

BMJ Open UK doctors' views on the implementation of the European Working Time Directive as applied to medical practice: a quantitative analysis

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ABSTRACT

Objectives: To report on doctors' views, from all specialty backgrounds, about the European Working Time Directive (EWTD) and its impact on the National Health Service (NHS), senior doctors and junior doctors.

Design: All medical school graduates from 1999 to 2000 were surveyed by post and email in 2012.

Setting: The UK.

Methods: Among other questions, in a multipurpose survey on medical careers and career intentions, doctors were asked to respond to three statements about the EWTD on a five-point scale (from strongly agree to strongly disagree): 'The implementation of the EWTD has benefited the NHS', 'The implementation of the EWTD has benefited senior doctors' and 'The implementation of the EWTD has benefited junior doctors'.

Results: The response rate was 54.4% overall (4486/8252), 55.8% (2256/4042) of the 1999 cohort and 53% (2230/4210) of the 2000 cohort. 54.1% (2427) of all respondents were women. Only 12% (498/4136 doctors) agreed that the EWTD has benefited the NHS, 9% (377) that it has benefited senior doctors and 31% (1289) that it has benefited junior doctors. Doctors' views on EWTD differed significantly by specialty groups: 'craft' specialties such as surgery, requiring extensive experience in performing operations, were particularly critical.

Conclusions: These cohorts have experience of working in the NHS before and after the implementation of EWTD. Their lack of support for the EWTD 4 years after its implementation should be a concern. However, it is unclear whether problems rest with the current ceiling on hours worked or with the ways in which EWTD has been implemented.

INTRODUCTION

The European Working Time Directive (EWTD) mandated the reduction of working hours for doctors in the UK to a maximum of 48 h/week (averaged over a 6-month period). Its implementation in the National Health

Strengths and limitations of this study

- This study is a systematic survey of all UK medical graduates from 1999 and 2000 willing to reply. These cohorts have extensive experience of work before and after the full implementation of the European Working Time Directive (EWTD) in medical practice.
- As with all surveys, non-responder bias is possible. The study represents the subjective views of doctors and does not include any objective impact of the EWTD on the National Health Service (NHS), senior or junior doctors.
- Respondents may have had difficulty in separating the effects of EWTD itself, and the way it has been implemented, from those of other reforms to the NHS and medical training.
- We have no information on various factors, such as hospital size or the nature of rotas and the organisation of shift work, that may have influenced doctors' views.

Service (NHS) was phased in over time with partial implementation in 2004 (56 h) and full implementation in 2009. In addition to limits on working hours, the EWTD sets out rest periods to limit continuous periods of work. The goal in reducing working hours is to promote doctors' health and safety by decreasing fatigue among doctors, and thereby to improve patient safety. The EWTD has been enshrined in law as the European Working Time Regulations (EWTR) but, for simplicity and using the commoner phrase, we use the term EWTD throughout.

Considerable controversy has surrounded the EWTD in the NHS. Concerns have been raised by bodies such as NHS Employers.¹ The Royal College of Physicians has expressed concerns that it may have adverse effects on the quality of medical training.² The Royal College of Surgeons has commented on reduced time for training and possible patient safety issues.³ An independent review

was commissioned by Medical Education England (MEE) in 2010 to examine the impact of EWTD on the training of healthcare professionals.⁴ Among other recommendations, the review proposed the implementation of a consultant delivered health service to be 'directly responsible for the delivery of 24/7 care' and to 'work more flexibly to deliver high-quality training and service'.

As part of a multipurpose series of surveys of doctors, mainly aimed at obtaining information about their career intentions, we were struck by the number of spontaneous comments doctors made about EWTD.⁵ In an accompanying paper we reported results of a qualitative analysis of the comments made in 2010 by doctors who qualified in the cohorts of 1993, 2005 and 2010.⁵ The doctors who commented were largely negative about the EWTD. We had not raised EWTD at all in our questionnaires; the doctors wanted to raise it with us. In order to judge whether these were representative views, in our next scheduled surveys in our programme, surveys of the qualifiers of 1999 and 2000, we added a brief section on the EWTD inviting all doctors to express a view. The aim was to get views from all respondents and not just those who self-selected to volunteer their views. The doctors we surveyed had worked for over a decade after qualification, and had experience of working before and after the implementation of the EWTD in the NHS. Our objective in this paper was to report on the views of doctors about whether the implementation of the EWTD had benefited the NHS, senior doctors and junior doctors. We also investigated whether there were differences in views between different specialties and between men and women.

