

BMJ Open Changes in weekly working hours, proportion of doctors with hours above the limitations of European Working Time Directive (EWTD) and time spent on direct patient care for doctors in Norway from 2016 to 2019: a study based on repeated surveys

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ABSTRACT

Objectives To compare the total weekly working hours, proportions with work hours above the limitations of European working time directive (EWTD) and time spent on direct patient care in 2016 and 2019 for doctors working in different job positions in Norway.

Design Repeated postal surveys in 2016 and 2019.

Setting Norway.

Participants Representative samples of doctors; the response rates were 73.1% (1604/2195) in 2016 and 72.5% (1511/2084) in 2019.

Main outcome measures Self-reported weekly working hours, proportions with hours above the limitations of EWTD defined as >48 hours/week and time spent on direct patient care.

Analyses Linear mixed models with estimated marginal means and proportions.

Results From 2016 to 2019, the weekly working hours increased significantly for male general practitioners (GPs) (48.7 hours to 50.9 hours) and male hospital doctors in leading positions (48.2 hours to 50.5 hours), and significantly decreased for female specialists in private practice (48.6 hours to 44.9 hours). The proportion of time spent on direct patient care was noted to be similar between genders and over time. In 2019, it was higher for specialists in private practice (66.4%) and GPs (65.5%) than for doctors in other positions, such as senior hospital consultants (43.5%), specialty registrars (39.8%) and hospital doctors in leading positions (34.3%). Working >48 hours/week increased significantly for both male and female GPs (m: 45.2% to 57.7%; f: 27.8% to 47.0%) and hospital doctors in leading positions (m: 34.4% to 57.1%; f: 17.4% to 46.4%), while it significantly decreased for female specialty registrars (13.2% to 6.9%).

Conclusions Working hours increased significantly for GPs and hospital doctors in leading positions from 2016 to 2019, resulting in increased proportions of doctors with work hours above the EWTD. As work hours above the EWTD can be harmful for health personnel and for safety at work, initiatives to reduce long working weeks are needed.

STRENGTHS AND LIMITATIONS OF THE STUDY

- ⇒ The representative cohort with high response rates provided a solid basis for the generalisation of the results to the practising doctors in Norway.
- ⇒ There were similarities in the survey methods and measurements at two points in time.
- ⇒ In terms of limitations, analyses were based on self-reported questionnaire data with the possibility of both overestimation and underestimation of working hours.

BACKGROUND

Doctors' work hours are vital for the medical profession itself and thereby also for both the quality and quantity of patient care. Both the number of total work hours and the balance between time spent on direct patient care versus administrative tasks are related to doctors' and patients' well-being and health, in primary care as well as hospital settings.^{1–7} Given this association, the European Union has introduced a working time directive (EWTD) limiting the overall average weekly working hours to 48 hours. This is a measure 'designed to protect the health and safety of workers and to improve health and safety at work'.^{8,9} For both treatment outcomes and for doctors' well-being, we, therefore, need longitudinal studies of total work hours and time spent on direct patient care.

Difficulties with recruitment and retention of general practitioners (GPs) have been reported in several European countries. Increases in workload and longer work hours are understood as reasons for this.^{10–12} In Norway, GPs have reported a growth in work

demands¹³ and long working weeks with a wide variety of tasks.¹⁴ Several GPs explained that high workload affects their own quality of life as well as the ability to ensure good quality of patient care.¹⁵ Moreover, hospital doctors confirmed an increasing workplace emphasis on production numbers and budget concerns and less emphasis on quality of care.¹⁶ In a panel study with data from 2010 to 2017, both GPs and hospital doctors reported a significant decrease in several aspects of job satisfaction like 'work hours', 'recognition for good work', 'rate of pay' and 'freedom to choose methods', suggesting changes in working conditions.¹⁷ Another panel study with data from 2010 to 2019 documented a significant increase in high levels of work stress for GPs and showed an increasing trend of stress for hospital doctors.¹⁸ An important aspect of this was constant time pressure due to a heavy workload.¹⁸

In Norway, the vast majority of doctors work full-time, but part-time work is possible as well. All full-time employed hospital doctors have a contracted basic working week of 35.5 (for doctors with on-call duty at the hospital) to 37.5 hours, usually with an additional 2.5 hours extension. Theoretically, doctors can choose to terminate this extension, but that is extremely rare in practice. Doctors can extend their weekly working hours up to 60 hours. The working pattern is usually day work with on-call duties.¹⁹ In contrast to hospital doctors, private practice specialists and the majority of GPs are self-employed and have more influence on their own work schedule.²⁰ However, the introduction of the list-patient system in 2001 entailed a considerable standardisation of the working conditions of the GPs in which the main variable is the number of patients on their lists. All inhabitants in Norway can voluntarily sign in to the list of a GP of their choice. The list-patient system aimed to enhance access to GPs and continuity in the patient–doctor relationship and also affirmed that GPs act as gatekeepers for other specialist care. GPs' responsibilities cover all GP tasks for the somatic and mental health of the inhabitants on the list.²¹

