

Out-of-hours workload among Norwegian general practitioners – an observational study

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Abstract

Background Repeated studies of working hours among Norwegian regular general practitioners (RGPs) have shown that the average total weekly working hours have remained unchanged since 1994 until 2014. For both male and female RGPs the mean total weekly working hours were almost 50 hours in 2014. In recent years there has been an outcry of dissatisfaction among Norwegian RGPs. They experience significantly increased workload without compensation, such as more doctors or better payments. A study from the Norwegian Directorate of Health in 2018 (the RGP study) showed that Norwegian RGPs worked 55.6 hours weekly (median 52.5). 25% of the respondents worked more than 62.2 hours weekly. Based on data from the RGP-study we investigated Norwegian RGPs work out-of-hours (OOH), how the working time was distributed, and to which extent the OOH work affected the regular working hours.

Methods In early 2018, an electronic survey was sent to all 4716 RGPs in Norway. Each RGP reported prospectively how many minutes per day they used on various tasks during one week. Working time also included additional tasks in the municipality, other professional medical work and OOH primary health care. Differences were analyzed by independent t-tests, and regression analyses.

Results 1876 RGPs (39.8%) responded, 640 (34.1%) had registered OOH work. Male RGPs worked in average 1.5 hours more with regular work than females ($p=0.001$) and in average 2.3 hours more OOH work than females ($p=0.079$). RGPs with no OOH work registered a mean of 1.0 hours more clinical work than RGPs working OOH ($p=0.043$). There was a large variation in OOH working hours. A linear regression analysis showed that male RGPs and RGPs in rural areas had the highest OOH workload.

Conclusions Every third of Norwegian RGPs participated in OOH work during the registration week in the RGP study. OOH work was done in addition to a high regular workload as RGP. We found small gender differences. OOH work did not lead to reduced regular RGP work.

Background

In 2001, Norway introduced a list-based medical primary care service for its inhabitants. All residents are offered to be on the list of a regular general practitioner (RGP). This ensures continuity in the doctor-patient relationship and more equal health care services for all inhabitants. The agreement between the RGPs and the municipality involves the list responsibility for the patients but also an obligation to participate in the municipal emergency out-of-hours (OOH) services (1). How this emergency care is organized varies in different municipalities due to differences in population density and geography. Large variations in the participation of RGPs in OOH services have been found in previous studies (2–5).

In 2017 approximately 60% of the RGPs participated in OOH work. Many of them worked only partly of their full obligations (3, 6). Older doctors and female doctors in central municipalities participated least. Few doctors did OOH work after the age of 55. These trends have been relatively stable over the last years.

A systematic review from 2006 found that factors related to the profession often increased job satisfaction, like task variation, contact and relationships with colleagues and teaching students. On the other hand, employment conditions like low income, too many working hours, administrative burden, and lack of time and recognition were associated with lower job satisfaction (7). A Norwegian study from 2010 found that the job satisfaction among Norwegian RGPs was high, and increasing between 2000 and 2006 (8). In recent years, increasing dissatisfaction with the workload has been reported among RGPs (9, 10). The Care Coordination Reform has gradually been implemented since 2012 (11). This reform aims to improve the collaboration and coordination between primary and secondary health care. The municipalities were supposed to take the responsibility for more patients, avoid referrals to hospital, and receive patients from the hospitals at an earlier stage. Each RGP got increased responsibility for the management of each patient, but was supposed to be responsible for fewer patients. However, the increase in number of RGPs has been much lower than planned and fewer additional resources have been added to the scheme (12, 13).

Repeated studies of Norwegian doctors working hours showed that for most doctors total weekly working hours remained unchanged since 1994 until 2014 (14). In 2014, the mean total working hours were 49.2 among male RGPs and 48.1 among females.

In recent years, there has been an outcry of dissatisfaction among Norwegian RGPs. They experience significantly increased workload without compensation, such as more doctors or better payments. A study from the Norwegian Directorate of Health in 2018 (the RGP study) showed that Norwegian RGPs on average worked 55.6 hours weekly (median 52.5), and 25% worked more than 62.2 hours weekly (15, 16).

Based on data from the RGP-study (15) we further investigated the characteristics of RGPs working OOH, distribution of OOH work, how OOH work affects the regular working hours, and some characteristics for RGPs with high workload OOH.