METHODS

All graduates from all medical schools in the UK in 1999 and 2000 were identified from General Medical Council registrations. We have previously surveyed these doctors 1, 3, 5 and 7 years after graduation.^{6, 7} In 2012, our fifth survey, over a decade after the doctors' graduation, we included questions about the EWTD.

The questionnaire contained the following three statements: 'The implementation of the EWTD has benefited the NHS', 'The implementation of the EWTD has benefited senior doctors' and 'The implementation of the EWTD has benefited junior doctors'. Doctors were asked to respond to each statement using a five-point scale from 'strongly agree' to 'strongly disagree'. Doctors were also asked a range of questions about their current and previous posts and about their future career intentions. Doctors were sent the questionnaire by post and by email. Several reminders were sent to non-responders. Further details of our methodology are available elsewhere.^{8, 9}

We analysed doctors' responses to the questions overall, by specialty group and gender. Specialties were grouped by us as adult hospital medical specialties, paediatrics, emergency medicine, surgery, obstetrics and

gynaecology, anaesthetics, radiology, clinical oncology, pathology, psychiatry, general practice and 'other medical specialties' comprising those in public health and community health. Those unemployed, not working in medicine or with an unknown specialty were not included in the analysis by specialty. We used χ^2 tests and adjusted residuals to compare responses by specialty subgroup. Adjusted residuals provide a simple means of identifying specialties in which doctors showed a particularly high or low level of percentage agreement or disagreement with the statements above (also see footnotes to table 1).

RESULTS

The cohorts of 1999 and 2000 comprised 8652 medical graduates (4219 and 4433, respectively). We excluded from the overall total 279 who were not contactable, 12 deceased and 109 who told us that they did not wish to participate. The response rate was 54.4% overall (4486/8252), 55.8% (2256/4042) of the 1999 cohort and 53% (2230/4210) of the 2000 cohort. In total, 54.1% (2427) of all respondents were women. Of the 4486 replies 290 doctors did not respond to the specific questions concerning the effect of EWTD on senior doctors (154 from 1999 and 136 from 2000) and the NHS (152 from 1999 and 138 from 2000). Two hundred and eighty-one did not respond to the question about junior doctors (152 from 1999 and 129 from 2000). Sixty respondents to the three statements had an unknown specialty, were not working in medicine, or were unemployed.

The implementation of the EWTD has benefited the NHS

Overall, 12.0% (498/4136) agreed that the EWTD had benefited the NHS, 58.9% of doctors (2436/4136) disagreed and 29.1% (1202/4136) were neutral. The majority of surgeons (75.9%) and of physicians in adult hospital medical specialists (64.7%) disagreed, as did 76.5% of specialists in clinical oncology and 64.6% of anaesthetists (all four groups had significantly higher levels of disagreement than the all-specialty average, table 1). Psychiatrists (46.6% disagreement) and general practitioners (GPs; 49.2%) were significantly less likely to disagree than the all-specialty average (table 1).

The implementation of the EWTD has benefited senior doctors

Only 9.1% (377/4136) agreed that the EWTD had benefited senior doctors. The majority disagreed (63.6%, 2632/4136) and 27.2% (1127/4136) were neutral. Specialists in clinical oncology (80.0%), surgery (79.3%) and the adult medical specialties (69.2%) had significantly high levels of disagreement, while anaesthetics (68.7%) and radiology (68.2%) also showed high levels of disagreement which did not attain statistical significance (perhaps as a result of smaller numbers). Very few surgeons (5.7%, 34/593) agreed with the statement. GPs showed a high

