

Need for recovery from work and sleep-related complaints among nursing professionals

Aline Silva-Costa^{a,*}, Rosane Harter Griep^a, Frida Marina Fischer^b, Lúcia Rotenberg^a

^aLaboratory of Health, Environment and Education, FIOCRUZ, Av. Brasil 4365 - Manguinhos, Rio de Janeiro CEP: 21040-360 Rio de Janeiro, Brazil

^bSchool of Public Health, University of São Paulo, Av. Dr. Arnaldo, 715, São Paulo, Brazil.

Abstract. The concept of need for recovery from work (NFR) was deduced from the effort recuperation model. In this model work produces costs in terms of effort during the working day. When there is enough time and possibilities to recuperate, a worker will arrive at the next working day with no residual symptoms of previous effort. NFR evaluates work characteristics such as psychosocial demands, professional work hours or schedules. However, sleep may be an important part of the recovery process. The aim of the study was to test the association between sleep-related complaints and NFR. A cross-sectional study was carried out at three hospitals. All females nursing professionals engaged in assistance to patients were invited to participate (N=1,307). Participants answered a questionnaire that included four sleep-related complaints (insomnia, unsatisfactory sleep, sleepiness during work hours and insufficient sleep), work characteristics and NRF scale. Binomial logistic regression analysis showed that all sleep-related complaints are associated with a high need for recovery from work. Those who reported insufficient sleep showed a greater chance of high need for recovery; OR=2.730 (CI 95% 2.074 – 3.593). These results corroborate the hypothesis that sleep is an important aspect of the recovery process and, therefore, should be thoroughly investigated.

Keywords: Need for recovery, Sleep complaints, Work, Nursing professionals

1. Introduction

The concept of the need for recovery, defined as the need to recuperate from work-induced fatigue [23], considers the extent that the work task induces a collection of symptoms, characterized by temporary feelings of overload, irritability, social withdrawal, lack of energy for new effort, and reduced performance [18]. Those early signs of fatigue correspond to the short-term work effects, which are mostly experienced during or immediately after work [12]. The need for recovery from work is not viewed as a problem if workers have enough time to recover between periods of work [24]. According to the theoretical model presented by Sluiter et al [13], the need for recovery would function as a work-related fatigue variable, which has an intermediate position between work demands and future health status. It is a concept

that would reflect an initial stage of a continuum process of fatigue [23].

It is well known that sleep has an important role in the recovery of an individual as sleep has restorative functions for an individuals' physiology, particularly for the brain [28]. According to Jansen et al [22] sleep might interfere in the recuperation process, as it influences the available time to recover. In addition, good sleep and lack of sleep problems are related to reduced fatigue [5,25]. According to Eek et al [7] insufficient sleep is a contributing factor to lack of recovery. However, there are few observational studies evaluating the relationship between sleep' characteristics and need for recovery from work. A recent study conducted with nursing professionals who worked the night shift showed that sleeping on the job for 2–3 hours during night shifts is related to a better recovery from work provided that workers were not submitted to long domestic work hours [3]. As sleep has been neglected in studies on recovery

* Corresponding author. E-mail: alinecos@ioc.fiocruz.br

[14], researches should pay more attention to sleep [6].

In this perspective, the aim of the study was to test the association between sleep-related complaints and recovery from work among nursing professionals.

2. Methods

A cross-sectional study was conducted at three public hospital units in Rio de Janeiro, Brazil. Data collection took place from June 2005 to March 2006. All female nursing professionals (nurses, nursing aides/assistants) engaged in assistance to patients at hospitals were invited to participate (N=1,307). The procedures used for contacting workers were in compliance with ethical aspects to conduct research with human subjects. The project was approved by the Ethics Committee of the Oswaldo Cruz Foundation, and by the Ethics Committee of each studied hospital; it was also approved by the Brazilian National Committee of Ethics, under the number CONEP-10228.

Data collection was based on a comprehensive questionnaire that included information on sociodemographics, lifestyle, sleep and health-related behaviors and work variables. Trained interviewers recorded this information from participants as a means to increase the accuracy of the data. The second part of the survey was a self-report and included the items concerning the Need for Recovery from Work Scale.

After revision and coding questions, data from the questionnaire was typed through double entry, a procedure that allows the identification of errors by confronting data typed by two distinct professionals. The Epi Info Software, version 6.0, was used to prepare the data bank for further analysis.