Method

In January 2018, an electronic survey was sent by email to all available RGPs (n = 4716) in Norway. The aim was to monitor working hours of RGPs as precisely as possible for one week. The mailing list was based on addresses from Norwegian Healthnet (NHN) and The Norwegian Health Economics Administration (HELFO). Non-responders got reminder emails one and two weeks after the first email. In addition to the invitation email, The Norwegian Directorate of Health sent information about the study to all municipalities, and The Norwegian Medical Association sent information to all their RGP members in order to encourage participation in the study. The study protocol was submitted to and approved by the Ombudsman for Research, Norwegian Centre for Research Data (NSD).

Survey instrument

The authors designed the questionnaire in Qualtrics software (version 2018 of Qualtrics, copyright © 2018, Provo, UT), and pilot tested it on 30 RGPs. The questionnaire included the following items: Gender,

age, approved specialist in general practice or not, number of days per week in clinical daytime practice, number of years working as RGP, employment position, number of inhabitants on their RGP list, number of inhabitants in the municipality, and travel distance to nearest hospital. For each of seven consecutive days, the RGP should register how many minutes per day that were used on various tasks in the RGP-practice and time used for additional positions in the municipality or other positions. The doctor should also register how many hours that were spent on duty at the OOH services each day during that week.

We asked about three different types of OOH-work: (1) Working at an OOH clinic, which means that the doctor is present at the clinic throughout the working hours. This kind of duty is common in cities and inter-municipal cooperatives; (2) Duty from home parts of the day while responding with turnouts immediately upon urgent inquiries and doing home visits or office consultations when appropriate. This is common in more rural areas with only one GP on duty; (3) Being the second doctor on call as support for less experienced doctors or locums. Most inquiries are solved by telephone. This kind of duty is considered less demanding than the two others. Hence, we excluded hours from the third category in some analyses.

“Clinical work” is daytime clinical practice work related to the patient list measured in hours per week. “Regular working hours” is defined as all clinical work, additional work for the municipality or other positions, administration of practice and teaching. “Total working hours” is defined as OOH work in addition to regular working hours.

Statistical analyses

Descriptive statistics were used, given as mean, median and proportions. To identify differences between groups independent t-tests and multiple regression analyses were used. Cohen`s d (standardized mean difference) was used to measure the effect size between the means. In general: Cohen`s d -value of 0.8 is defined as large effect, 0.5 is medium effect and 0.2 is small effect. Cohen`s d of 1 indicates the two groups differ by 1 standard deviation, a d of 0.5 indicates they differ by 0.5 standard deviations, and so on. A multiple linear regression analysis was performed to identify factors associated with high OOH workload. Different models for selection of variables were tested but we found no differences in R-square between the models and therefore a stepwise selection was chosen. The level of statistical significance was set at $p = 0.05$. The statistical analyses were performed in IBM SPSS Statistics, version 25.

Results

The response rate was 41.4% (1955 responses). We excluded 79 persons as they reported that they did not work as an RGP or were on sick leave at the time of the study. 1876 RGPs (39.8%) were then included in the further analyses. A total of 640 RGPs (34.1%) had also registered work OOH during their registration week.

Characteristics of all RGPs

48.5% of all respondents were females, compared to 42.0% in the total national RGP population. Mean total working time per week was 55.6 hours. Male RGPs worked 57.2 hours while females worked 53.9 hours ($p < 0.001$) and Cohen`s d was 0.16. The difference between male and female RGPs regular work at daytime was 1.5 hours per week ($p < 0.001$) and Cohen`s d was 0.12.

Distribution of the OOH working hours

Table 1 shows the distribution of the different types of OOH work. The main proportion of the RGPs (79.7%) worked at an OOH-clinic, 24.1% worked from home and 24.4% were also being on call as a second doctor. Only 8.8% (56) of the RGPs had duties as second doctor on call only. When estimating the total OOH working hours, we excluded the hours worked on call as second doctor. The minimum value of OOH work was 0.5 hour and the maximum value was 168.0 hours (all hours in the week). The median value for total OOH working hours was near 10 hours.

Table 1
Distribution of different types of OOH work.