A good balance between professional and private life is of increasing importance in modern society,²² and this holds for doctors as well. Several studies,^{23–25} including those from Norway, have documented that working hours in relation to work–home balance is now one of the most important topics when medical students and young doctors choose future specialty.^{26,27} Among specialty registrars, a tendency is to think about their work as 'a job', compared with senior hospital consultants who tended to think about work as a 'lifestyle'. This implies that there is an ongoing change in the profession regarding expectations about responsibilities outside of work and having more predictable working hours.²⁸ Furthermore, also more senior doctors, for example, a group of surgeons in Norway, expressed concern about work–home balance.¹⁶

The balance between time spent on direct patient care and administrative tasks has been discussed in several studies. These showed that doctor satisfaction is largely associated with direct patient work and the delivery

of good quality patient care. Therefore, a satisfactory balance is important for the experience of meaning in work.^{16,29,30} From 1994 to 2014, the proportion of work hours doctors spent on direct patient care was reduced considerably for hospital doctors (62% vs 46%), whereas the drop was marginal among GPs (73% vs 69%).¹

Although previous studies with data from 1994 to 2016 have documented better work–home balance, well-being and a higher percentage of doctors working within EWTD (between 45 hours and 48 hours) for doctors in Norway than for their colleagues in several other European countries (between 50 hours and 90 hours),^{1,6,31} Norwegian studies show worrying signs of long work hours, less time for direct patient care and a demanding situation in terms of work–home balance.^{13,14,18,32}

Hence, the objectives of this study are to explore and discuss the possible changes in total weekly working hours, relate the number of work hours to the requirements in the EWTD and time spent on direct patient care for Norwegian doctors working in different job positions (hospital doctors in leading positions, senior hospital consultants, specialty registrars, GPs, private practice specialists, doctors in academia, community medical officers and doctors in administration) from 2016 to 2019.

MATERIAL AND METHODS

Design and participants

Since 1994, the Institute for Studies of the Medical Profession (LEFO) has, approximately every second year, surveyed a representative sample of actively working doctors in Norway with postal questionnaires about their health, quality of life and working conditions. One of the most central and repeated measures has been self-reported weekly working hours.

The original panel was based on an invitation to 2000 active Norwegian doctors, randomly selected in 1993 from the master file of the Norwegian Medical Association, which includes almost all doctors in Norway. The 1272 doctors who agreed to participate were representative of the total doctor workforce in terms of age, sex, specialty and job position. The sample represents an unbalanced cohort, as respondents who leave the panel due to retirement, death or voluntary withdrawal are replaced by randomly selected younger doctors, while the sample's representative nature is maintained at all times.^{1,31} This article is based on the data collected from the same sample in 2016 and 2019. Both samples were nearly identical with the exception of n=111 doctors in 2019 that left the panel due to retirement, death or voluntary withdrawal.

Measurements

Dependent variables

Weekly working hours and time spent on direct patient care

The items on working hours were the same in 2016 and 2019. The doctors were asked to specify the number of

total working hours per week. They were then asked to specify the number of hours spent on various activities in a working week. The questions were worded as follows:

In an average working week, including on-call and any part-time job(s), approximately how many hours do you work?

▶ Total number of hours per week.

How many hours of your total working time do you spend on

- ▶ Patient care (all direct contact with individual patients or their relatives, including phone calls, etc.).
- ▶ In meetings (interdisciplinary team meetings, patient case meetings, guidance meetings, etc.).
- ▶ Paper work/PC, phone calls, emailing, data-recording (patient records, certificates, discharge summaries, other documentation).
- ▶ Professional updating.
- ▶ Other—write.

Work hours above the limitations in the European work time directive (EWTD)

It is documented that workers with a work week >48 hours have increased health complaints and more suboptimal work–home balance than workers with fewer working hours.^{33 34} Therefore, the European Union issued this directive ‘designed to protect the health and safety of workers and to improve health and safety at work’.^{8 9} In this article, we examined the percentage of doctors working above 48 hours a week on a regular basis.

