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**Title: Pros and cons of quick returns – a cross-sectional survey among Swedish nurses
and nurse assistants**

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Declaration of conflict of interest

Authors declare no conflicts of interest.

Ethical Conduct of Research:

The study was approved by the Swedish ethics research committee (Regionala etikprövningsnämnde Stockholm) (dnr 2018/1541-31). All participants gave their informed consent prior to data collection.

Pros and cons of quick returns – a cross-sectional survey among Swedish nurses and nurse assistants

Abstract: Short rest (<1h) between evening and day shifts – known as quick returns (QRs) – impede recovery and may impair health. Nevertheless, QRs remain popular among some shift workers. This study explores nurses' and nursing assistants' perceptions of the merits and demerits of QRs from individual and organizational perspectives. Participants were recruited from eleven wards at two Swedish hospitals as part of a larger quasi-experimental intervention study. The majority (79%) had influence over their work schedules. Frequency distributions of responses are presented. Ninety six undertook a baseline survey regarding recovery, tolerance and work performance in relation to QRs. A majority experienced difficulties unwinding before bedtime (76%), insufficient sleep (80%), and daytime fatigue (72%). A third experienced an increased risk of errors and mistakes. However, QRs appeared to facilitate taking reports from patients and planning work, as this task was more often rated as 'very easy' following a QR compared to other shift combinations. Tolerance of QRs varied substantially. In conclusion, QRs seem to benefit continuity in work processes, but may do so at the expense of recovery and safety. Wards planning to reduce QRs –through participatory or fixed schedule models – should consider impacts on work processes.

Key words: Recovery, Continuity of care, Shift work tolerance, Fatigue, Safety

Introduction

A challenge with participatory working time scheduling systems is that what are considered healthy and safe working hours do not necessarily match the preferred working hours of the individual worker. For example, a cross-sectional study found that when workers scheduled their own shifts they would more often prioritize family life and having longer blocks of time off work, rather than getting sufficient recovery before the next shift and protecting their own health¹). In order to gain longer periods off work, employees can compress their work week in

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several ways. One way of getting longer time off between shifts is to schedule short rests periods (<1h) between shifts. However such compressed schedules have been associated with risk of increased fatigue – both from working long hours, and as a result of insufficient recovery between work shifts – which could affect both employees' health and safety²⁾. Thus, a potential downside to greater autonomy over working hours is that individual workers must consider health and safety when planning their working hours – and the employers responsibility might be overlooked. As more workers are given flexibility to influence their working hours, the need for knowledge underpinning guidelines for healthy and safe work hours will be of increasing importance.

Short rests – or quick returns (QRs) – are commonly defined as having less than eleven hours between work shifts. Although legislation in the European Union from 2003³⁾ entitle workers to a minimum of eleven consecutive hours of rest every day, QRs continue to be common within the sectors of health care, agriculture, construction and transport⁴⁾ which suggests associated benefits as well. To enable a transition toward healthier and safer shift schedules that still match the needs of the individual and organization, an understanding of the potential benefits of QRs is important. To our knowledge, this is the first study to actively investigate the potential benefits of QRs in addition to their potential harm.

Among shift workers, QRs usually occur between evening and day shifts⁵⁾. Quick returns have been associated with shortened and reduced quality of sleep⁵⁻⁷⁾, daytime fatigue^{5, 7)}, reduced health and wellbeing⁵⁾, increased stress^{5, 8)}, and increased risk of prospective sick leave⁹⁾. Insufficient sleep is in turn associated with impaired cognitive functioning^{10, 11)}, and there is emerging evidence that QRs are also associated with memory problems¹²⁾, and an increased risk of work related accidents and mistakes¹³⁻¹⁵⁾.

It is uncertain how the quantity and frequency of QRs affect health and safety. According to the theory of allostatic load¹⁶⁾, repeated stress paired with insufficient recovery¹⁷⁾ can, over

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time, increase the risk of stress-related health problems. Insufficient recovery is likely to accumulate with the number of QRs occurring within a set period. The risk of sick leave, for example, increases with frequency of QRs⁹⁾. However, tolerance of QRs is also likely to vary between individuals, as does tolerance of sleep loss^{18, 19)} and shift work²⁰⁾.

