The Relationship between Workload, Fatigue and Sleep Quality of Psychiatric Staff

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Abstract. The present research investigated the relationship between workload, fatigue, and sleep quality of physicians and nurses in psychiatric hospitals by conducting a cross-sectional survey and a diary study. Both studies were conducted in China in early 2021, investigating the effect of workload on fatigue and sleep quality among psychiatric staff in a real-life setting. Study 1 was a cross-sessional survey, investigating 334 responses from physicians and nurses in five psychiatric hospitals, and Study 2 was a diary study examining the association between workload, fatigue and sleep quality in the working week of 48 psychiatric staff. The findings from the first study showed that the staff reported a high workload, and fatigue and poor sleep quality were very prevalent. Workload was the strongest predictor of fatigue. In the diary study, workload and fatigue increased over the week, and sleep quality declined. This research has identified the importance of studying workload and its effects on psychiatric staff.

Keywords: Workload, occupational fatigue, sleep quality, psychiatric staff, diary study

1 Introduction

1.1 Mental Workload

Mental workload has been widely studied in both laboratory [1,2] and occupational settings [3,4,5]. Workload is a multi-dimensional concept involving time, task input load, operator effort, performance or other outcomes [6]. Wickens [7] stated that workload is defined by human's limited resources available for mental processing. It is considered as a mental construct of an "intervening variable" [8], reflecting the interaction of mental demands imposed on operators by tasks they are involved in [9]. Despite no clearly defined definition of mental workload, it is commonly accepted as

'the volume of cognitive work necessary for an individual to accomplish a task over time' [10,11,12].

Mental workload can be assessed by using self-report measures, task variables and physiological outcomes. Although fundamental research often requires comparing subjective and objective workload, the subjective measure can generally be considered sufficient [9,10]. The NASA-Task Load Index (NASA-TLX) and the Subject Workload Assessment Technique are well-known self-assessment tools for mental workload. Recently, the single-item measure of workload was also confirmed to be reliable and valid, and it was able to predict fatigue and wellbeing of workers and students [13,14,15].

Compared with different occupational groups, healthcare workers reported higher workloads and higher levels of effort [16]. The workload of physicians and nurses was a combination of time spent, mental effort and judgment, technical skill and physical effort, and perceived psychological stress while providing medical services [17]. Several previous studies [18,19,20] found that mental workload was the highest valued dimension among healthcare workers when using the NASA-TLX to measure multi-dimensional workload in a hospital. The continually evolving human-system interactions in healthcare require learning, processing new data inputs, and substantial adaptation by staff, leading to further mental costs [20]. As in general hospitals, physicians and nurses in psychiatric hospitals work under a high mental workload. However, there is very little relevant literature focused on psychiatric staff.

1.2 Occupational Fatigue

Occupational Fatigue is a common problem among workers. It represents a state of "extreme tiredness and reduced functional capacity experienced during or at the end of the workday" [21]. Fatigue's consequences mainly include impaired cognitive and skilled performance, negative mood, low wellbeing, physical and mental ill-health. In an occupational setting, fatigue can be considered the outcome of high workload, overtime work, low job support and control, shiftwork, poor work environment, or the combined effect of these factors [13,22].

Healthcare workers usually experience heavy workloads and shiftwork and, thus, suffer from high occupational fatigue. They report higher mental fatigue than physical fatigue [23]. The central role of fatigue in impairing their work performance has been supported by research using subjective measures, objective measures, or both [23,24,25,26]. In China, healthcare workers were listed as one of the most vulnerable work populations to occupational fatigue, followed by taxi drivers and police officers [27]. Existing literature on healthcare workers in China shows that fatigue is associated with workload and shift schedules and results in psychological withdrawal [28]. A study among surgery nurses showed that perceived fatigue was higher when working with a high workload [29].