Independent variables

Main job positions were categorised into the following groups

- ▶ Hospital doctors in leading positions (medical superintendent, head of department, chief senior consultant, head of the unit, chief senior consultant, head of section).
- ▶ Senior hospital consultants.
- ▶ Specialty registrars.
- ▶ General Practitioners (GPs).
- ▶ Private practice specialists.
- ▶ Doctors in academia (professor, associate professor, research fellow, researcher).
- ▶ Doctors in administrative positions (county medical officer, medical adviser, chief medical officer).
- ▶ Community medical officers (district medical officer, senior district medical officer, nursing home medical officer, visiting medical officer, doctor at infant welfare clinic).
- ▶ Interns in general practice or in hospitals.
- ▶ Other job positions.

Other variables were gender and age.

Inclusion and exclusion criteria

Responses from doctors that provided data on gender, age (<70 years), job positions and all items of the weekly hours questionnaire were included in the study. Doctors ≥70 years were excluded to maintain the sample’s

representativity of practising doctors in Norway. The ‘Statistics on all Members of the Norwegian Medical Association’ include doctors under 70 years as it is assumed that the common retirement age is just under 70 years.³⁵

Analyses

The analyses were undertaken among doctors in the following job positions: hospital doctors in leading positions, senior hospital consultants, specialty registrars, GPs, specialists in private practice, doctors in academia, community medical officers and doctors in administration. First, changes in the distribution of doctors related to three categories of the total weekly working hours in 2016 and 2019 were described using Pearson’s χ^2 tests: <37 hours, 37–48 hours and >48 hours. Second, the changes in the total weekly working hours and time spent on direct patient care for doctors working full-time were described. Full-time work was defined as 37 working hours or more per week.³⁶ Multivariable linear mixed models with a subject-specific random intercept were used in the analyses. The estimates of the means and tests of comparisons are based on statistical models for repeated measurements. The total working hours was the dependent variable and the job position and age (<50 years of age and ≥50 years of age) were independent variables in the models. Women and men have primarily been analysed separately. Third, mixed models on the proportion of time spent on direct patient care (with fixed gender, age and job positions) for doctors in different job positions were described. Units with missing data were excluded. The data were analysed using IBM SPSS software, V.26.

Patient and public involvement

This study is important for patients because healthy doctors take better care of their patients. However, in this survey, there was no access to direct patient involvement. No patients were involved in setting the research question or the outcome measures, nor were they involved in the design and implementation of the study.

RESULTS

Respondents

Table 1 presents the sample, respondents, response rates and the range of job positions for doctors for which we obtained data on gender, age (<70 years) and working hours. The samples in 2016 and 2019 were nearly identical with the exception of n=111 doctors in 2019 that left the panel due to retirement, death or voluntary withdrawal. The response rates were 73.1% in 2016 and 72.5% in 2019. The number of responses with missing data was n=123 in 2016 and n=160 in 2019. The majority of doctors did fill in both questionnaires n=1189 of 1481 (80%) in 2016 and 1189 of 1351 (88%) in 2019. The distribution of the doctors and the proportion of women in different job positions were comparable over the study period. As the number of interns was very low in 2019, these data are not remarked on in the Results section.

Table 1 Sample, number of respondents, response rates and the makeup of job positions for which we have data on gender, working hours and age (<70 years) in 2016 and 2019

	2016	2019
Sample, n	2195	2084
Respondents, n	1604	1511
Response rate, %	73.1	72.5
Job positions, n (females %)		
All*	1481 (53.2)	1351 (53.5)
Hospital doctors in leading position	84 (27.4)	84 (33.3)
Senior hospital consultants	348 (48.0)	379 (50.9)
Specialty registrars	354 (70.6)	366 (71.9)
General practitioners	271 (42.2)	245 (46.9)
Specialists in private practice	58 (34.5)	56 (35.7)
Doctors in academia	61 (55.7)	68 (50.0)
Community medical officers	54 (55.6)	57 (57.9)
Doctors in administrative position	31 (29.0)	26 (30.8)
Interns in district or hospital†	167 (71.3)	18 (66.7)
Other job categories	52 (40.4)	52 (32.7)

*The number of respondents with no data on working time, or gender or age (or respondents ≥ 70 years) was 123 in 2016 and 160 in 2019.

†As the number of interns was very low in 2019, these data are not commented in the Results section.

In terms of age, gender and job positions, the distributions of our samples in 2016 and 2019 were comparable to the distributions found in the Statistics on all Members of the Norwegian Association, which includes 97% of all active doctors in Norway.¹⁷

Full-time, part-time and proportion with work hours above the limitation of EWTD

Full-time and part-time

Table 2 shows the distribution of total weekly working hours by doctors in 2016 and 2019: <37 hours (part-time), 37–48 hours and >48 hours (above the limit of EWTD).