Both for shift workers who can influence their own schedules, and those administrators responsible for designing fixed shift schedules, a greater understanding of how QRs affect health and safety is needed as they remain common despite being advised against. The objectives of this field study were to explore nurses' and assistant nurses' experiences of how QRs between evening and day shifts affect recovery, continuity of care and work-home balance, as well as their perceived tolerance of QRs and perceptions of patient safety, within settings where flexible working was prevalent.

Subjects and Methods

Participants were recruited from eleven wards with 24h care at two Swedish hospitals. The wards either planned to reduce the number of QRs, as a part of an intervention study, or acted as controls in the same study. The intervention wards were to eliminate or significantly reduce the number of QRs in their schedule, and participation involved responding to baseline, post-intervention and follow-up surveys. The current analyses are based on data from the baseline survey only. The eligibility criteria were to be working as a nurse or nursing assistant with a shift schedule that included QRs (defined as less than 11 hours of rest between evening and day shifts). Participation was voluntary, and participants gave informed consent. The study was approved by the Swedish ethics research committee (2019-06527).

All nurses and nursing assistants employed at the participating wards were invited to participate in the study. A total of 366 employees received information about the study via information meetings and email. The work schedules of the invitees were unknown prior to invitation, making it uncertain how many of the invitees were in fact eligible for participation.

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Among the 97 who chose to participate, one person did not fulfill the eligibility criterion of having a schedule that included QRs and was excluded.

A questionnaire was emailed to participants in the autumn of 2019. The sample consisted of 96 participants, a majority were female (94%) with a mean age of 41.3 years (SD=11.5; min=20; max=63). Half of the participants (56%) had children still living at home. Their professions were as nurses (34%), nurse specialists or midwives (12%), nursing assistants (51%) or mental care givers (2%). The type of care at the wards spanned a wide range of fields, for example maternity care, cardiology, psychiatry and abdominal surgery. The participants' work experience within their profession ranged between 1–45 years, and a most had worked between one and five years (38%), whereas only a minority (7%) had worked for 30 years or longer. For further details on response distributions and years of professional experience, see [online appendix A](#). A majority worked full time (62%), or at least 80 percent (86%). The remaining 14 percent worked between 50 (3%) and 75 percent (11%). A majority could influence aspects of their work schedules through a participatory scheduling scheme (79%).

Questions concerned the frequency and tolerance of QRs, continuity of care and information transfer between shifts, workload, and the effects of QRs on sleep, fatigue, patient safety, stress and private life. Questions were either rated on a 5-point likert scale (for example “1 – Strongly agree”, “5 – Strongly disagree”), or provided categorized response alternatives (for example “none”, “1–2”, “3–4”, “5 or more. As this is the first study to explore employees' perceptions of merits and demerits of quick returns, new questions had to be constructed. Prior to the data collection, a handful of employees, managers and staffing assistants were interviewed on their views of quick returns and scheduling. These were used to inform the construction of questions regarding quick returns. Where possible, similar wordings as in standardized questionnaires were used: *What is your view on working quick returns? I don't*

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get sufficient sleep is an adaptation of Karolinska Sleep Questionnaire²¹); *What is your view on working quick returns? I come home from work too tired to do things I would like to do* is an adaptation from the subscale *Work interference with personal life* in a validated measure of work /non work-interference and enhancement²²). See Tables 1–3 for the wording of questions and response alternatives. Group level frequencies are reported.

Results

The frequency and tolerance of QRs are summarized in Table 1. All but two participants (98%) had worked at least one QR in the previous month. Almost half of the participants (44%) had worked at least 5 QRs. The duration of their exposure to QRs varied, ranging from 1–5 years (36%) to more than 15 years (31%) of work where less than 11 hours of rest frequented in their schedule.

Insert Table 1 here.

The largest group, about one third (35%), could work at most two QRs in a month before experiencing negative effects. Some (16%) stated that they never experience negative effects from QRs. One out of ten participants (10%) reported no tolerance of QRs.

The experienced benefits and demerits of QRs varied between participants, and are summarized in Table 2. A majority of participants experienced difficulties unwinding after the evening shift of QRs (76%), insufficient sleep (80%), and feeling tired during the day shift (72%). One third (33%) also reported an increased risk of errors and mistakes. In addition, more than half of the participants (60%) felt too tired after work to do the things they would have liked to do during their free time. Some reported reduced stress on day shifts after QRs (36%), others did not (44%). Some found that QRs made it easier to combine work and private life (34%), but more participants did not (50%).