Compared with general hospitals, physicians and nurses in psychiatric hospitals have a higher fatigue risk [30]. They have specific work characteristics, work environment, and service targets, which increases their psychological load [31]. Dong et al. [32] found that the fatigue phenomenon among staff in the closed management ward of the psychiatric department or hospital was severe and widespread, and the

leading causes for their fatigue include shiftwork, age, and the high-risk nature of the work itself. Psychiatric staff provide medical and nursing services to patients who have mental illnesses or mental disorders. At any time, they may be wounded or be injured, break facilities, escape from the ward, and even commit suicide. Accidents caused by patients such as lost property, infection, and accidental falls may also cause conflict between staff and the patients or their families. These will directly affect the psychiatric staff and put them under considerable mental pressure. Psychiatric staff were found to have a high level of mental and emotional exhaustion and be prone to negative emotions, which leads to increased fatigue [33], although individual differences such as personality have been suggested to affect the level of their fatigue [30]. It is apparent that there is insufficient research on workload and fatigue of psychiatric staff, and the association between them should be further studied.

1.3 Sleep

Quality of sleep guarantees work efficiency and helps recovery from fatigue. Vice versa, insufficient and inadequate sleep reduces work performance [34], can induce headaches and the feeling of fatigue [35]. Healthcare workers have a high incidence of sleep problems, reduced opportunities for sleep with minimal recuperation time, all of which contribute to their sleep problems and impairments in physical, cognitive, and emotional functioning [36,37]. Previous studies have also found an association between occupational fatigue and sleep quality in healthcare professionals [37,38,39]. The sleep of psychiatric healthcare workers has rarely been studied. Li et al. [31] showed that high fatigue and poor sleep quality were frequent among psychiatric staff. Recently, sleep disorders in psychiatric staff were found to be associated with impaired cognitive performance [40].

Sleep quality can be assessed by using subjective measurements, objective outcomes, or both. The subjective measurements include the Pittsburgh Sleep Quality Index scale (PQSI), sleep diary, and Morningness-Eveningness Questionnaire (MEQ). The Pittsburgh Sleep Quality Index scale (PQSI) is a commonly accepted standardised questionnaire developed by Buysse[41], which appraises sleep quality and differentiates "good sleepers" and "poor sleepers". The objective measurements include polysomnography (PSG) and actigraphy. In the current research, the Chinese version of PQSI [42] assessed sleep quality in the occupational setting.

1.4 Rationale of the present research

It is necessary to establish a work and sleep quality profile among physicians and nurses working in psychiatric hospitals before further fatigue management. The research described in the current paper aimed to examine the relationships between workload, fatigue, and sleep quality of physicians and nurses in psychiatric hospitals. It also aimed first to investigate the predictors of occupational fatigue among them, using the Demands, Resources, and Individual Effects (DRIVE) model [43] as the framework. The present study contributed to widening the research results in the field of workload analysis by collecting real data in an everyday setting, by translating the

research tools into Chinese, by testing that these tools are usable even in a different language and culture.

This research consisted of two studies, a cross-sectional survey and a diary study conducted in Maoming City in China. Study 1 involved a survey of reported mental workload, fatigue and sleep quality among doctors and nurses of the psychiatric hospital, utilising the Smith Wellbeing Questionnaire (SWELL) and the Pittsburgh Sleep Quality Index Scale (PSQI). Study 2 was a diary study that forty-eight psychiatric doctors and nurses completed at the start and end of the first and last day of their working week. The main items included in the diary were sleep duration, sleep quality, alertness before work, workload, and fatigue after work. It should be noted that the COVID-19 cases in that region of China were at zero for three months before and during data collection.

The remainder of this paper is structured as follows. Section 2 describes the methods and materials, the results and a summary of Study 1, while Section 3 describes Study 2. Section 4 discusses the results, highlights the contribution of current research and suggests future work. Section 5 summarises the main conclusions of this paper.

2 Study 1

2.1 Methods

Participants. Participants were physicians and nurses recruited from five public psychiatric hospitals in Maoming City, Guangdong Province, China. A total of 360 paper questionnaires were distributed from January to February 2021, and 334 valid questionnaires were returned with a response rate of 92.78%. The criteria for valid questionnaires were those with no obvious errors or omissions of two or more items. These participants were either nurses (N = 216, 64.7%) or physicians (N = 118, 35.3%) in psychiatric hospitals, with a mean age of 36.78 years (SD = 8.29, minimum 19yr, maximum 55yr). 60.18% of them were female (N = 201). The School of Psychology Research Ethics Committee at Shenzhen University reviewed and approved this study.

Materials. The survey included questions about demographics, the SWELL questionnaire, and the PSQI questionnaire. Demographic information included gender, age, years of work, job role, commuting time, and weekly working hours.