The majority of doctors worked full-time (≥ 37 hours). A minority of female and male doctors worked part-time but with clear differences across job positions. For example, no female or male doctors in leading hospital positions worked part-time, whereas 30.3% of the female community medical officers did in 2019. There was a significant reduction in the proportion of part-time work for female senior hospital consultants from 13.2% in 2016 to 7.3% in 2019. Although not significant, the same tendency was found among both male hospital consultants and male and female specialty registrars.

Compared with males, female senior hospital consultants reported a significantly higher proportion of part-time in 2016 (6.6% vs 13.2%) and 2019 (1.1% vs 7.3%),

as did female community medical officers in 2019 (8.3% vs 30.3%).

Proportion with hours above the limitations of EWTD (>48 hours/week)

The proportion of doctors working >48 hours a week increased significantly for male (m) and female (f) GPs (m: 45.2% to 57.7%; f: 27.8% to 47.0%) and hospital doctors in leading positions (m: 34.4% to 57.1%; f: 17.4% to 46.4%) and working 37–48 hours decreased accordingly. On the other hand, female specialty registrars reported a significant decrease in working >48 hours (13.2% to 6.9%) and a resulting significant increase in working 37–48 hours (82.0% to 91.2%). No significant changes were found in other job positions.

Overall, the proportion of doctors working >48 hours/week was higher in male doctors than female, with significant differences among GPs in 2016 (m: 45.2%; f: 27.8%), senior hospital consultants in 2016 (m: 29.3%; f: 18.0%) and 2019 (m: 33.3%; f: 18.1%) and specialty registrars in 2019 (m: 19.4%; f: 6.9%).

In 2019, male and female GPs (m: 57.7%; f: 47.0%) and hospital doctors in leading positions (m: 57.1%; f: 46.4%) had the highest proportion of >48 hours/week, followed by doctors in academia (m: 38.3%; f: 44.3%), private practice specialists (m: 38.9%; f: 30.0%), doctors in an administrative position (m: 38.9%; f: 12.5%), senior hospital consultants (m: 33.3%; f: 18.1%), community medical officers (m: 33.4%; f: 12.1%) and specialty registrars (m: 19.4%; f: 6.9%).

Total weekly working hours in full-time

Table 3 shows the total weekly working hours and hours spent on direct patient care among doctors working full-time (≥ 37 hours). From 2016 to 2019, the total weekly working hours increased significantly for male GPs (48.7 hours to 50.9 hours) and hospital doctors in leading positions (48.2 hours to 50.5 hours), while it significantly decreased for female specialists in private practice (48.6 hours to 44.9 hours), and it remained significantly unchanged for doctors in other job positions.

There were a few significant gender differences. In 2019, male doctors as senior hospital consultants (m: 47.8 hours; f: 45.6 hours) and specialty registrars (m: 46.6 hours; f: 43.6 hours) reported higher weekly working hours compared with females.

Compared to male and female GPs both in 2016 and 2019, most doctors in other job positions reported significantly fewer total weekly working hours.

Total hours spent on direct patient care

There were no gender differences in the hours spent on direct patient care within job positions. Compared with male and female GPs, doctors in other job positions reported significantly fewer hours spent in direct patient care, except private practice specialists, both in 2016 and 2019 (table 3).

Table 2 Distribution of total weekly working hours by doctors working in different job positions in 2016 and 2019

	2016				2019			
	n	%			n	%		
		<37 hours	37–48 hours	>48 hours		<37 hours	37–48 hours	>48 hours
Hospital doctors in leading position								
Males	61	1.7	63.9	34.4	56	0.0	42.9‡	57.1§
Females	23	0.0	82.6	17.4	28	0.0	53.6‡	46.4§
Senior hospital consultants								
Males	181	6.6*	64.1	29.3*	186	1.1*†	65.6	33.3*
Females	167	13.2*	68.8	18.0*	193	7.3*	74.6	18.1*
Specialty registrars								
Males	104	5.7	76.0	18.3	103	1.0	79.6*	19.4*
Females	250	4.8	82.0	13.2	262	1.9	91.2*‡	6.9*§
General practitioners								
Males	157	6.4	48.4*	45.2*	130	6.2	36.1‡	57.7§
Females	115	10.4	61.8*	27.8*	115	11.3	41.7‡	47.0§
Specialists in private practice								
Males	38	7.9	57.9	34.2	36	5.6	55.5	38.9
Females	20	25.0	55.0	20.0	20	15.0	55.0	30.0
Doctors in academia								
Males	27	18.5	59.3	22.2	34	8.8	52.9	38.3
Females	34	8.8	64.7	26.5	34	2.9	52.8	44.3
Community medical officers								
Males	24	20.8	50.0	29.2	24	8.3*	58.3	33.4
Females	30	26.7	60.0	13.3	33	30.3*	57.6	12.1
Doctors in administrative position								
Males	22	31.8	45.5*	22.7	18	11.1	50.0	38.9
Females	9	0.0	88.9*	11.1	8	25.0	62.5	12.5