Insert Table 2 here, or nearest page break.

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The experiences of continuity in work processes and work load are summarized in Table 3. Most participants (73%) agreed that processes for information transfer between shifts were good, although some (29%) reported that important information was sometimes lost. For 55 percent of participants, familiarity with patients was important to continuity of care. On day shifts that followed QRs, the processes of taking reports from patients and planning work were more often rated as being very easy (62%), compared to when day shifts followed a previous day shift (38%) or a day off (34%). On day shifts, workload was more often perceived as very high (28%) compared to evening (12%) and night shifts (12%).

Insert Table 3 here, or after nearest page break hereafter.

Discussion

Flexible working hours and increased worktime control are likely to be beneficial for the individual worker but their implementation requires insight and clear guidelines for healthy and safe work hours. However, what constitutes a healthy and safe shift schedule is likely to be complex, as particular shift sequences can afford both benefits and harm in different domains, depending on the context.

In this field study, where flexible working practices were prevalent, there was considerable variation between participants, both in positive and negative views of quick returns (QRs), effects on safety and in perceived tolerance. QRs appeared to facilitate aspects of continuity of care and work processes. Most participants in this field study agreed that the processes for information transfer between shifts were good, although important information was sometimes lost. QRs were perceived by many participants as facilitating report taking at shift handover and making a plan for work. Many preferred that patients met the same personnel. The importance of familiarity with patients and the beneficial effect of QRs on information transfer is likely to depend on existing routines for information transfer between shifts as well as the type of care setting (e.g. types of patients or duration of hospitalisation), where the need

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for - and urgency of - information transfer could vary between settings. Although QRs have been associated with adverse outcomes⁵⁾, our results indicate that designing for healthy and safe shift schedules is more complex than simply reducing the number of QRs. For a work hour intervention to be successful – either through a participatory schedule model or fixed allocation of schedules – insight into the organizational structure and work processes, as well as the individual characteristics of employees, is likely to be important.

Although QRs facilitated some aspects of work, they did not seem to alleviate stress on day shifts. A recent study suggests that QRs could even be associated with slightly increased stress⁸⁾. In line with previous research^{5, 6)}, QRs were found to impede recovery and be a source of worktime fatigue. According to the theory of allostatic load, the need for recovery increases with the amount of work effort exerted. As day shifts involved the highest workloads, the risk associated with insufficient recovery and fatigue may be especially large when QRs occur most commonly between evening and day shifts. QRs were also associated with a perceived increased risk of errors and mistakes, adding to the evidence of QRs as a safety hazard¹³⁻¹⁵⁾. Thus, the potential contribution of QRs to continuity in work processes needs to be considered against the risk posed to employee health and patient safety.

QRs allow workers to compress their working week, resulting in longer consecutive time periods off work, which is valued by shift workers¹⁾. However, only a minority of participants agreed that QRs improved work-home balance, suggesting that the positive impact of QRs on private life is limited. That said, QRs were associated with fatigue after work, which may inhibit health promoting behaviours such as exercising or socialising. The trade-off between the possible benefits of QRs to work-home balance and their negative impact on recovery and safety merits further investigation in future research.

Most participants could work a limited number of QRs per month without experiencing negative effects, but no conclusion as to what is a safe number of QRs can be drawn from this

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study. Some seem to tolerate working more QRs than others, which indicates that future recommendations might need to take individual variations into consideration. Research is needed to identify individual and organizational characteristics that help individuals gain sufficient recovery when time for rest is short, and how their perceived tolerance is reflected in outcomes such as sick leave and patient safety.

Some key limitations can be noted. The results were based on a small sample, lacked adjustment for background variables and cannot be generalized. Further studies are needed to validate our results. Nevertheless, our data provide important knowledge of the positive and negative effects that can be associated with quick returns, which generate new hypotheses for future studies and can be used to guide future interventions.