Table 1 Doctors' views, by specialty, on whether the implementation of the European Working Time Directive has benefited the NHS

Specialty group	Strongly agree or agree		Neither agree nor disagree		Strongly disagree or disagree		Total n (100%)
	n	Per cent	n	Per cent	n	Per cent	
Adult medical specialties	73	9.9*	188	25.4*	479	64.7**	740
Paediatrics	36	17.8**	57	28.2	109	54.0	202
Emergency medicine	22	15.1	41	28.1	83	56.8	146
Surgery	47	7.9**	96	16.2**	451	75.9**	594
Obstetrics and gynaecology	5	8.9	12	21.4	39	69.6	56
Anaesthetics	50	14.5	72	20.9**	223	64.6*	345
Radiology	19	12.6	42	27.8	90	59.6	151
Clinical oncology	3	3.7*	16	19.8	62	76.5**	81
Pathology	13	10.3	38	30.2	75	59.5	126
Psychiatry	46	19.7**	79	33.8	109	46.6**	234
General practice	176	12.5	541	38.3**	695	49.2**	1412
Other medical	8	16.3	20	40.8	21	42.9	49
χ^2_{11} , p value	42.6	<0.001	133.7	<0.001	176.1	<0.001	
Total	498	12.0	1202	29.1	2436	58.9	4136

The row of χ^2_{11} values and corresponding p values indicates whether the variation in percentages, comparing specialties in each column, can be regarded as random. $p < 0.001$ indicates a probability of less than 1 in 1000 that the variation is due to chance.

Asterisks alongside percentages indicate specialties in which doctors take a significantly different view than doctors overall; * denotes $p < 0.05$ and ** $p < 0.01$, representing respectively a 5% and a 1% chance that the specialty variation from the overall average is due to chance.

Sixty respondents whose specialty was unknown, who were unemployed or who did not work in medicine were excluded.
NHS, National Health Service.

level of neutrality, with 36.9% (520/1410) neither agreeing nor disagreeing with the statement (table 2).

The implementation of the EWTD has benefited junior doctors

Respondents were more inclined to agree that EWTD had benefited junior doctors in contrast to how they viewed its impact on seniors and on the wider NHS. A total of 31.1% (1289/4145) agreed with the statement, 21.9% (912/4145) were neutral and 46.9% (1944/4145)

disagreed. Surgeons (69.9%), clinical oncologists (63.0%) and anaesthetists (54.8%) showed higher levels of disagreement than average, while GPs (38.0%), psychiatrists (29.8%) and specialists in emergency medicine (37.7%) had lower than average levels of disagreement (table 3).

Men compared to women

Women were more inclined than men to express the view that the EWTD had benefited junior doctors (table 4).

Table 2 Doctors' views, by specialty, on whether the implementation of the European Working Time Directive has benefited senior doctors

Specialty group	Strongly agree or agree		Neither agree nor disagree		Strongly disagree or disagree		Total n (100%)
	n	Per cent	n	Per cent	n	Per cent	
Adult medical specialties	52	7.0	177	23.8*	514	69.2**	743
Paediatrics	23	11.4*	47	23.3	132	65.3	202
Emergency medicine	22	15.0*	35	23.8	90	61.2	147
Surgery	34	5.7**	89	15.0**	470	79.3**	593
Obstetrics and gynaecology	5	8.9	9	16.1	42	75.0	56
Anaesthetics	34	9.9	74	21.4*	237	68.7*	345
Radiology	14	9.3	34	22.5	103	68.2	151
Clinical oncology	3	3.8	13	16.3*	64	80.0**	80
Pathology	5	4.0*	38	30.2	83	65.9	126
Psychiatry	37	15.8**	72	30.8	125	53.4**	234
General practice	142	10.1	520	36.9**	748	53.0**	1410
Other medical	6	12.2	19	38.8	24*	49.0	49
χ^2_{11} , p value	41.4	<0.001	138.9	<0.001	174.3	<0.001	
Total	377	9.1	1127	27.2	2632	63.6	4136

See notes to table 1 for explanation of statistical terminology (χ^2_{11} , p values and asterisks).