*Differences in proportions between male and female doctors significant at the <0.05 level using Pearson's χ^2 test.
 †Changes in proportion of working <37 hours from 2016 to 2019 are significant at the <0.05 level using Pearson's χ^2 test.
 ‡Changes in proportion of working 37–48 hours from 2016 to 2019 are significant at the <0.05 level Pearson's χ^2 test.
 §Changes in proportion of working >48 hours from 2016 to 2019 are significant at the <0.05 level Pearson's χ^2 test.

Proportion of time spent on direct patient care

Table 4 shows the changes in the proportion of time spent on direct patient care among doctors in different job positions working full-time from 2016 to 2019. The table includes both genders because there were no significant differences in time spent on direct patient care. There were no significant changes from 2016 to 2019. Both in 2016 and 2019, specialists in private practice and GPs had the highest proportion of time spent on direct patient care.

DISCUSSION

Main findings

From 2016 to 2019, the weekly working hours increased significantly for male GPs (48.7 hours to 50.9 hours) and male hospital doctors in leading positions (48.2 hours to 50.5 hours) and significantly decreased for female specialists in private practice (48.6 hours to 44.9 hours).

The proportion of time spent on direct patient care was similar between genders and did not change significantly. In 2019, it was higher for specialists in private practice (66.4%) and GPs (65.5%) than for doctors in other positions. The proportion of doctors working >48 hours/week increased significantly for both genders among GPs (m: 45.2% to 57.7%; f: 27.8% to 47.0%) and hospital doctors in leading positions (m: 34.4% to 57.1%; f: 17.4% to 46.4%), while it significantly decreased for female specialty registrars (13.2% to 6.9%). In all job positions, more male than female doctors reported working >48 hours/week.

Comparison with other studies

Weekly working hours

Whereas the present study found an increase in weekly work hours for male GPs and hospital doctors in leading positions and a decrease for female specialists in private practice, data from the same cohort for the period of 1994–2014 showed stable total weekly working hours for

Table 3 Linear mixed models with estimated marginal means of total weekly working hours and time spent on direct patient care in hours among doctors working full-time. Separate analyses for gender

	Males				Females			
	Total weekly working hours		Direct patient care		Total weekly working hours		Direct patient care	
	2016	2019	2016	2019	2016	2019	2016	2019
General practitioners	48.7	50.9†	32.8	33.1	48.3	49.3	33.1	32.0†
Hospital doctors in leading position	48.2	50.5†	16.3‡	16.6‡	45.8	47.3	13.0‡	18.3‡
Senior hospital consultants	46.5‡	47.8*‡	20.5‡	21.5‡	45.4‡	45.6*‡	18.6‡	18.9‡
Specialty registrars	44.9‡	46.6*‡	17.7‡	18.3‡	44.4‡	43.6*‡	17.3‡	16.6‡
Specialists in private practice	47.8	47.3	33.6	30.8	48.6	44.9 †‡	32.4	30.9
Doctors in academia	44.7‡	47.8‡	6.8‡	7.4‡	44.9‡	46.7‡	5.7‡	4.2‡
Community medical officers	46.5	50.0	19.3‡	19.9‡	42.7‡	44.5‡	16.9‡	17.9‡
Doctors in administrative position	46.1	47.8‡	3.6‡	2.6‡	42.7‡	43.3‡	5.4‡	3.6‡

*Differences in estimated marginal means between male and female doctors are significant at the <0.05 level.

†Changes in estimated marginal means from 2016 to 2019 are significant at the <0.05 level.

‡Differences in estimated marginal means across job positions with GP as reference are significant at the <0.05 level.

GP, general practitioner.

most doctors working full-time.^{1 31} Both female and male GPs were among those with highest total working hours.