The SWELL questionnaire was developed by Smith and Smith [44] and has been used in previous studies in the real-life occupational setting to assess workload, fatigue and wellbeing [3, 13, 14]. It consists of twenty-six single-item questions, some of which were chosen from the Wellbeing Process Questionnaire (WPQ) [45], and took approximately 10 minutes to complete. Most of the questions were on a 10-point

scale, and the remaining were Yes/No answers. Such single-item measures were valid and reliable [13,46], allowed identification of the overall risks, saved time and brought convenience to this field study [3]. In the current study, workload and fatigue were the main variables of interest.

This survey was translated into Chinese using both forward and backward translations. Two researchers who were proficient in both English and Chinese performed the forward translation that translates the English version of SWELL into Chinese. An independent translator who did not know the assessment then performed the backward translation process. Comparison between the original English and the backward translated English versions were then carried out, and any discrepancies were discussed before any final adjustments were made to the questionnaire. The Chinese version of SWELL was piloted in January 2020 before it was used in the present study.

PSQI is a standardised self-reported questionnaire that assesses sleep quality over a one-month interval. It has been widely used and translated for use with Chinese samples. The PSQI included 19 items that generate seven factors: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. The sum of these factors (a global PSQI score), ranging from 0 to 21, indicates good or poor sleep quality. A higher score indicates worse sleep quality. In China, the standard global PSQI threshold is 8 [42], and a global score > 8 means poor sleep quality and potential sleep problems in a Chinese adult.

Procedure. The paper information sheet and informed consent form were distributed by researchers with permission and assistance from the hospitals. The purpose, significance and theme of the survey were explained in the information sheet, and participants were informed that they had the right to answer a paper questionnaire voluntarily and withdraw from the survey at any point. The paper survey was handed to participants after they signed the consent form. A pilot study was conducted to revise any potential problems with the Chinese version of these questionnaires before the formal survey started.

Analyses. Data analysis was carried out using SPSS 26. Pearson correlation was used to examine the associations between workload, fatigue and sleep quality, and logistic regression to investigate the predictors of occupational fatigue of psychiatric staff.

2.2 Results

Descriptive. Participants had a mean workload score of 7.40 ± 0.70 and a mean occupational fatigue score of 7.38±0.69, both of which showed a high level according to single-item measurements. The average PQSI global score was 9.51 ± 2.66, and 74.9% of participants had a score above 8, meaning their sleep quality was worse than that of Chinese adults in general.

Associations between Workload, Fatigue and Sleep Quality. Pearson correlation was used to investigate the association between workload, fatigue and sleep quality (shown in Table 1). Workload showed significant correlations with fatigue ($r = .831$, $p < .01$) and the sleep global score ($r = .213$, $p < .01$), with high levels of workload being associated with high levels of fatigue and poor sleep quality. Fatigue also showed a significant correlation with global sleep scores ($r = .227$, $p < 0.01$), with a higher level of fatigue associated with poorer sleep quality. Both workload and fatigue were significantly correlated with six of the seven PSQI factors, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, and daytime dysfunction, all $p < 0.05$. There was no significant association found between either workload or fatigue and the use of sleep medication.

Table 1. Correlation between workload, fatigue and sleep variables.

Heading level	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Workload (1)	1									
Fatigue (2)	.831**	1								
Subjective Sleep Quality (3)	.145**	.155**	1							
Sleep Latency (4)	.192**	.244**	.400**	1						
Sleep Duration (5)	.114*	.062	.192**	.267**	1					
Habitual Sleep Efficiency (6)	.108*	.119*	.211**	.356**	.526**	1				
Sleep Disturbances (7)	.120*	.143**	.402**	.430**	.201**	.197**	1			
Use of Sleep Medication (8)	.093	.097	.378**	.334**	.212**	.238**	.414**	1		
Daytime Dysfunction (9)	.211**	.207**	.672**	.506**	.274**	.402**	.513**	.473**	1	
Sleep Global Score (10)	.213**	.227**	.706**	.728**	.547**	.637**	.621**	.615**	.834**	1

*p<0.05, **p<0.01

Predictors of Fatigue. Logistic regressions were run to investigate the predictors of fatigue. Variables scores were categorised into a high/low group using a median split. The dependent variable was categorical fatigue (High/Low). The independent variables included in the model were social-demographic variables (age and gender), individual difference factors (personality and lifestyle) and work-related risk factors (workload, job control and support, being exposed to noise at work, and being exposed to fumes at work), in which age was continuous, and the rest of them were categorical. The OR effect size for each of the IVs is shown in Table 2 below.