The true response rate is unknown, since we did not determine invitees' eligibility prior to inviting them to the study. Thus, the reported response rate is likely deflated but close to what can be expected in organization-level research²³). The demographic distribution in our sample indicate a broad range of work-experience and ages, although men are somewhat underrepresented. However, it is possible that employees with strong positive or negative opinions of QRs were more motivated to participate.

Concluding Remarks

Our findings provide new knowledge about the potential role of QRs in continuity of work processes, which might be an important consideration for the construction of healthier and safer shift schedules. Our findings also generate new hypotheses regarding possible organizational benefits of QRs, benefits that need to be contrasted against QRs' negative impact on recovery, fatigue and patient safety. Future research should also examine factors influencing individual tolerance to QRs and how they may impact guidelines for QRs.

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Table 1. Frequency distribution and total number of responses to questions about frequency and tolerance of quick returns

Response alternatives	n	%	Response alternatives	n	%
“During the past month, how often have you worked the shift combination evening-day (quick return)?”			“During a month, how many single quick returns can you work before it starts to affect you negatively?”		
Never	2	2 %	0	10	10 %
1-2	17	18 %	1-2	33	35 %
3-4	35	36 %	3-4	23	24 %
5-6	26	27 %	5-6	10	10 %
7 or more	16	17 %	7 or more	4	4 %
			It never affects me negatively	15	16 %
Total	96		Total	95	
Response alternatives	n	%			
“In sum, how many years have you worked (current and previous employments) quick returns or other shift combinations with less than 11 hours of rest?”					
1-5 years	34	36 %			
6-15 years	29	31 %			
>15 years	31	31 %			
Total	94				

Note: Decimals of .5 have been rounded to the nearest even number

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Table 2. Frequency distribution and total number of responses to questions about pros and cons of quick returns

Response alternatives	n	%	Response alternatives	n	%
Experiences of working quick returns:					
“I have a hard time unwinding after the evening shift”			“I don’t get sufficient sleep”		
1 – Strongly agree	64	67 %	1 – Strongly agree	67	70 %
2	9	9 %	2	10	10 %
3	6	6 %	3	7	7 %
4	9	9 %	4	7	7 %
5 – Strongly disagree	8	8 %	5 – Strongly disagree	5	5 %
Total	96		Total	96	
Experiences of working quick returns:					
“It reduces stress on the day shift”			“I feel tired during the day”		
1 – Strongly agree	21	22 %	1 – Strongly agree	40	42 %
2	13	14 %	2	29	30 %
3	19	20 %	3	10	10 %
4	17	18 %	4	9	9 %
5 – Strongly disagree	24	26 %	5 – Strongly disagree	8	8 %
Total	94		Total	96	
Experiences of working quick returns:					
“I experience an increased risk of performance errors and mistakes on the day shift”			“ It makes it easier to combine work and private life”		
1 – Strongly agree	15	16 %	1 – Strongly agree	17	18 %
2	16	17 %	2	15	16 %
3	17	18 %	3	16	17 %
4	24	25 %	4	15	16 %
5 – Strongly disagree	24	25 %	5 – Strongly disagree	32	34 %
Total	96		Total	95	
Experiences of working quick returns:					
“I come home from work too tired to do things I would like to do”					
1 – Strongly agree	39	41%			
2	18	19%			
3	21	22 %			
4	12	12 %			
5 – Strongly disagree	6	6 %			
Total	96				

Note: Decimals of .5 have been rounded to the nearest even number.

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Table 3. Frequency distribution and total number of responses to questions about continuity in work processes, workload and quick returns