	Work at the OOH- clinic (n = 510) Hours	OOH work on duty from home (n = 154) Hours	OOH work as second doctor on call (n = 156) Hours	Total OOH work, hours as second doctor excluded (n = 584) Hours
All (mean)	11.4	19.7	23.1	15.2
Male	12.0	22.0	23.1	16.2
Female	10.7	16.5	22.5	13.8
Percentiles				
10	6.0	2.0	5.0	6.0
25	7.0	6.5	8.0	7.3
50	8.8	12.5	15.0	9.8
75	15.0	23.0	15.0	16.8
90	20.2	48.0	20.2	28.1

(Table 1 here)

Characteristics of RGPs working OOH

Among RGPs working OOH the proportion of males was higher than females (37% vs. 31%). Male RGPs worked in mean 2.3 hours more per week than female RGPs with OOH work but this difference was not significant ($p = 0.079$) and the effect size Cohen`s d was 0.15.

In bivariate analysis the proportion of specialists, older and more experienced RGP was lower among RGP working OOH (Table 2). There was also a larger proportion of RGP working OOH in small municipalities with longer distance to nearest hospital. Larger list size also seemed to affect the participation in a negative direction, the same was found for being self-employed RGP.

Table 2
Distribution of characteristics of RGPs working OOH and not OOH. N = 1876

Variables	Number	RGPs not working OOH (n = 1236) %	RGPs working OOH (n = 640) %	P value
Gender				0.005
Female	910	51.0	44.2	
Male	959	49.0	55.8	
Specialist in general practice				< 0.001
Yes	1267	74.6	55.3	
No	596	25.4	44.7	
Experience (number of years as RGP)				< 0.001
0–2	225	9.2	18.1	
3–5	273	10.2	23.8	
6–10	354	17.4	22.7	
11–15	233	12.0	13.8	
16–25	330	20.2	13.3	
>25	430	31.0	8.3	
Age				< 0.001
< 35	263	10.6	23.0	
35–44	690	30.4	50.0	
45–54	390	21.4	20.0	
> 54	518	37.6	9.0	
Number of patients at their list				< 0.001
< 600	72	3.5	4.6	
601–900	316	14.3	22.3	
901–1200	721	35.8	44.5	

Variables	Number	RGPs not working OOH (n = 1236) %	RGPs working OOH (n = 640) %	P value
1201–1500	567	33.9	24.0	
1501–1800	139	9.6	3.5	
> 1800	43	2.9	1.1	
Number of inhabitants in the municipality				< 0.001
< 3 000	50	1.6	4.7	
3 001–5 000	70	2.0	7.1	
5 001–10 000	198	8.3	15.3	
10 001–25 000	407	17.9	29.7	
25 001–50 000	376	21.8	17.4	
50 001-100 000	281	16.7	12.2	
> 100 000	471	31.6	13.4	
Driving distance to nearest hospital				< 0.001
< 30 minutes	1372	81.5	58.3	
30 minutes – 1 hour	338	14.5	25.1	
1–2 hours	115	3.1	12.2	
>2 hours	39	0.9	4.4	
Employment position				< 0.001
Self-employed	1584	90.6	76.1	
Self-employed with bonus agreement	192	7.1	16.6	
Salaried	45	1.6	4.0	
Salaried with bonus agreement	28	0.6	3.3	

(Table 2 here)

A multiple logistic regression analysis showed which RGP characteristics were associated with participation in OOH work. Being a male RGP, long driving distance to nearest hospital and salaried employment with a bonus agreement were all significantly associated with more OOH work (Table 3). Age more than 54 years and working in cities with more than 100 000 inhabitants were associated with less participation in OOH work.

Table 3

Factors associated with working out-of-hours compared to not. Multiple regression analysis, N = 1774.

Variables	OR	95% CI		P-value
Gender				
Male (reference)	1.00			
Female	0.53	0.423	0.674	< 0.001
Age				
< 35 (reference)	1.00			
35–44	1.21	0.839	1.747	0.307
45–54	0.80	0.477	1.357	0.414
> 54	0.18	0.096	0.340	< 0.001
Specialist in general practice				
Yes (reference)	1.00			
No	1.07	0.777	1.484	0.665
Experience, number of years as RGP* ¹	0.97	0.931	1.001	0.057
Number of days in clinical practice per week* ²	1.00	0.919	1.095	0.945
Number of patients at their list				
< 600 (reference)	1.00			
601–900	1.60	0.850	3.011	0.145
901–1200	1.68	0.897	3.156	0.105
1201–1500	1.54	0.794	3.004	0.200
1501–1800	0.99	0.438	2.258	0.989
> 1800	1.65	0.526	5.078	0.395
Number of inhabitants in the municipality				
< 3 000 (reference)	1.00			
3 001–5 000	1.46	0.609	3.502	0.396
5 001–10 000	0.97	0.449	2.079	0.930
10 001–25 000	1.25	0.575	2.696	0.578
* ¹ Continuous variable per year. * ² Continuous variable per half day, minimum 0.5 and maximum 10.				