The results showed that workload was the strongest predictor of reported high fatigue with an odds ratio of 86.234 ($p < .001$), which indicated that participants who reported a high workload were over eighty times more likely to report a high level of fatigue than those reporting a low workload after controlling social demography and individual difference factors in the model. No significant contribution from other work-related risk factors was found in this model.

Table 2. Odds ratio of IVs on fatigue.

Variables	Odds Ratio	95% C. I for Odds Ratio
Social Demographics		
Age	1.040	[0.986, 1.098]
Gender	1.216	[0.499, 2.966]
Personal Characteristics		
Personality (Negative)	1.545	[0.493, 4.842]
Lifestyle (Unhealthy)	0.803	[0.260, 2.477]
Work Characteristics		
Workload (High)	86.234**	[40.235, 184.820]
Job support and control (Low)	0.994	[0.451, 2.189]
Noise (High)	0.590	[0.262, 1.327]
Fumes (High)	1.441	[0.610, 3.402]

* $p<0.05$, ** $p<0.001$

2.3 Summary

Fatigue and poor sleep quality were the general problems in physicians and nurses working in psychiatric hospitals. The majority of the participant report high workloads and suffering from fatigue and sleep problem. 74.9% of the participant had their PSQI global score over 8, the standard threshold in China [42], indicating that their sleep quality was generally worse than that of normal Chinese adults. The present study showed that the associations between workload, fatigue and sleep

quality were significant, and with a higher workload, participants reported higher fatigue and more inferior sleep quality.

According to the DRIVE model, the predictors of fatigue were investigated by using logistic regression. The workload was the strongest and the only work-related predictor of occupational fatigue in the psychiatric industry. Participants who reported a high workload were over eighty times more likely to report a high level of fatigue than those reporting a low workload after controlling social demography and individual difference factors.

3 Study 2

3.1 Links between studies 1 and 2

Study 1 was a cross-sectional study using a sample of psychiatric staff, which provided an overview of participants' workload, fatigue and sleep quality over recent months. However, the short-term effect of workload on dynamic changes of fatigue and sleep quality was still lacking; thus, a continuous exploration of workload, fatigue, and sleep quality over a working week was needed. Study 2 was a diary study aiming to explore further the relationships between workload, fatigue and sleep quality over a working week. Participants recorded their sleep quality, occupational fatigue, and workload within one working week in the present study. This study aimed to demonstrate a relationship between workload, fatigue, and sleep quality to confirm the results from study 1.

3.2 Methods

Participants. Participants were 48 psychiatric staff, 20 male (41.7%) and 28 female (58.3%). The mean (±SD) age group was 36.21 (±9.49) years with a range of 19-53 years. The participants worked as doctors and nurses in one public psychiatric hospital in Maoming City, China.

Materials. Smith and Smith [3] developed and validated the diary, including five questions in the pre-work diary and five questions in the post-work diary. The pre-work diary was completed immediately before work, and the post-work diary was completed immediately after work, on the first and the last day of a working week (5 uninterrupted working days). The pre-work diary asked about sleep duration, sleep quality, commute time, general wellbeing, and alertness. The post-work diary asked about workload, effort, fatigue, stress, and break time (minutes). There were additional questions in the post-work diary on the last day, which asked participants whether their work task affects their sleep. If yes, participants were asked to provide examples; if not, they were asked to list the primary factors they believed affected their sleep.

Procedure. This study was conducted in March 2021. Participants in Study 1 were informed about this diary study and provided an informed consent form to ask if they would like to participate. If yes, they were asked to provide a start and end date for their usual working week. On the first and the last working day in the agreed testing week, participants were asked to complete a diary questionnaire under the required time frame. This study was reviewed and approved by the Ethics Committee of the School of Psychology, Shenzhen University.

Analysis. Data analysis was carried out using SPSS 26. Data were analysed using paired-samples t-test and Pearson correlation.

