . Full shifts – no continuity, no feedback, no follow-up, antisocial . . . Very disturbing for me and my family . . . I've worked thirteen days without a break . . . Appalling continuity of care and I'm a clerking machine . . . Extremely disheartening, very little social life, I never see my family . . . Continuity is a big problem – with patients and with social life. How about more doctors? . . . Shifts have not prepared me for my senior house officer job . . . I'm really unhappy and never get any teaching . . . Full shift is a nightmare. It's demanding and I can't take annual leave . . . It's appalling . . . I prefer partial shifts but there is poor continuity of care and lots of potential for buck passing

Box 1. House officers' comments on shift systems at hospital A.

Table 3. Mean and median scores for both hospitals at two or three months (early scores) and at six months (late scores). Mann-Whitney U test used to analyse differences. Mean (standard deviation) and median (range) scores are given for each of the measures. The potential range of scores for each of the measures is also shown. In all cases higher scores indicate a more favourable outcome with the exception of GHQ scores where higher scores indicate greater psychological morbidity

Measure (potential range)	Early scores			Late scores		
	Hospital A (n = 36)	Hospital B (n = 24)	p value for difference	Hospital A (n = 35)	Hospital B (n = 24)	p value for difference
Total job satisfaction (15-105)						
Mean (SD)	58.9 (14.3)	69.5 (10.9)		63.3 (9.3)	70 (9.8)	
Median (range)	60.5 (17-88)	72.5 (48-91)	< 0.05	63 (43-81)	72 (55-87)	< 0.05
Job choice and autonomy (6-30)						
Mean (SD)	16.4 (4.6)	18.8 (3.7)		18.8 (3.6)	19.5 (3.5)	
Median (range)	16 (8-26)	19 (10-28)	< 0.01	19 (12-25)	19 (13-27)	< 0.05
Work pressure (6-30)						
Mean (SD)	16.7 (4.3)	22.1 (4.9)		19.2 (4.7)	22.7 (4.1)	
Median (range)	17 (9-26)	23 (11-29)	< 0.005	19 (11-27)	23 (15-26)	< 0.01
Relationship with consultant (6-30)						
Mean (SD)	15.8 (6.5)	19.9 (4.5)		16.8 (4.8)	21.2 (4.9)	
Median (range)	17 (6-30)	20.5 (11-30)	< 0.01	17 (7-27)	22 (8-28)	< 0.05
Rota satisfaction (3-15)						
Mean (SD)	7.6 (2.9)	11.9 (1.5)		9.4 (3.2)	12.1 (1.9)	
Median (range)	7 (3-13)	12 (9-15)	< 0.001	10 (3-14)	12.5 (7-15)	< 0.001
GHQ score (0-30)						
Mean (SD)	7.8 (6.5)	3.9 (5)		3.5 (4.9)	2.4 (5)	
Median (range)	6 (0-24)	3 (0-19)	< 0.005	1 (0-18)	0 (0-15)	0.09

Discussion

Levels of psychological morbidity in this study are similar to those reported 10 years ago² with 50% of our sample being identified as probable cases of psychiatric disorder on the General Health Questionnaire early in their house job.

It was hoped that the 'new deal' would reduce such stress in junior doctors by reducing working hours. One of the methods chosen to achieve this was to introduce shift working. In fact, full shifts appear from our study to have a detrimental effect on psychological health and extrinsic job satisfaction, despite a 12-hour reduction in the working week. The effects of partial shifts are less marked but they are still unpopular among house officers. Consultants, nurses and medical students also seem to regard shift working for house officers as an unwelcome development. Perhaps these results are hardly surprising since we know from studies in non-medical settings that shift work imposes its own stresses²⁵⁻²⁷.

It may be that the observed associations are not due to shift working alone but are accounted for by the presence of confounding factors. For example, the differences between hospitals cannot be explained

solely in terms of different working patterns. The hospitals also differed in that hospital B had a system of 'support workers' to help house officers with routine ward-based tasks. Juniors were more involved in the design of the rotas at hospital B. This helps to illustrate an important point: whether doctors work on-call or shifts is only one variable; the junior's contribution to the process of flexible rota design and implementation is also likely to be significant, as is support in the job. Nonetheless shift systems do have an influence, as indicated by the study at hospital A where there were few differences within individuals' job experience other than the duty system being worked, and yet shift systems were rated as more unpopular and associated with more distress. The consistency with which the house officers focused specifically on the new rotas, both when we talked to them and in their written comments, seems to confirm the findings from the questionnaire study: some 'new deal' shifts can be bad for your health. 'New deal' house officers work for up to 10 consultants and provide little continuity of care. Their hours of work are shorter but they have lost their special place in the clinical team. They have gone from being the long-suffering but appreciated 'ward dogbody' to the undervalued 'ward nobody'.

The widespread disgruntlement with the work rotas at hospital A did not go unheeded. Working patterns were changed once again in the six months following this study but shift systems were retained. The house officers worked full shifts on a short-stay medical assessment unit for two months and an on-call rota on general medical wards for four months. Hospital B continued with the modified on-call rota. We are not aware of plans for formal monitoring of the effect of the new rota system at hospital A.

Our results should be interpreted cautiously since they may not be generalisable across specialties and grades; one study suggested partial shifts might be better received by senior house officers¹³. Like any intervention in the health service, new rota systems need more careful evaluation before they are accepted for wide-scale introduction.

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Copies of the questionnaire are available from the authors.

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Appendix: Components of intrinsic and extrinsic job satisfaction subscores as identified by the job satisfaction scale 18

Intrinsic job satisfaction:

- Freedom to choose working method
- Recognition received for good work
- Amount of responsibility
- Opportunity to use one's abilities
- Chances of promotion
- Attention paid to suggestions one makes
- Amount of variety

Extrinsic job satisfaction:

- Physical working conditions
- Fellow workers
- Immediate superior
- Rate of pay
- Relationship between the trust and its workers
- The way the ward is managed
- Hours of work
- Job security

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