Other studies also suggest an increase in working hours for GPs in Norway. The ‘Commonwealth Fund’ surveys of GPs in 10 countries in 2009³⁷ and in 11 countries in 2019³⁸ showed that GPs in Norway have the highest increase (40 hours to 49 hours), followed by GPs in the Netherlands (44 hours to 50 hours), Canada (42 hours to 49 hours), USA (47 hours to 51 hours), France (49 hours to 51 hours) and Germany (51 hours to 52 hours). The weekly working hours for GPs remained unchanged in Sweden (38 hours), while it decreased in Great Britain (41 hours to 40 hours), Australia (42 hours to 38 hours) and New Zealand (42 hours to 38 hours).³⁸ A cross-sectional survey among GPs in Norway in 2018 documented long working weeks (55.6 hours).¹⁴ In Germany in 2018, GPs reported longer working weeks than specialists in private practice (52.3 hours vs 50.1 hours).³⁹

In comparison with our data from 2016 and 2019, doctors in other countries seem to have longer weekly working hours. In the ‘Work-Life Profiles of Today’s Physician 2014’ by AMA Insurance in the USA, 5% of

doctors reported an average working week of >80 hours, while 18% of doctors worked 61–80 hours and 62% of doctors worked 40–60 hours.⁴⁰ A study among specialists and senior doctors in German urology in 2016 showed that approximately 80% of the doctors had average weekly work hours beyond 50 hours.⁴¹ Another study among hospital doctors in Germany in 2019 documented long working weeks: 22% of them worked 60–80 hours a week, 41% worked 49–59 hours and 36% worked less than 49 hours. An average working week for full-time hospital doctors amounted to 57 hours.⁴² A survey among hospital doctors in Austria from 2019 documented an average working week of 47 hours, while hospital doctors in leading positions had longer hours (51 hours) than doctors in postgraduate training (49 hours).⁴³

Proportion of doctors with work hours above the limitations of EWTD (>48 hours/week) and part-time work (<37 hours/week)

The proportion of doctors who reported working >48 hours/week (higher than the limitations in EWTD) was high among all job positions, with an increasing trend for GPs and hospital doctors in leading positions and a

Table 4 Mixed model on proportion of time spent on direct patient care (with fixed gender, age and job position) by doctors in different job positions

	2016 (%)	2019 (%)	Mean difference	P Value
Specialists in private practice	70.4	66.4	−4.0	0.176
General practitioners	68.5	65.5	−2.7	0.050
Senior hospital consultants	43.1	43.5	0.4	0.707
Community medical officers	40.1	38.1	−2.0	0.535
Specialty registrars	40.0	39.8	−0.2	0.909
Hospital doctors in leading position	32.2	34.3	2.1	0.363
Doctors in academia	13.8	11.7	−2.1	0.486
Doctors in administrative position	6.2	5.0	−1.2	0.787

decreasing trend for specialty registrars. This is clearly higher than in most other professional groups in Norway. For example, in a national survey in 2019, a total of 5% of all employees as a whole worked more than 48 hours per week,⁴⁴ whereas in our sample it varied between 6.9% for female specialty registrars and 57.7% for male GPs in 2019 (table 2). Compared with our data among hospital doctors in leading positions, senior hospital consultants and specialty registrars in 2019, the proportion of doctors with a working week above 48 hours was higher among German hospital doctors in leading positions (76%), senior hospital consultants (43%), specialty registrars (71%) in 2019⁴² and Hungarian hospital doctors (58%) in 2020.⁴⁵ A working week above 50 hours was reported by 48% of family doctors and 39% of specialists in private practice in Germany in 2018.³⁹

As in other countries, a minority of the Norwegian doctors work part-time. Contrary to our expectations, the present study documented a trend towards less part-time work in 2019. Especially among specialty registrars, who are most likely to have small children, this was surprising (table 2). This contradicts previous national studies in Norway based on data from the same unbalanced cohort of 1994–2014, which showed a trend towards more part-time work (<37 hours/week) for specialty registrars and senior hospital consultants (6.3% to 10.0%), specialists in private practice (14.8% to 25%) and doctors in academia (3.9% to 12.5%).³¹

Compared with doctors in our data from 2016 to 2019, the proportion of part-timers was higher among populations with academics in Norway, but academics in general also showed a decreasing trend both for men (11.3% to 10.0%) and women (26.3% to 24.1%).⁴⁶ In contrast, hospital doctors in Germany showed an increase in part-time work (<40 hours/week) from 15% in 2013 to 26% in 2019.⁴² Furthermore, 14% of US doctors in 2014⁴⁰ and 21% of family doctors and 26% of specialists in private practice in Germany worked <40 hours a week in 2018.³⁹

Time spent on direct patient care

A previous study with the same unbalanced cohort data from 1994 to 2014 documented a considerable reduction in time spent on direct patient care for senior hospital consultants and specialty registrars (61% to 46%) and a marginal drop for GPs (73% to 69%) and specialists in private practice (75% to 72%).¹ This trend has not continued, as we do not find significant differences from 2016 to 2019 (table 4).