Variables	OR	95% CI		P-value
25 001–50 000	0.69	0.308	1.550	0.370
50 001-100 000	0.72	0.312	1.643	0.431
> 100 000	0.41	0.177	0.932	0.033
Employment position				
Self-employed (reference)	1.00			
Self-employed with bonus agreement	1.25	0.818	1.898	0.305
Salaried	1.57	0.735	3.340	0.245
Salaried and bonus agreement	4.06	1.320	12.461	0.014
Driving distance to nearest hospital				
Less than 30 minutes (reference)	1.00			
30 minutes – 1 hour	1.58	1.161	2.151	0.004
1–2 hours	5.01	2.881	8.714	< 0.001
More than 2 hours	3.09	1.317	7.237	0.010
* ¹ Continuous variable per year. * ² Continuous variable per half day, minimum 0.5 and maximum 10.				

(Table 3 here)

There was no significant difference between the regular daytime work among RGP's working or not working OOH. RGP's working OOH had 0.7 hours more of regular work at daytime than RGP's not working OOH ($p = 0.471$). Figure 1 shows a scatterplot of paired values of OOH working hours by regular working hours.

(Fig. 1 here)

The difference in hours of clinical work between the RGP's working OOH and RGP's not working OOH was small (1.0 hours per week) but statistically significant ($p = 0.043$). Cohen's d was only 0,10. The difference was primarily explained by the amount of face-to-face contacts (0.7 hours more for RGP's with no OOH work, $p = 0.030$, Cohen's d 0.11) and paper work (0.7 hours more for RGP's with no OOH work, $p = 0.002$, Cohen's d 0.15). Doctors not working OOH had 0.1 hours less home visits per week ($p = 0.038$, Cohen's d 0.10) and 0.2 hours less meetings per week ($p = 0.003$, Cohen's d 0.14).

Figure 2 illustrates the distribution of total working time in quartiles, with OOH work separated from regular working time. We found that in all quartiles, the differences in regular work between the groups

were small, it was the OOH work that mainly made the difference in total working hours both for those with fewer regular working hours as well as for those with a high number of regular working hours.

(Fig. 2 here)

Factors associated with high OOH workload

There was a large variation in OOH working hours especially among those working most. In order to find variables associated with a high number of working hours OOH, a linear regression analysis was performed with possible explanation variables included (Table 4). A stepwise selection method showed that to be male RGP, to work in small municipalities and to have long travelling distance to nearest hospital all were associated with more OOH work per week. Also, the RGPs with many hours OOH work had shorter patient-lists.

Table 4

Factors associated with high workload out-of-hours. Linear regression analysis of total working hours OOH exclusive work as second doctor. R square 0.125. N = 573

Variables	Standardized Beta (β)	P-value
Gender (Male = 0 Female = 1)	-0.137	0.001
Number of inhabitants in the municipality (7 categories, ref. Table 1)	-0.114	0.025
Driving distance to nearest hospital (per 30 minutes, 4 categories ref. Table 1)	0.211	< 0.001
Number of patients at their list (per 300 patient, 6 categories, ref. Table 1)	-0.113	0.010
Figure titles		
Figure 1. Scatterplot of paired total work exclusively OOH work and the OOH work in hours. N = 567		
Figure 2. Comparison of total working time per week between RGPs working or not working OOH in quartiles of total working time. N = 1876		

(Table 4 here)

Discussion

During one January week in 2018 every third RGP in Norway was working OOH. OOH work was done in addition to an already high workload as RGP. RGPs working OOH has slightly less clinical daytime practice than those not working OOH. Male RGPs and RGPs from rural areas have the highest workload of OOH work.

Strengths and limitations

We used an electronic survey because of its clear advantages; saving of time, cost-effective, no need of data entry. As far as we know the Norwegian GPs, all age-group are very well-known with web-based surveys. The response rate of 39.8% is rather low, with a risk of nonresponse bias. However, compared to other studies among physicians our response rate on an electronic survey is quite good (17). Generally, physicians have lower response rates than the general public and different factors that may increase the rate are found in some reviews and trials (17, 18).