Sixty respondents whose specialty was unknown, who were unemployed or who did not work in medicine were excluded.

Table 3 Doctors' views, by specialty, on whether the implementation of the European Working Time Directive has benefited junior doctors

Specialty group	Strongly agree or agree		Neither agree nor disagree		Strongly disagree or disagree		Total n (100%)
	n	Per cent	n	Per cent	n	Per cent	
Adult medical specialties	219	29.4	178	23.9	347	46.6	744
Paediatrics	74	36.6	43	21.3	85	42.1	202
Emergency medicine	62	42.5**	29	19.9*	55	37.7*	146
Surgery	109	18.4**	70	11.8**	415	69.9**	594
Obstetrics and gynaecology	18	32.1	8	14.3	30	53.6	56
Anaesthetics	101	29.3	55	15.9**	189	54.8**	345
Radiology	47	30.9	26	17.1	79	52.0	152
Clinical oncology	15	18.5*	15	18.5	51	63.0**	81
Pathology	37	29.4	21	16.7	68	54.0	126
Psychiatry	110	46.8**	55	23.4	70	29.8**	235
General practice	480	33.9**	397	28.1**	537	38.0**	1414
Other medical	17	34.0	15	30.0	18	36.0	50
χ^2_{11} , p value	97.0	<0.001	84.8	<0.001	230.0	<0.001	
Total	1289	31.1	912	22.0	1944	46.9	4145

See notes to table 1 for explanation of statistical terminology (χ^2_{11} , p values and asterisks).

Sixty respondents whose specialty was unknown, who were unemployed or who did not work in medicine were excluded.

Men were more inclined than women to disagree that the implementation of EWTD had benefited the NHS and a higher percentage of women than men held neutral views. Views of men and women about the effect of the EWTD on senior doctors did not differ appreciably.

DISCUSSION

Main findings

The great majority of doctors did not agree that the EWTD had benefited the NHS or senior doctors.

Doctors were more positive about its benefits for junior doctors but, even so, fewer than a third felt that the EWTD had benefited junior doctors. The negative views of the EWTD 4 years after its implementation indicate that it is a continuing concern for doctors. There were significant differences between respondents in different specialties. Doctors in the surgical specialties, the hospital physician specialties, anaesthetics and clinical oncology were significantly more negative about the implementation of EWTD than the all-specialty average; doctors in psychiatry and general practice were less

Table 4 Doctors' views about the implementation of the European Working Time Directive, comparing the views of men and women

The implementation of the EWTD	Men		Women		Total	
	n	Per cent	n	Per cent	n	Per cent
Has benefited the NHS*						
Strongly agree/agree	242	12.3	263	11.8	505	12.0
Neither agree nor disagree	491	25.0	728	32.6	1219	29.1
Strongly disagree/disagree	1228	62.6	1244	55.7	2472	58.9
Total	1961	100	2235	100	4196	100
Has benefited senior doctors†						
Strongly agree/agree	192	9.8	190	8.5	382	9.1
Neither agree nor disagree	515	26.2	632	28.3	1147	27.3
Strongly disagree/disagree	1255	64.0	1412	63.2	2667	63.6
Total	1962	100	2234	100	4196	100
Has benefited junior doctors‡						
Strongly agree/agree	543	27.6	768	34.3	1311	31.2
Neutral	399	20.3	522	23.3	921	21.9
Strongly disagree/disagree	1024	52.1	949	42.4	1973	46.9
Total	1966	100	2239	100	4205	100

Results of χ^2_2 test for trend across the three categories of response, comparing men's and women's responses.

* $\chi^2_2=29.3$, $p<0.001$.

† $\chi^2_2=3.5$, $p=0.17$.

‡ $\chi^2_2=40.3$, $p<0.001$.

Results include 60 doctors with an unknown specialty, were unemployed or not working in medicine.

NHS, National Health Service.

negative. Gender differences in views were modest. Men were, however, rather more negative about the effects of implementing EWTD in respect of the NHS overall and of the effects on junior doctors, than were women, though the views of the effects on senior doctors were equally negative for both genders.