3.3 Results

Descriptive. Forty-eight participants fully completed the diary, 41.7% were doctors, and 58.3% were nurses. The range of their commute time was 15 minutes to 45 minutes, and the range of their rest time during work was between 120 to 180 minutes.

Perceived workload, fatigue, and sleep quality over the working week. Table 3 below shows the difference in sleep quality, subjective workload, and fatigue after work between the first and last workdays. As is shown, Sleep quality decreased during the week. Fatigue and subjective workload increased over the week.

Table 3. Descriptive Statistics for Mean of Variables.

Variables	First Day		Last Day	
	Mean	S.D	Mean	S.D
Sleep Quality	6.63	.937	5.85	.684
Subjective Workload	6.71	.852	7.33	.519
Fatigue after Work	6.85	.618	7.58	.647

A paired-samples t-test analysis was conducted to evaluate the impact of the working week on participants' ratings on perceived workload, fatigue and sleep quality.

There was a statistically significant decrease in sleep quality score from first working day (M = 6.63, SD = .937) to last working day (M = 5.85, SD = .684), $t(47) = 6.235$, $p < 0.001$ (two-tail). The mean decrease in sleep quality score was .771 with a 95% confidence interval ranging from .522 to 1.020. The eta squared statistic (.45) indicated a medium effect size.

Both fatigue and subjective workload were found to significantly increase from the first working day to the last working day (fatigue: $t(47) = -8.803$, $p < 0.001$; subjective workload: $t(47) = -7.148$, $p < 0.001$). The eta squared statistics for fatigue (.62), and for subjective workload (.52) indicated large effect size.

Association between workload, fatigue, sleep quality and other variables. A Pearson correlation was run to investigate the association between workload, fatigue and sleep quality.

On the first day, workload was positively correlated with fatigue ($r = .648$, $p < .001$) and stress ($r = .371$, $p = .010$) , and negatively correlated with rest time during work ($r = -.421$, $p = .003$) at a statistically significant level. Fatigue was significantly positively correlated with stress ($r = .547$, $p < .001$) and effort ($r = .440$, $p = .002$), while negatively correlated with break time during work ($r = -.535$, $p < .001$). Sleep quality showed a significant positive correlation with sleep duration ($r = .634$, $p < .001$) and general feeling ($r = .452$, $p < .001$). No significant associations between sleep quality and workload or fatigue were found.

On the last day, fatigue showed a significant positive correlation with stress ($r = .369$, $p = .005$) and effort ($r = .420$, $p = .003$). No other significant associations were found.

The weekly change scores of variables were calculated using the last-day scores minus the first-day work scores. The Pearson correlation result showed that the change of perceived workload was significantly associated with fatigue change ($r = .314$, $p = .030$). The change in sleep quality was not found to be significantly associated with either fatigue or workload.

In the post-work diary, participants were asked if their work tasks affected their sleep on the last day. In this open question, 41 of the 48 participants stated that their work-related factors affected their sleep. For example, they had too many patients each day, spent time receiving patients or their family members' calls, or consulting online during staff breaks, were assigned extra tasks by their supervisor, or had work that needed to be completed during non-working hours. Seven participants believed that work was not the most critical factor affecting their sleep, and the impact of work was less substantial than the impact of family relationships or life stress on their sleep. None of the respondents mentioned that COVID-19 brought them more mental workload or impacted their sleep.

3.4 Summary

The present diary study aimed to explore the relationships between fatigue, workload and sleep quality in realistic situations over a working week. The results showed that within the working week, as the number of working days increased, the perceived workload and fatigue increased, while the sleep quality deteriorated. These effects of the working week were found to be significant. Similarly to study 1, workload and fatigue showed a significant positive correlation in the present study. However, no significant correlation was found between sleep quality and workload or between it and fatigue.

4 Discussion

Occupational fatigue and poor sleep quality were common occupational issues among working people, especially medical workers. Psychiatric medical staff, like other workers in this industry, work under a high mental workload. However, there is very little relevant literature focused on psychiatric staff. This research aimed to examine the association between workload, occupational fatigue, and sleep quality of the psychiatric medical staff. The present research included two studies: Study 1 was a cross-sessional study using SWELL and PSQI, and study 2 was a diary study conducted in Maoming City in China. Both two studies showed the associations between workload, fatigue and sleep quality, supporting the hypothesis that workload affects fatigue and sleep quality among psychiatric staff.