Response alternatives	n	%	Response alternatives	n	%
“At my workplace, it’s important that patients meet the same personnel to maintain continuity of care.”			“At my workplace, we have good work processes for information transfer between shifts”		
1 – Strongly agree	29	30 %	1 – Strongly agree	28	30 %
2	24	25 %	2	41	43 %
3	23	24 %	3	22	23 %
4	15	16 %	4	3	3 %
5 – Strongly disagree	5	5 %	5 – Strongly disagree	1	1 %
Total	96		Total	95	
“At my workplace, information important to quality of care is sometimes lost?”			“How easy or difficult is it for you to take report on patients and make a plan for your work on day shifts that were preceded by a day off work?”		
1 – Strongly agree	3	3 %	1 – Very easy	32	34 %
2	25	26 %	2	24	26 %
3	28	29 %	3	20	22 %
4	31	32 %	4	10	11 %
5 – Strongly disagree	9	9 %	5 – Very difficult	7	8 %
Total	96		Not applicable	2	-
			Total	95	
“How easy or difficult is it for you to take report on patients and make a plan for your work on day shifts that were preceded by a day shift?”			“How easy or difficult is it for you to take report on patients and make a plan for your work on day shifts that were preceded by an evening shift (quick return)?”		
1 – Very easy	35	38 %	1 – Very easy	58	62 %
2	36	39 %	2	22	24 %
3	18	20 %	3	8	9 %
4	4	4 %	4	2	2 %
5 – Very difficult	0		5 – Very difficult	3	3 %
Not applicable	3	-	Not applicable	2	-
Total	95		Total	95	
“During the past month, how has the workload been during day shifts?”			“During the past month, how has the workload been during evening shifts?”		
Very high	27	28 %	Very high	11	12 %
Somewhat high	47	50 %	Somewhat high	54	57 %
Neither high nor low	17	18 %	Neither high nor low	20	21 %
Somewhat low	4	4 %	Somewhat low	8	8 %
Very low	0	-	Very low	2	2 %
Total	95		Total	93	
“During the past month, how has the workload been during night shifts?”					
Very high	6	12 %			
Somewhat high	29	57 %			
Neither high nor low	13	14 %			
Somewhat low	1	25 %			
Very low	2	4 %			
Not applicable	42				
Total	51	-			

Note: Decimals of .5 have been rounded to the nearest even number.

APPENDIX A

This appendix presents the distribution of years of professional experience in the sample, and the frequency distribution of responses to items relating to quick returns, in relation to years of professional experience.

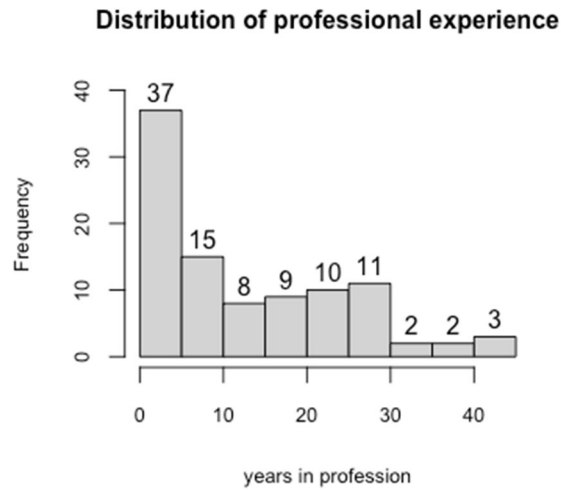


Fig. 1. Distribution of professional experience, in number of years.



Fig. 2. Number of quick returns worked the previous month, plotted against the number of years of professional experience.

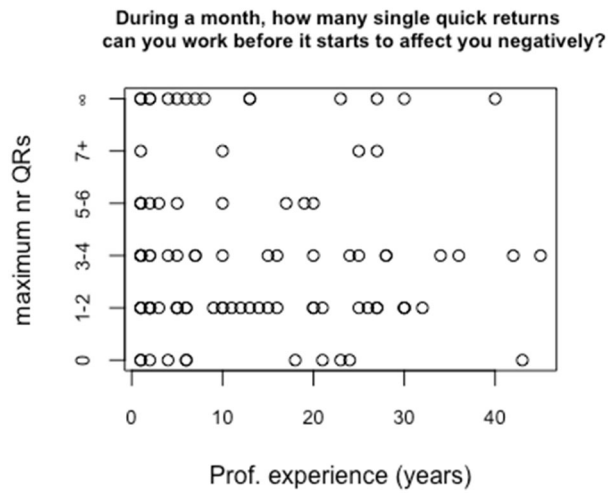


Fig. 3. Tolerance of quick returns, plotted against the number of years of professional experience. The last category, labeled with an infinity sign, refers to the response alternative “It never affects me negatively”.