The impact of the EWTD on junior doctors

The impact of working limits has been studied throughout the 'roll out' of the EWTD. Some studies examined the effect of a 56 h limit and others of 48 h. The literature concerning perceptions and attitudes towards working time restrictions varies in its quality and generalisability.¹⁰ Studies of the surgical specialties typically report surgeons to have a negative view of the EWTD.^{11–15} Our findings confirm this. Previous studies of the views of surgical trainees have found concerns about reduced contact time with trainers,¹⁴ reduced clinical exposure and operative experience^{12 16} and adverse impact on patient care.^{11 12} Our findings indicate that few surgeons believe junior doctors benefit from the EWTD. The surgical specialties, often regarded as craft specialties, require development of proficient manual dexterity and expertise alongside the development of medical and surgical knowledge. Restricting working hours has been argued to lengthen the amount of time it takes to develop this expertise.¹⁷ Another issue has been a potential conflict between junior doctors' ability to balance training opportunities with service provision within reduced working hours.¹⁸ In 2010 the GMC surveyed trainees and asked if they found it was taking longer to achieve educational competencies as a result of 48 h restrictions from EWTD (with responses invited as yes, unsure and no). They found 51.4% of surgical trainees, 49.3% of trainees in obstetrics and gynaecology, and 47.6% of trainees in anaesthetics believed that it took longer to achieve the required educational competencies.¹⁸ In contrast, 72.5% of trainee GPs, 66.3% in psychiatry, 58.1% in pathology and 52.7% in emergency medicine believed that EWTD did not limit the achievement of their educational competencies.¹⁸

In the context of the EWTD in 2014, it is worth considering the comments we received from doctors whom we studied in similar ways 20 years ago when junior doctors worked very long hours. For example, we studied the qualifiers of 1993 at the end of their pre-registration year in 1994. We reported our concerns about the fact that many trainees wrote telling us of the adverse impact on them of working very long and intensive hours.¹⁹ As we reported then,¹⁹ 'some doctors clearly suffered in the pre-registration year'. Some made vivid comments about fatigue-related stress. We quoted a doctor who wrote "I have been nearly suicidal throughout some of last year," as a result of exhaustion; and another who wrote "The fact that I haven't killed anyone through exhaustion leading to medical error is a miracle". We reported that a formal keyword search on such terms as 'exhaustion' and 'fatigue' showed that 10% of all who replied to our

questionnaire (259/2621 doctors) in 1994 spontaneously made working-hours-related comments that we considered worrying. Nowadays we get fewer comments like these: in our recent study of the 2012 graduates in 2013, we found only 2 doctors of 2419 respondents mentioned work-related 'exhaustion' or 'fatigue' or 'tiredness', although 'stress' was mentioned by 43 and we get many comments about 'unfairness of unpaid overtime' and not being able to declare non-compliant hours.⁵ To illustrate diversity among doctors,¹⁹ we also quoted one who wrote in the very long working hours of 1994: "I am quite happy with my working hours. Further reductions could be detrimental to the level of experience gained from the job."

Recently, we have shown that doctors in their first year of work, graduating from selected cohorts from 1999 to 2009, have reported increasingly high levels of satisfaction in the recent cohorts, with time off work for leisure and with enjoyment of their work.²⁰

The impact of the EWTD on senior doctors

International research concerning the impact of working time restrictions on senior doctors is limited. Richter *et al*²¹ compared burnout among doctors prior to the implementation of EWTD and post implementation in Hamburg, Germany (n=328). While the authors found a decrease in working hours after the implementation of EWTD among junior doctors, a similar decline was not found among seniors. Rather, the results indicated greater strain and burnout among senior physicians with less time for rest.²¹ Hutter *et al*²² studied the working hour restriction in the USA to 80 h/week and found a reduction in burnout among junior but not senior doctors. These results are in line with our findings that the majority of our UK respondents did not believe EWTD benefits senior doctors.