The survey was relatively time-consuming to answer since all work-related activity had to be registered continuously for seven consecutive days. The response rate was slightly lower in the oldest age-groups. This explain that the female proportion was slightly higher than the national average among RGPs (15). Despite this very small difference we found our study sample representative with respect to age, gender, list size and proportion that was approved specialists in general practice.

Self-report of working-time has some disadvantages. Previous research on RGPs workload in Norway was also by self-registration but on smaller numbers of RGPs (n = 203) and retrospective (14). The strength of our study is that all RGPs in Norway got an invitation. The potential degree of over- or under-estimation of working hours in this study is not known. There is a possibility that more hard-working RGPs respond compared to those working less, as the latter may feel they should not spoil a wanted outcome of high workload. On the other hand, experienced RGPs that are used to high workload and those that are comfortable with it may not respond either. OOH work is easier to register than other work tasks that flow more into each other, as the duties are set up with certain hours and paid per hour. Therefore, we assume that the number of hours OOH is correct with a relatively high degree of certainty.

Discussion of results

In this study one of three RGPs worked OOH during one week in January 2018. From other Norwegian studies we know that more than one third of all RGPs participate in OOH work. In 2017 around 60 percent of RGP participated but they had fewer contacts than other doctors at OOH-services and therefore probably take fewer duties (3, 6). Since our registration only was for one week there are probably more doctors working OOH more seldom. These RGPs are probably working in larger OOH-district where many doctors participate. That is why we reckon that the portion of RGPs working OOH is lower in our study sample than in the general RGP population. Our study cannot state the total workload of OOH work for all RGPs but show a mean of the situation one normal January week.

Total workload for RGPs is a sum of different tasks. Clinical work connected directly to the patient list is the main task, but OOH work and additional work for the municipality are also obliged in Norway. Countries that have the same organization as in Norway report significant out-of-hours demand and high workload in rural areas (19, 20). The mean total working hours for RGPs was 7 hours more than found in 2014 (14). Because of different methods and numbers in the study population it cannot be stated an exact increase of 7 hours from 2014 until 2018, but our study shows that an increase in the workload is

very likely. Both studies have OOH work included in the mean, and in our study the mean total working hours is higher for both RGP groups, also for those not working OOH. The total workload for the average RGP is some 20 hours a week above the recommended working hours in Norway, both for regular work and total work (21).

Mean regular working hours are similar for RGPs both with and without OOH work. It can be compared with GPs in other countries, for example British GPs, i.e. approximately 49 hours per week but with large variations. Our study showed that for all RGPs the OOH work is in addition to already more than full-time RGP work at daytime. There were no association between number of regular working hours and OOH working hours, and only minimal reduction in mean regular work at daytime for RGPs with OOH work. There were also minimal differences in time used at other tasks. This can be explained from that most RGPs have their own personal list and the same duty to work OOH with small opportunities for flexibility to take over the work of colleagues.

The small difference in working time between genders in Norway is remarkable. In United Kingdom the difference between male and female GPs is estimated to be 6 hours for regular work (24) and in Netherland to be 8 hours in average (25). For OOH work we have not found any comparable literature. Our results show that female RGPs have an almost similar workload as male in daytime practice, the gender difference is somewhat larger at OOH (2.3 hours compared to 1.6 hours). Significantly fewer females participate in OOH work. Especially when the duties are taken from home, female RGPs participate less than male RGPs. Such an organization with combined duties from home and at clinic is usually used in rural areas with generally high OOH workload. This may explain that women do less such work. So Norwegian female RGPs seem to work nearly as much as male RGPs at daytime, but less at OOH. This is in line with what is known about gender differences generally in working life in Norway. A larger proportion of women work part-time also among highly educated women and to a lesser extent take up positions that entail a high workload beyond normal working hours, on average, women earn 87% of men's earnings (22).

Age over 55 years gives exemption from OOH work according to negotiated collective agreement. That fits well with what we found; RGPs more than 54 years old seldom worked OOH. There was a clear tendency that a higher proportion RGPs in the younger age group participated in OOH work. This may be desired, the requirement to work OOH as part of the specialization course for general practitioners and a wish for higher income at the start of the career (23).

The employment position was also associated to participation in OOH work. A higher proportion of salaried GPs or GPs with bonus agreement participated in OOH work. For small and/or rural municipalities with high OOH workload different bonus agreement may be offered as a recruitment effort and explains why a salaried position with bonus agreement was significantly associated to having OOH work.