2.1. Definition of variables

- Need for Recovery from Work (NFR)

In the present study, we used the need for recovery from work scale as a tool for analyzing the short-term effects of work on fatigue, as this scale is supposed to reflect both the effects of work and the recovery time [22]. This variable was analyzed by means of the need for recovery from work scale [12,19], which consists of 11 dichotomized questions, such as: 'At the end of a working day I am really feeling worn-out' and 'I find it hard to relax at the end of a working day'. This scale leads to a score that varies from 0 to 11, which is recoded to a range between 0 and 100 [22]. Workers were classified into two groups

corresponding to those who reported higher and lower need for recovery. The higher need for recovery was defined as being in the last tertile according to procedures concerning the cut-off point for poor recovery from work [9].

- Sleep-related complaints

1. Unsatisfactory sleep: non-satisfactory sleep was analyzed through the question "How satisfied are you with your sleep?" derived from the Brazilian version of the WHOQOL-brief [21]. The response alternatives were: very unsatisfied, unsatisfied, neither satisfied nor unsatisfied, satisfied, and very satisfied. Workers were classified in the non-satisfactory sleep group if they reported to be "unsatisfied" or "very unsatisfied" with their sleep.

The variables 2, 3 and 4 were related to a four-week interval, with the following response alternatives: never, rarely, sometimes, almost always, and always. Workers who answered "almost always" or "always" to any of these questions were classified in the respective group of sleep-related complaints.

2. Sleepiness during work hours: sleepiness during work hours was analyzed through the question "Feel sleepy during work"

3. Insufficient sleep: this variable was analyzed through the question "Feel that you hadn't slept enough."

4. Insomnia complaints: the variable "insomnia complaint" referred to workers who had any of the described sleep problem (A. difficulty falling asleep; B. difficulty maintaining sleep; or C. early morning awakening). Questions A to B were related to a four-week interval, with the following response alternatives: never, rarely, sometimes, almost always, and always. Workers who answered "almost always" or "always" to any of those questions (A, B or C) were classified in the insomnia complaint group [20].

2.2. Data analysis

The association between need for recovery and each sleep-related complaint variable was tested through binomial logistic regression, with results presented as Odds Ratios and 95% confidence intervals. The following variables were tested as confounders for analysis: body mass index (BMI), physical activity, age, marital status, education degree, professional category, work ability, type of employment, professional work hours, domestic work hours, work schedules and environmental factors affecting sleep quality (temperature, noise, lighting, people

sharing bedroom, insecurity). Potential confounders were screened by bi-variant Chi-square tests. Those with at least a minimum association ($p < 0.20$) were selected for inclusion in the models.

Descriptive analyses of sociodemographics data as well as variables related to work and lifestyles were based on chi-square tests (significance at 0.05). Statistical analyses were performed using the SPSS software, version 18.0.

3. Results

Table 1 describes the main characteristics of the studied group. Concerning sleep-related complaints,

workers who reported sleepiness during work hours, insufficient sleep and unsatisfactory sleep were younger, spent more hours on professional work and less time doing housework, compared to those who did not have such complaints. The group of workers who reported complaints of insomnia were older, spent more hours at professional work and had a lower monthly family income, compared to those who had no insomnia complaints (Table 1).

Workers who reported any sleep-related complaint had a greater chance of reporting high need for recovery from work (Table 2).

Table 1

Description of the sample (n=1,307), sociodemographic data, and variables related to work and lifestyle.

	Insomnia complaints		Unsatisfactory sleep		Insufficient sleep		Sleepiness during work hours	
	No (n=962)	Yes (n=345)	No (n=842)	Yes (n=463)	No (n=719)	Yes (n=588)	No (n=1003)	Yes (n=304)
Age (mean;SD)	39.5;12.9	41.7;12.4 [#]	42.1;12.4	36.5;12.6 [#]	43.3;12.2	36.2;12.3 [#]	42.0;12.6	33.8;11.4 [#]
Monthly family income (mean;SD) in USD	407.8;306.5	351.6;240 [#]	376.9;291.7	423.4;289.2 [#]	393.9;308.6	392.1;269.4	382.6;283	427.1;316.7 [#]
Weekly domestic work hours (mean;SD)	15.4;14.9	18.2;15.6 [#]	16.7;15.0	15.1;15.2 [#]	17.1;15.1	14.9;15.1 [#]	13.6;14.7	14.7;16.2 [#]
Weekly professional work hours (mean;SD)	47.1;19.4	46.2;19.5	44.2;18.0	51.7;20.9 [#]	43.7;17.7	50.8;20.8 [#]	45.4;18.6	51.6;21.3 [#]
NFR	49.1;21.8	61.8;19.1 [#]	47.3;21.8	60.9;20.0 [#]	45.5;21.8	60.0;20.0 [#]	49.1;22.7	61.8;19.1 [#]
Overweight/obese (%)	70.9	29.1 [#]	69.0	31.0 [#]	61.1	38.9 [#]	82.0	18.0 [#]
Smoking habits (%)	68.0	32.0	65.1	34.9	51.2	48.8	77.3	22.7
School education (%)								
Fundamental/High school	73.5	26.5 [#]	74.4	25.6	65.4	34.6 [#]	81.9	18.1 [#]
College education	73.8	26.2	57.2	42.8	47.3	52.7	72.8	27.2