Other research has focused on surveying senior doctors or 'trainers' about their views on how the EWTD has impacted on medical training. Tsouroufli and Payne²³ held qualitative interviews with 20 consultants, from surgical and medical specialties, who trained junior doctors across six trusts in Wales in 2005. These trainers considered that there was a disintegration of the apprenticeship style of learning in clinical training following the implementation of the EWTD and the increased use of shift work. Respondents commented on 'the reduced availability of trainees, reduced interaction between trainees and trainers, and reduced continuity' among effects of the implementation of the EWTD.²³ Doctors also commented on the new roles and increased workload of consultant trainers as a result of MMC.²³ A GMC survey of trainers (n=17 000) conducted between 2009 and 2010 found that 58% believed that the training needs of their trainees were being met within the 48 h work week. However, 74.3% of trainers from the surgical specialties did not believe their trainees' needs were being met.¹⁸ The GMC report in 2010 identified particular specialties as having consistent

concerns related to EWTD's effect on training opportunities, namely surgical specialties, obstetrics and gynaecology, emergency medicine, anaesthetics and paediatrics.¹⁸ The GMC survey found that 49% of trainers indicated that they have changed the way they teach trainees as a result of EWTD.¹⁸ Just as junior doctors must adapt their learning strategy within limited working hours, a culture shift from senior doctors might be necessary to meet the evolving demands of medical training.

A systematic review of the literature reported inconclusive findings on the effects of EWTD.²⁴ In fact, it is challenging to differentiate the changes resulting from EWTD in isolation from those that may have resulted from other changes, including Modernising Medical Careers, The New Deal or wider structural reforms to the NHS.²⁵ Importantly, it is difficult to differentiate between the effects of EWTD itself and the ways that Trusts and Deaneries have implemented it.⁴ For example, a GMC analysis of Annual Deanery Reports from 2009 found that a few deaneries reported gaps in rotas which they felt were due to EWTD. However, others reported compliance (though whether their juniors would invariably agree may be open to question) and successful implementation of EWTD.¹⁸

Strengths and limitations

This study is based on large numbers of respondents from across the UK. It covers doctors who graduated from all UK medical schools in 2 years, 1999 and 2000. It is a systematic survey of all who were willing to respond in cohorts that have extensive experience of work before and after the full implementation of the EWTD in medical practice. As with all surveys, non-responder bias is possible. We included the section about the EWTD in a multipurpose survey with several other sections. We did not deem it possible to delve in detail into the doctors' views about the EWTD: in our core work, we try to be thrifty with questions to encourage doctors to respond.

The study represents the subjective views of doctors in these cohorts and does not include any objective impact of the EWTD on the NHS, junior or senior doctors. Some caution is advised in interpreting the results as respondents may have had difficulty in separating the effects of EWTD itself, and the way it has been implemented, from those of other reforms to the NHS and medical training. In addition, we did not have information on various factors that may have influenced the findings, such as hospital size or the nature of rotations and the organisation of shift work. For example, it has been suggested that surgical trainees working in large hospitals, with larger volumes of operations, might be less dissatisfied with the EWTD since these trainees have not been so limited in their operating experience.²⁶ A further limitation is that our questioning, necessarily brief for practical reasons, aimed to seek views on benefit; for those who disagreed that the EWTD had shown benefit, particularly in respect of senior doctors,

we do not know whether they thought that the effect of EWTD had been damaging or simply neutral. It is striking, nonetheless, that only such a small proportion felt able to specify that the EWTD had positive benefit.

CONCLUSION

The majority of doctors graduating from medical school in 1999 and 2000 did not agree that the EWTD, as implemented in their experience, had benefited the NHS or senior doctors. They were less negative about the impact of EWTD on junior doctors. We do not recommend, and nor did our respondents advocate, a return to the very long working hours of earlier times. However, there is a need for organisational changes, including well-coordinated and planned rotas, with consideration of points made by doctors in the accompanying paper,⁵ to improve opportunities for training and clinical experience while maintaining the requirement and the benefit of EWTD-compliant hours.

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Data sharing statement The authors may be able to provide aggregated data on which the analysis is based, on request.

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