Explanations of the results

Healthcare organisations are constantly subject to change in most Western countries. The relationship between healthcare reforms and working conditions for doctors is complex, but several studies have documented an increase in out-of-hospital care and pressure on GPs after the so-called ‘Co-ordination reform’ implemented in 2012.⁴⁷ The reform has been criticised for leading to: increase in consultations, ordering laboratory services

for appointment specialists, increase in tasks related to preventive treatment, more follow-up care of pregnant women or patients with chronic diseases.¹³ Other reports confirmed this increased work pressure due to increase in consultations⁴⁸ and documentation⁴⁹ and for more complex and time-consuming consultations⁵⁰ for GPs. The evaluative study of ‘The Regular General Practitioners Scheme’ from 2019 confirmed a significant rise in workloads for GPs, which was related to increase in both new tasks and the volume of established tasks.⁴⁹

A majority of GPs (86%) reported that they ‘completely disagree’ that regular working hours were sufficient to carry out this increase in work tasks.¹³ It is therefore likely that the increase this study documents in weekly working hours and time spent on patient care for GPs is related to this and the following reform of 2015 called ‘The Future Primary Care—Proximity and Comprehensiveness Reform,’^{51 52} which additionally emphasised decentralised services close to where patients live to reduce costs, increasing the GPs responsibility. Before 2014 GPs reported high but stable total weekly working hours of 48 hours from 1994 to 2014.^{1 31}

Long working hours is one of the important contributors to work stress and reduced job satisfaction.^{53 54} Panel studies in Norway documented a significant decrease in several aspects of job satisfaction for GPs and hospital doctors from 2010 to 2017 and a significant increase in work stress for GPs as well as increasing work stress for hospital doctors from 2010 to 2019. One of the important aspects of this was time pressure arising from a heavy workload.^{17 18} Another study among hospital doctors documented workload related to increasing workplace emphasis on production numbers and budget concerns.¹⁶ In a survey of hospital doctors’ working conditions in 2018, hospital doctors assigned high scores to items related to engagement at work, assessment of work as meaningful and cooperation with colleagues but scored items related to workload and professional autonomy lower.⁵⁵

In the last few years, there have been worries about maintaining high-quality patient care. The introduction and use of electronic patient registration systems in several Western countries is described as taking a substantial amount of time from clinical tasks and increasing the risk of work stress and burnout for doctors.^{42 56–58} A study among GPs in 2018 showed the potential negative effects of task shifting from hospital care specialists and other specialists to GPs on patient safety, such as the hazardous delay of necessary examinations or insufficient treatment due to lack of resources or risk of malpractice.⁵⁹ Other studies showed that inadequate communication between hospitals and primary care as well as competence problems in primary care can lead to inadequate patient care and frequent readmissions to hospitals for an increasing number of medically complex patients.^{60 61} Several GPs in Norway explained that high workload affects their own quality of life as well as the ability to ensure good quality of patient care.⁴⁹ A recent report shows that a part of the population do not have access to an allocated

GP at present and that this will grow into a much larger problem in the years to come.⁶²

These findings fit well with our data from 2016 to 2019, where doctors in several job positions reported long working weeks, with a significant increasing trend for male GPs and hospital doctors in leading positions. Working above 48 hours/week (above the EWTD) increased significantly—for both genders to about half of the GPs and of hospital doctors in leading positions in 2019 (table 2). Interestingly, in 2019, both female (6.9%) and male (19.4%) specialty registrars, compared with other job positions, had the lowest proportion of a members working over 48 hours/week. This may be due to ongoing societal changes called ‘downshifting’, implying that people choose to prioritise other qualities in life by forgoing a higher income in exchange for a life with lower stress and more free time.²² Many hospital doctors—particularly female doctors—try to reduce their working hours by choosing family-friendly specialties with less on-call or shift duties.^{26 63} This indicates an ongoing change in the profession regarding expectations about responsibilities outside of work hours and having more predictable working hours.²⁸ Lesser work hours (promoting better work–home balance) seems to be an important predictor for the choice of future specialty among medical students and young doctors.²³ However, the tendency to choose less part-time work, including among specialty registrars,^{26 27} points in the opposite direction. Obligations to finish specialty training and temporary work contracts among young doctors make it difficult to work part-time. Reduction of long work hours and increased possibility for part-time work can be one aspect of reducing work–home conflict and thus increasing doctors’ well-being and patient safety.^{6 7 64}

Studies have also demonstrated that delivering high quality patient care and increasing the time spent on direct patient care result in more satisfied patients and doctors^{16 29 30} and that doctors themselves would like to spend more of their time on this work.^{65 66} In the present study period between 2016 and 2019, the time spent on direct patient care did not change. However, in our cohort of Norwegian doctors, it fell from 1994 to 2014¹ and even further by 2019 in the present study, for instance, for GPs (73%, 69%, 66%) and for senior hospital consultants and specialty registrars (62%, 46%, 42%). Long working weeks and a decreasing trend in time spent on direct patient care suggest an increasing need for devotion of time to tasks like documenting, reporting and encoding in the health sector. Considering all of these points, it is not only enough to measure the number of hours worked (the quantity) but also important to study the content of the work (the quality).

