

The Relation between Sleep and Teaching Effectiveness Among Teachers as Faculty of Education Master Students

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Abstract

Work-health balance is the ability to balance between your body needs for a good health and your job responsibilities. Such balance appears to be more challenging when a person is both an employee and a student at the same time. Scientists have confirmed that sleep is necessary for our healthy functioning and even survival. And because most master students study and work at the same time, getting enough sleep becomes a challenge for them. It was important to detect if such deficiency in sleep has a relation with their teaching effectiveness. The aim of this quantitative research is to find the relation between sleep and teaching effectiveness among Faculty of Education master students that are also teachers. So, what is the type of the relation between sleep and teaching effectiveness of such teachers? We predict that the teaching effectiveness of teachers increases as the average sleep hours increase with a better sleep quality. In order to verify this hypothesis, a questionnaire was distributed among Lebanese University – Faculty of Education master students. 48 students of different majors with different teaching subjects and years of teaching experience responded to our questionnaire. By regression analysis, it appears that such expected relation is not significant. Moreover, such relation is a moderate negative relationship. As a conclusion, the suggested hypothesis was not validated, and the teaching effectiveness of teachers as master students was not significantly related to sleep.

Keywords

Teaching effectiveness, sleep, master students, teachers

Résumé

L'équilibre travail-santé est la capacité à concilier les besoins de son corps pour une bonne santé et ses responsabilités professionnelles. Cet équilibre semble plus difficile lorsqu'on est à la fois employé et étudiant. Les scientifiques ont confirmé que le sommeil est nécessaire à notre bon fonctionnement, voire à notre survie. Comme la plupart des étudiants en master étudient et travaillent simultanément, dormir suffisamment représente un défi pour eux. Il était important de déterminer si ce manque de sommeil était lié à l'efficacité de leur enseignement. L'objectif de cette recherche quantitative est d'identifier la relation entre le sommeil et l'efficacité de l'enseignement chez les étudiants en master de la Faculté des sciences de l'éducation qui sont également enseignants. Quel est donc le type de relation entre le sommeil et l'efficacité de l'enseignement chez ces enseignants ? Nous prévoyons que l'efficacité de l'enseignement des enseignants augmente avec l'augmentation du nombre moyen d'heures de sommeil et une meilleure qualité de sommeil. Afin de vérifier cette hypothèse, un questionnaire a été distribué aux étudiants en master de la Faculté des sciences de l'éducation de l'Université libanaise. 48 étudiants de différentes spécialisations, de différentes matières et ayant des années d'expérience en enseignement différentes ont répondu à notre questionnaire. Une analyse de régression révèle que cette relation attendue n'est pas significative. De plus, il s'agit

d'une relation négative modérée. En conclusion, l'hypothèse suggérée n'a pas été validée et l'efficacité pédagogique des enseignants en master n'était pas significativement liée au sommeil.

Mots-clés

Efficacité de l'enseignement, sommeil, étudiants en master

مستخلص

يعرف التوازن بين العمل والصحة بأنه القدرة على الموازنة بين احتياجات الجسم للصحة الجيدة كالنوم والغذاء والراحة الجسدية والنفسية من جهة وبين ومسؤوليات العمل من جهة أخرى. ويبدو هذا التوازن أكثر صعوبة عندما يكون الشخص موظفًا وطالبًا في الوقت نفسه حيث يتوجب عليه مسؤوليات عديدة كمسؤولياته تجاه عمله من جهة ومسؤولياته كطالب من جهة أخرى. وقد أكد العلماء أن النوم ضروري لأداء وظائفنا بشكل صحي وبشكل صحيح وللابتعاد عن الأخطاء التي قد تنتج عن قلة التركيز أو الانزعاجات الناتجة عن النوم الغير كافي، بل وحتى للبقاء على قيد الحياة. ولأن معظم طلاب الماجستير يدرسون ويعملون في الوقت نفسه، فإن الحصول على قسط كافٍ من النوم يُمثل تحديًا لهم وصعوبة من حيث إدارة المسؤوليات وابعاء العمل والدراسة والمحافظة على صحة جيدة. كان من المهم معرفة ما إذا كان لنقص النوم لدى الاساتذة الذين يتابعون دراساتهم العليا علاقة بفاعلية التدريس لديهم. يهدف هذا البحث الكمي إلى إيجاد طبيعة العلاقة بين النوم وفعالية التدريس لدى طلاب الماجستير في كلية التربية الذين يعملون أيضًا كمعلمين. فما نوع العلاقة بين النوم وفعالية التدريس لهؤلاء المعلمين؟ نتوقع أن تزداد فعالية التدريس لدى المعلمين مع زيادة متوسط ساعات النوم مع تحسن جودة النوم. وللتحقق من هذه الفرضية، وُزِع استبيان على طلاب الماجستير في كلية التربية في الجامعة اللبنانية. وقد أجاب على الاستبيان 48 طالبًا من تخصصات مختلفة، بمواد تدريسية وسنوات خبرة تدريسية مختلفة. وتحليل الانحدار، يتبين أن هذه العلاقة المتوقعة ليست ذات دلالة إحصائية، بل هي علاقة سلبية متوسطة. في الختام، لم تُثبت صحة الفرضية المقترحة، ولم تكن فعالية التدريس لدى المعلمين كطلاب ماجستير مرتبطة ارتباطًا وثيقًا بالنوم.