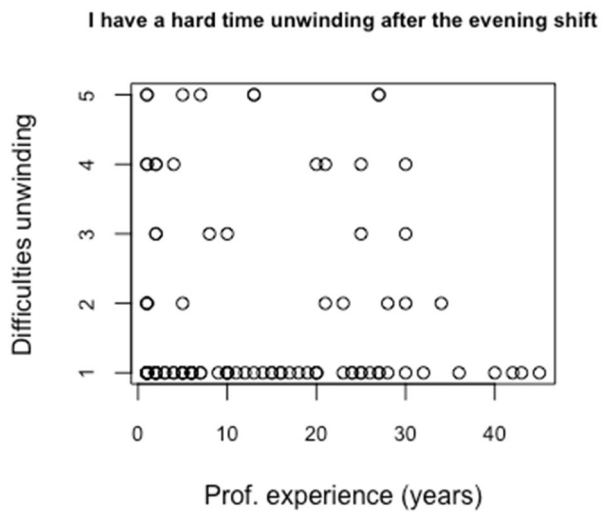


Fig. 4. Experience of the difficulties unwinding during quick returns, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.



Fig. 5. Experience of the ability to gain sufficient sleep during quick returns, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.

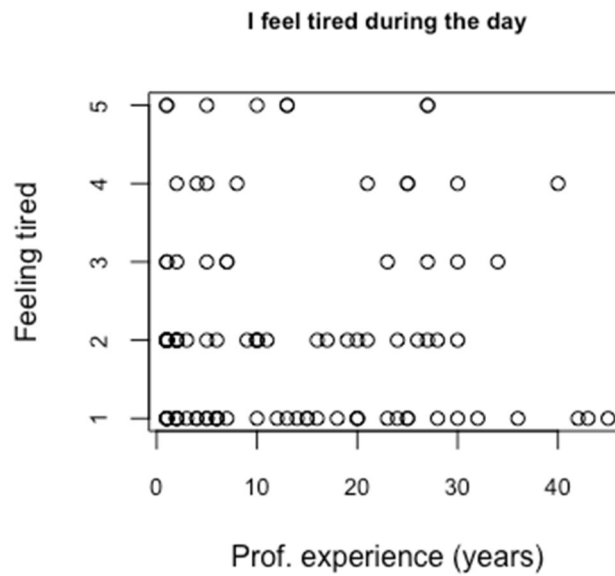


Fig. 6. Fatigue during the day shift of a quick return, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.



Fig. 7. Experience of stress during day shifts following a quick return, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.

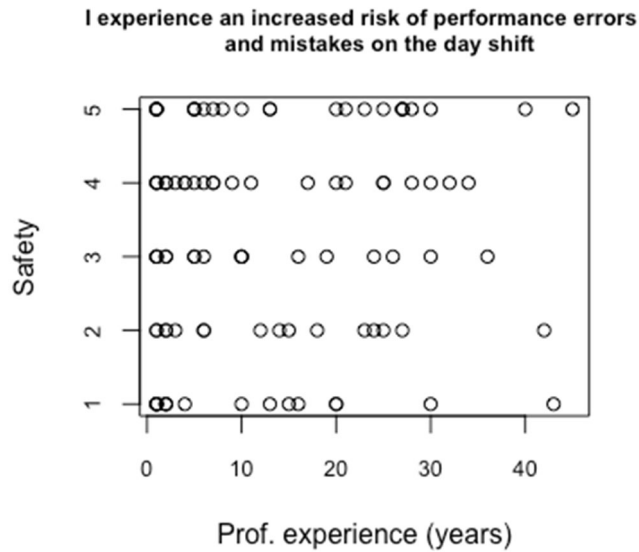


Fig. 8. Experienced risk of mistakes during quick returns, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.

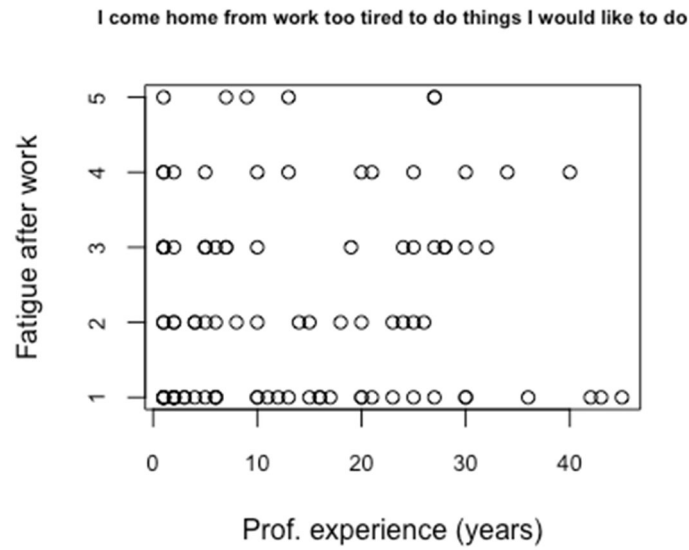


Fig. 9. Fatigue during leisure time after a quick return, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.