Strengths and limitations

The study’s main strength is the representative cohort that provides a solid basis for generalisation of the results to practising doctors in Norway. The same cohort was followed up over time. There were similarities in survey

methods and key items on working hours at both points in time. The response rates were fairly good: 73.1% in 2016 and 72.5% in 2019. They were higher than in some similar studies but do not rule out the possibility of a non-response bias.³¹ Analyses were based on self-reported questionnaire data with the possibility of both over- and underestimation of the working hours. However, as the majority of doctors answered at both points in time (80% in 2016 and 88% in 2019—see Respondents section), the changes in work hours documented in the study should be reliable.

The doctors’ self-reporting of hours spent on their various workday components may, of course, be inaccurate. The level of working hour accuracy can probably be improved, but there has been built-in quality control throughout, as each individual doctor had been asked to add up their own working hour components to arrive at a total number of hours worked per week.

A previous study documented variations in the interpretation of the concept of ‘direct patient care’ among doctors from different job positions.¹ To a greater degree than others, GPs and specialists working in private practice referred to ‘only face-to-face contact with patients’ when talking about patient care, while more doctors working in administration or management included ‘all work directly related to individual patients, including work on patient records, telephone calls and meetings’ and ‘other’. However, the majority responded either ‘only face-to-face contact with patients’ (47%) or ‘all direct contact with individual patients, including phone calls, emailing, etc.’ (24%), which reflects our questionnaire’s definition of direct patient care.¹ In addition, since the same doctors were polled on each occasion largely, the reliability of changes over time in the data increases significantly and could be assessed as repeated measurements. Unfortunately, data on other and more specific variables for doctors in different job positions that may have an effect on time spent, such as staffing levels, distribution of tasks and workday organisation, were not included.

Policy implications

Variations in distribution of work time, proportion of doctors working >48 hours/week and time spent on direct patient care across job positions call for more comparative analyses in the future. Several doctors reported reduced time spent on direct patient care. It is impossible to determine what constitutes the optimal proportion of time spent on direct patient care. However, more time spent in patient care is a quality indicator. It results in more satisfied doctors and patients.²⁹ Good patient care depends on individual and organisational factors, including quality improvement and evaluation. Reducing the proportion of doctors working >48 hours/week among Norwegian doctors is important and has been found to improve both doctors’ health and quality of patient care.^{6 7 64} The possibility to adapt the number of work hours to other life commitments (including the possibility of working part-time) is important to maintain a good balance between

professional and private life. This balance is an important factor for career decisions, such as staying in or leaving job positions.^{67 68} Specific attention should be paid to male and female GPs. Low recruitment to primary care is a concurrent issue in Norway.^{50 69} Improving the working conditions of doctors and ensuring optimal working hours may cause more doctors to choose or to remain in general practice.

CONCLUSION

Compared with the stipulated work hours in Norway, doctors of both genders work long hours, and length has increased significantly for male GPs and hospital doctors in leading positions from 2016 to 2019. The proportion of time spent on direct patient care fell for some job positions over time. GPs and specialists in private practice spent about two-thirds of their time on direct patient care, while hospital doctors spend less than half of their time on it. In 2019, of the proportion of doctors with work hours above the limitations in EWTG was highest among GPs and hospital doctors in leading positions of both genders and lowest among specialty registrars. Since a long working week affects both the doctors' own well-being and the quality of patient care, regular assessments of working hours followed by analyses and appropriate actions are useful interventions.

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Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved. According to the Regional Committee for Medical Research Ethics, the study based on 'Norwegian Physician Survey—A biennial prospective questionnaire survey of a representative sample of Norwegian physicians' is exempt from review in Norway, cf. §§ 4 of The Act. The project can be implemented without the approval by the Regional Committee for Medical Research Ethics (IRB 0000 1870). In addition, approval for data protection of the biennial prospective survey among Norwegian doctors was obtained from the Norwegian Social Science Data Service (Reference 19521). Participants gave informed consent to participate in the study before taking part. It was explained that participation was voluntary and that the data would be handled confidentially.

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Data availability statement Data are available upon reasonable request. The datasets generated and analysed during the current study are not publicly available. The datasets are part of a comprehensive longitudinal follow-up study of Norwegian doctors, which started in 1993. The datasets include deidentified participant data. Participants have consented to publish aggregated data, but not to openly publish data for individuals.

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