Different variables were associated with high OOH workload and most of them express different conditions in rural areas. Long travelling time to nearest hospital and small municipalities are both

isolated factors associated with high OOH workload. We also found that the more hours a RGP worked OOH, the greater the portion of home duties. Rurality is associated with OOH home duties and shorter patient lists, likely to be an explanatory factor. We had no information about the centrality of the workplaces. Hence it was not possible to correct for this relationship in the analyses.

Implications for future research

In this study we investigated self-registered working time during one week. Factors that can provide stability and continuity in primary health care were not mapped. High workload indicates high risk of unstable physician staffing. With increasing numbers of female medical students, it is necessary to examine what conditions are fundamental to enable newly educated female doctors to thrive and stay as RGPs, especially in rural areas where the OOH workload is high.

Conclusions

During one week every third RGP in Norway work OOH in addition to their work as RGP. RGPs working OOH do not work less at daytime than RGPs not working OOH. Male RGPs and RGPs from rural areas have the highest workload of OOH work. Gender differences are minimal at daytime but more present at OOH work.

Abbreviations

RGP
Regular general practitioner
OOH
Out-of-hours

Declarations

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Ethics declarations

Ethics approval and consent to participate

The study was submitted to and approved by the Ombudsman for Research, Norwegian Centre for Research Data (NSD) (Reference 57262). As the study did not contain any health information about the participants and the research did not include health and disease, there was no need for approval from the

ethics committee (24). The consent from the study participants was obtained by written answer of the submitted questionnaire.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

IKR, TM, KM and SH conceived the study and the design. TM and IKR performed the analysis. IKR drafted the article. All authors revised, read and approved the final manuscript.

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Additional file

Additional file 1: Qualtrics Survey

References

1. Nieber T, Hansen EH, Bondevik GT, Hunskår S, Blinkenberg J, Thesen J, et al. Organization of Norwegian out-of-hours primary health care services. *Tidsskr Nor Laegeforen*. 2007;127(10):1335-8.
2. Sandvik H, Hunskår S. Reimbursement for out-of-hours work in Norway. *Tidsskr Nor Laegeforen*. 2007;127(10):1347-50.
3. Sandvik H, Zakariassen E, Hunskår S. Norwegian regular general practitioners' participation in out-of-hours work. *Tidsskr Nor Laegeforen*. 2007;127(19):2513-6.
4. Sandvik H, Hunskår S. Working style among regular general practitioners and other doctors in the out-of-hours services. *Tidsskr Nor Laegeforen*. 2010;130(2):135-8.
5. Hjortdahl M, Zakariassen E, Halvorsen PA. Self reported involvement in emergency medicine among GPs in Norway. *Scand J Prim Health Care*. 2018;36(2):161-9.
6. Sandvik H, Blinkenberg J. Årsstatistikk fra legevakt 2017. Rapport nr. 2-2018. Nasjonalt kompetansesenter for legevaktmedisin, Uni Research Helse, Bergen. 2018. <http://bora.uib.no/handle/1956/17544>. Accessed 27 November 2019.
7. Van Ham I, Verhoeven AA, Groenier KH, Groothoff JW, De Haan J. Job satisfaction among general practitioners: a systematic literature review. *Eur J Gen Pract*. 2006;12(4):174-80.
8. Aasland OG, Rosta J, Nylenna M. Healthcare reforms and job satisfaction among doctors in Norway. *Scand J Public Health*. 2010;38(3):253-8.
9. Kjosavik SR. Ongoing recruitment crisis In Norwegian general practice. *Scand J Prim Health Care*. 2018;36(2):107-8.
10. Rosta J, Aasland OG, Nylenna M. Changes in job satisfaction among doctors in Norway from 2010 to 2017: a study based on repeated surveys. *BMJ Open*. 2019;9(9):e027891.
11. Samhandlingsreformen - informasjon om ikraftsetting av lov om kommunale helse- og omsorgstjenester. Ministry of Health and Care Services, Oslo. 2011. <https://www.regjeringen.no/no/dokumenter/samhandlingsreformen—informasjon-om-ik/id667798/>. Accessed 27 November 2019.
12. Christiansen TW, Sandvik H. Fastlegeordningen forvitrer – hva nå? (The family physician system is crumbling - what now?). *Tidsskr Nor Laegeforen*. 2017;137(22).