The finding of study 1 suggested that the majority of the psychiatric staff report a high mental workload, which was in line with the previous studies of other healthcare staff, either inside or outside China [16,28,29]. It is also in line with previous studies using NASA-TLX to measure workload [18,19,20]. Meanwhile, they suffered from fatigue and sleep problem with high self-reported ratings. It was not surprising that the fatigue and poor sleep quality were frequent among psychiatric staff, with a higher fatigue score and severe sleep problems, just as Li et al. [31] suggested. However, it should be noticed that 74.9% of the participant in the present study had their PSQI global score above the number 8, the standard threshold in China [42], indicating that most of their sleep quality was generally worse than that of normal Chinese adults.

The findings showed clear associations between workload, fatigue and sleep quality so that those with a higher workload reported higher fatigue and worse sleep quality. In study 1, such correlations were significant. Although in study 2, the associations between workload and sleep quality did not reach statistical significance, the effect of workload was found to be significant for sleep quality, with self-reported sleep quality scores significantly decreasing over the working week with a medium effect size.

The qualitative data also supported the effect of workload on sleep. 41 of the 48 participants stated that work-related factors were affecting their sleep. The examples they provided in the open question gave a detailed picture of the nature of their daily work. These work-related factors influenced their sleep quality and included too many

patients each day, receiving patients or their family members' calls or consulting online during staff breaks, and being assigned extra tasks by their supervisor. Further research needs to investigate their non-working hours, as other participants believed that work was not the most crucial factor affecting their sleep, and it was family relationships or life stress that was affecting their sleep quality.

This research also aimed to investigate the main predictors of the occupational fatigue of psychiatric staff, as there was limited literature concerned with fatigue in this particular job. In study 1, workload was the strongest and only work-related predictor of occupational fatigue in the psychiatric staff, partially supporting the DRIVE model [43]. Participants who reported a high workload were over eighty times more likely to report a high level of fatigue than those reporting a low workload after controlling social demography and individual difference factors. In study 2, the diary result showed a large effect size of weekly work on fatigue. Both studies supported the hypothesis that workload affects fatigue and sleep quality among psychiatric staff. These results bring more insight in understanding the relationship between workload, fatigue and sleep quality among psychiatric staff and can be used to back up initiatives to detect work-related fatigue quickly in order to provide adequate support to the medical and psychiatric staff suffering from the workload and take action to reduce the risks of ill-health and accidents.

An essential feature of the study was the use of single-item measures of workload and fatigue. We translated the SWELL questionnaire[3] from its original English version to the Chinese version by forward-translation and back-translation. Such measurements are acceptable, manageable, can be further applied in field studies of real-life settings, particularly in the medical workplace, as it allows us to identify risk factors conveniently in a short time compared to multi-item measures. Detecting work-related fatigue quickly will allow individuals to self-manage fatigue and allow organisations to provide adequate support to the medical and psychiatric staff and to take action to reduce the risks of ill-health and accidents.

4.1 Limitations

The unexpected results led to reflections on the limitations of this research. The single-item measurement of sleep quality currently used in the diary study may have its limitation. When the PSQI was used as a multi-item measurement in study 1, the associations between sleep quality (its seven factors and the global score) and fatigue was apparent. However, when a single-item measurement of sleep quality was used in the diary study, no such associations were found. In the future, one could integrate the objective measurement of sleep quality (e.g., actigraphy) and the single-item measurement of sleep quality to further examine any potential bias. Furthermore, the sample used in the present study was from psychiatric hospitals in one medium city in China, which may limit the generalisation of the results to psychiatry staff working in general hospitals or those with other cultural backgrounds.

5 Conclusion

Overall, the studies described in this article have shown that psychiatric staff have a high workload, leading to high fatigue and poor sleep quality. Associations between workload and fatigue were found in both studies, probably due to using the same measuring instruments. The sleep quality associations seen in study 1 with the PQSI were not observed when single sleep items were used in the diary study. Further research must determine whether this reflected the different measuring instruments or the focus on specific days. The influence of non-work confounders also needs to be addressed, as does the extent to which effects of workload may persist outside of the workplace.

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