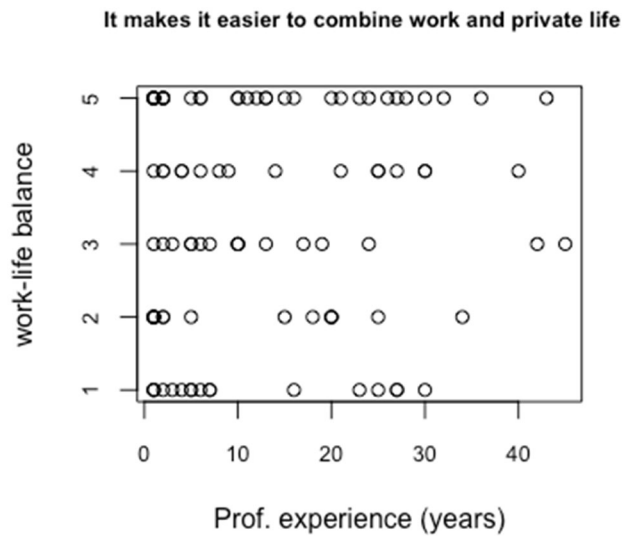


Fig. 10. Experience of whether work-life balance is facilitated by quick returns or not, plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Strongly agree, to 5 = Strongly disagree.



Fig. 11. Ease of taking reports on patients and making a plan for one's work, during day shifts that were preceded by a day of work. Response distribution plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Very easy, to 5 = Very difficult, and NA = Not applicable.



Fig. 12. Ease of taking reports on patients and making a plan for one's work, during day shifts that were preceded by a day shift. Response distribution plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Very easy, to 5 = Very difficult, and NA = Not applicable.

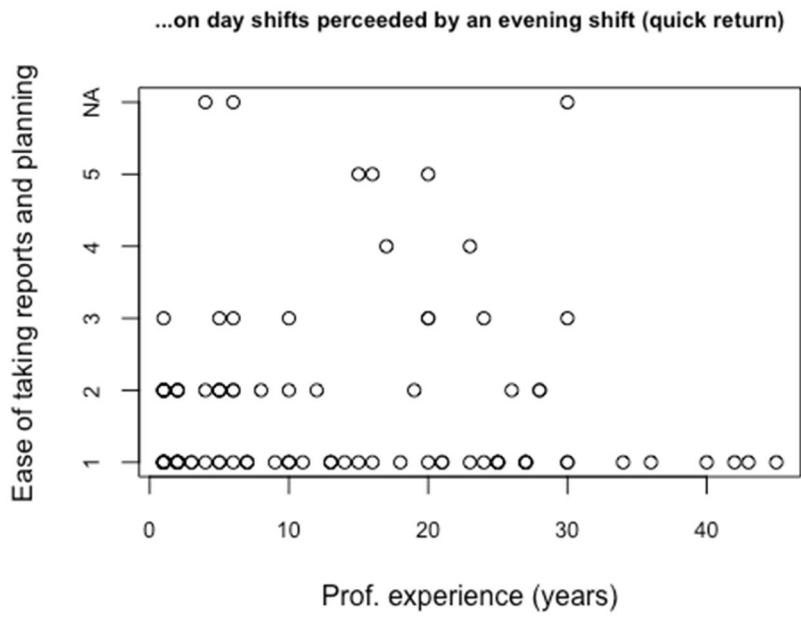


Fig. 13. Ease of taking reports on patients and making a plan for one's work, during day shifts that were preceded by an evening shift (quick return). Response distribution plotted against the number of years of professional experience. The response alternative is a Likert scale, ranging from 1 = Very easy, to 5 = Very difficult, and NA = Not applicable.