13. Texmon I. Kortere pasientlister, lengre arbeidsdager? (Shorter patient lists, longer working days?). Statistics Norway. 2018. <https://www.ssb.no/helse/artikler-og-publikasjoner/kortere-pasientlister-lengre-arbeidsdager>. Accessed 27 November 2019.
14. Rosta J, Aasland OG. Doctors' working hours and time spent on patient care in the period 1994 - 2014. *Tidsskr Nor Laegeforen*. 2016;136(16):1355-9.
15. Rebnord IK EO, Hunskaar S, Morken T. Fastlegers tidsbruk (Investigation of regular GPs working hours). In: Report to the Norwegian Directorate of Health. Bergen: National Centre for Emergency Primary Health Care, Uni Research Health. 2018. <https://www.regjeringen.no/no/dokumenter/fastlegers-tidsbruk/id2592992/>. Accessed 27 November 2019.
16. Morken T, Rebnord IK, Maartmann-Moe K, Hunskaar S. Workload in Norwegian general practice 2018 - an observational study. *BMC Health Serv Res*. 2019;19(1):434.
17. Cunningham CT, Quan H, Hemmelgarn B, Noseworthy T, Beck CA, Dixon E, et al. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol*. 2015;15:32.
18. Bratlid D. Doctors' time for working with patients and patients' time with doctors. *Tidsskr Nor Laegeforen*. 2018;138(2).
19. McGrail MR, Humphreys JS, Joyce CM, Scott A, Kalb G. How do rural GPs' workloads and work activities differ with community size compared with metropolitan practice? *Aust J Prim Health*. 2012;18(3):228-33.
20. Jakob J, Cohidon C, Cornuz J, Selby K. Participation in medical activities beyond standard consultations by Swiss general practitioners: a cross-sectional study. *BMC Fam Pract*. 2018;19(1):52.
21. Cabrita J. Working time developments - 2011. European Foundation for the Improvement of Living and Working Conditions, Dublin. 2012. <https://www.eurofound.europa.eu/publications/report/2012/working-time-developments-2011#hd33>. Accessed 27 November 2019.
22. Selmer-Andersen I. Store kjønnsforskjeller i arbeidslivet. Statistics Norway. 2018. <https://www.ssb.no/befolkning/artikler-og-publikasjoner/store-kjonnsforskjeller-i-arbeidslivet>. Accessed 27 November 2019.
23. Rivard MK, Cash RE, Chrzan K, Panchal AR. The impact of working overtime or multiple jobs in emergency medical services. *Prehosp Emerg Care* 2019:1-13.
24. Helseforskningsloven (The Health Research Act – ACT 2008-06-20 no.44). https://lovdata.no/dokument/NL/lov/2008-06-20-44#KAPITTEL_3. Accessed 27 November 2019.