[#] p value < 0.05

Table 2

Association between the sleep-related complaints and recovery from work among nursing workers; odds ratios (95% confidence interval).

	Model 1	Model 2	Model 3
Insomnia complaints			
No	1	1	1
Yes	2.194 (1.689 – 2.851)	1.977 (1.489 – 2.625)	1.896 (1.422 – 2.527)
Unsatisfactory sleep ¹			
No	1	1	1
Yes	2.887 (2.260 – 3.687)	2.429 (1.854 – 3.183)	2.373 (1.809 – 3.112)
Insufficient sleep ¹			
No	1	1	1
Yes	3.709 (2.905 – 4.736)	2.807 (2.136 – 3.689)	2.730 (2.074 – 3.593)
Sleepiness during work hours ¹			
No	1	1	1
Yes	2.276 (1.735 – 2.986)	1.801 (1.330 – 2.437)	1.738 (1.282 – 2.357)

Model 1: unadjusted. Model 2: adjusted for age, physical activity, work schedules, work ability, domestic work hours and BMI; additional adjustment was: ¹professional work hours.
 Model 3: adjusted for variables in model 2 plus environmental factors affecting sleep quality.

4. Discussion

The association between reporting insomnia complaints, unsatisfactory sleep, sleepiness during work hours, insufficient sleep and need for recovery from work support the hypothesis that sleep is an important aspect involved in the recovery process.

Concerning everyday situations, individuals express the need for recovery as the desire to "recharge their batteries", as commented by Sonnentag and Zijlstra [26]. From this viewpoint, the perception of a good sleep quality, reflected in the absence of complaints by workers could be seen as an opportunity to recover.

Significant associations here observed were maintained independently of the features related to professional work and environmental factors that disrupt sleep. These results suggest that the need for recovery encompasses not only occupational variables, as indicated in different studies [12,22], but also aspects that are not directly involved with the dynamics of work [23] such as, housework [15,16] and off-job activities [26].

In relation to adverse environmental conditions such as temperature, noise, lighting, which can interfere with sleep quality [1,10], the results point to the issues inherent in the psycho-physiological sleep

complaints, that should be involved in this association.

In this investigation, all sleep-related complaints, which are related to both subjective quality and sleep duration, were strongly associated with increased need for recovery. However, some authors show that the quality and quantity of sleep may present differently in relation to health-related outcomes [11], suggesting thorough studies of each of these variables. Akerstedt et al. [27] defend that when it comes to recovery, sleep quality seems to be more important than the duration of sleep itself.

The association between unsatisfactory sleep and recovery was also found in another study on nurses who had napping episodes during night shifts [3]. Moreover, in the present study, a greater chance of increased need for recovery was found among those who reported insufficient sleep. These data remit to the comments by Sonnentag and Zijlstra [26] on the relationship between sleep deprivation and an increased need for recovery after work, given that unsatisfactory sleep, especially at night, is related to sleep deprivation, albeit partial [2,8,29].

A study on recovery and performance among workers showed that the perception of sleep (subjective quality and sufficient sleep) during the weekend

was associated with recovery status on Monday, and that, consequently, reflected in work performance next week [6]. In other words, the absence of sleep complaints are related to better recovery, given the increased alertness and decreased fatigue [5,25], contributing to better job performance and wellbeing.

Also in this context, according to Eek et al [7], insufficient sleep is a factor that contributed to the lack of recovery among workers. Therefore, as described by [24] the recovery process depends on time and enough opportunities to satisfy the worker's own needs for recovery, which includes rest and / or leisure activities. In this perspective, the need for recovery, which would act as an intermediate variable between work demands and future health status, deserves deeper investigations considering variables related or not with professional work.

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