Figures

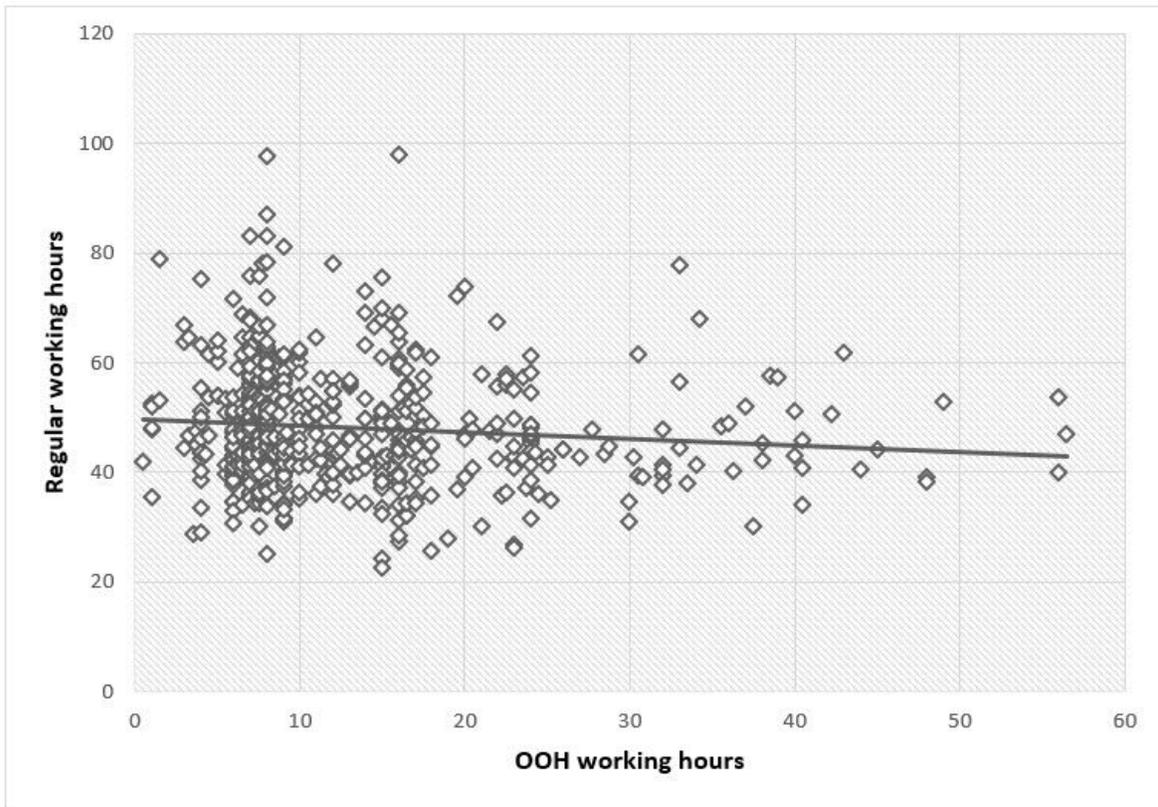


Figure 1

Scatterplot of paired total work exclusively OOH work and the OOH work in hours. N=567

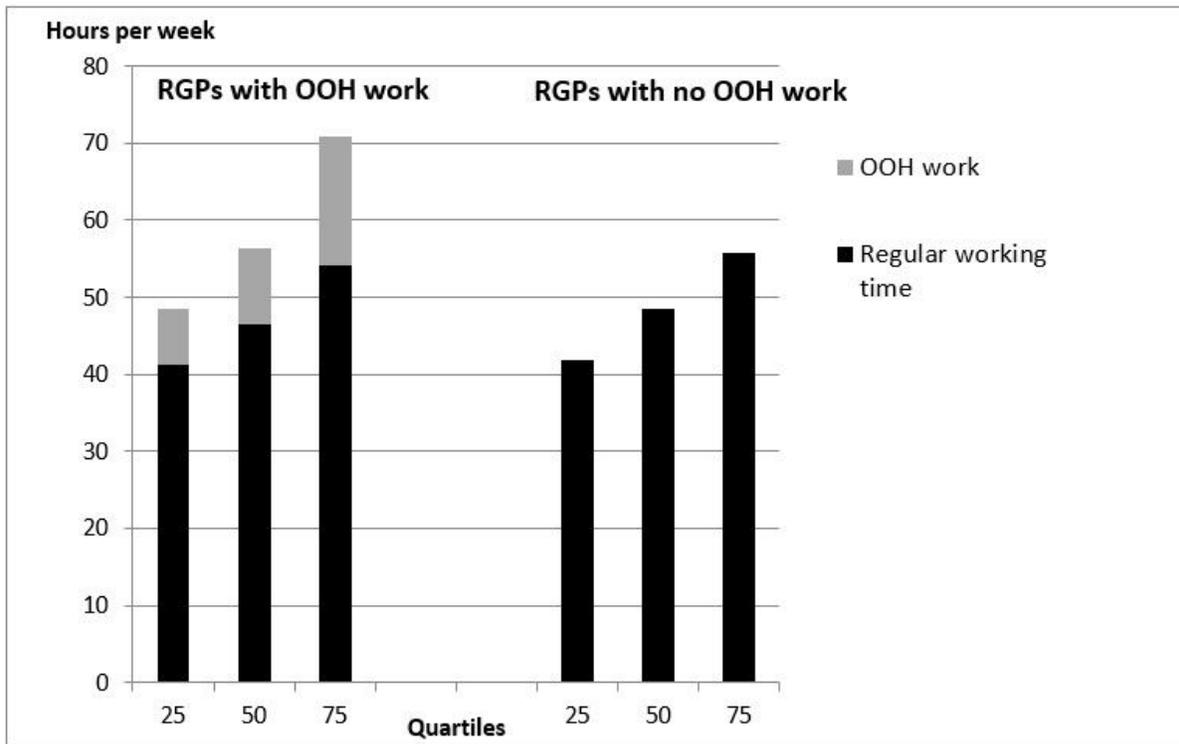


Figure 2

Comparison of total working time per week between RGPs working or not working OOH in quartiles of total working time. N=1876

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [QualtricsSurvey.pdf](#)