كلمات المفتاحية

فعالية التدريس، النوم، طلاب الماجستير

1. Introduction

The research on the work-life interface has gained considerable attention due to demographic changes, technological advancements, environmental shifts, and evolving individual expectations (Sharma & Tiwari, 2023). The employees' ambitions for rising their job demands, and the blurred boundaries between work and personal life domains allows the employees to become connected to work more than maintaining balance in their lives (Van Beek et al., 2012). According to Acta Psychologica, 2024, work-life balance and work-health balance must be satisfied for such employees. Work-life balance is the ability to balance between your work responsibilities and your life, moreover, work-health balance is the ability to balance between your job responsibilities and your body needs in order to maintain a good health. Sleep is necessary for our survival and body functioning to maintain a good health. And because most master students study and work at the same time, getting enough sleep becomes a challenge for them. It was important to detect if such deficiency in sleep has a relation with their work performance. Previous researches focused on the work-health balance of employees. So, it is important to be more specific and detect if the deficiency in sleep has a relation with the teaching effectiveness of teachers, more specific, teachers as Master students. Defining the teaching effectiveness is complex and there are many conceptions of teacher effectiveness, it is often defined as the ability to produce gains in student achievement scores (Little, O., Goe, L., & Bell, C., 2009). The aim of this quantitative research is to focus on the relation between sleep and the teaching effectiveness among Faculty of Education master students that are also teachers. So, what is the type of the relation between sleep and teaching effectiveness of such teachers? We predict that the teaching effectiveness of teachers increases as the average sleep hours increase with a better sleep quality. In order to verify if this hypothesis is valid or not, a quantitative research is made on the Lebanese University- Faculty of Education master students that currently work as teachers. This research is done to better understand the type of the relation between their sleep and their teaching effectiveness, because such understanding help to improve the educational outcomes for both teachers and students.

2.Theoretical Framework

Neurocognitive theories of sleep:

In 2005, Durmer, J. S., & Dinges, D. F. stated that sleep loss costs deficits in daytime performance. This is experienced universally with a significant social, financial and human cost. They added: "Sleep deprivation studies repeatedly show a variable (negative) impact on mood, cognitive performance, and motor function due to an increasing sleep propensity and destabilization of the wake state. Specific

neurocognitive domains including executive attention, working memory, and divergent higher cognitive functions are particularly vulnerable to sleep loss". Recent experiments suggest that sleep loss may cause a critical role in humans' performance during the day. (Durmer, J. S., & Dinges, D. F., 2005). Based on the above information, sleep deficiency may cause a very low teaching effectiveness and performance for teachers in their classes because teachers are multitaskers, and they need to be quick thinkers, patient and be organized and calm during their classes and when preparing for classes and for the exams.

Moreover, and according to Haskell, B., Eiler, A., & Essien, H. (2025), "Sleep affects musculoskeletal recovery, cognitive function, and immune response, which may further exacerbate injury risk", in addition to that, during sleep neurobiological process are crucial for muscle repair, cognitive function and immune efficiency which integrate in the teaching effectiveness of teachers that need to be in a good health to be productive during their classes.

3. Literature Review

"Insufficient sleep is common among teachers and is associated with diverse health risks", moreover, teachers live in a highly stressful occupation compared to other occupations and with high job strain, teachers report poorer sleep (Schmidt, L. I., Steenbock, L. M., & Sieverding, M., 2023). Differences regarding the schedule, length and regularity of sleep was observed between worker and non-worker students. Non-worker students usually go to sleep and wakeup later compared to worker students. (Vinha, D., Cavalcante, J. A., & Andrade, M. M., 2002). In this case, it is clear that teachers that are doing their master's degree usually have insufficient sleep due to their responsibilities as teachers and as students at the same time which leads to many problems. Moreover, "it is clear that insufficient sleep is a major factor governing mood, alertness, concentration, learning, and ultimately performance in the academic environment" (Eliasson, A. H., Lettieri, C. J., & Eliasson, A. H., 2010). and this could affect the teachers' effectiveness and their academic performance as students. Moreover, highly effective teachers are necessary to improve student performance and there is a growing interest in identifying individual teachers' impact on student achievements (Little, O., Goe, L., & Bell, C., 2009). And to reach the goal that teachers are really effective during the classes, teachers must take the necessary rest and sleep to make classroom management, make productive lesson plans and engage students during the class.

- To improve teaching practices, strategies, quality and learning outcomes, educational researches must be done. These researches must rely on the factors that affect the teachers' effectiveness. We saw before the importance of sleep and its deficiency effect in many domains. This research is an example on the educational researches that could help to improve the teaching effectiveness with better educational outcomes.

- My Experience as a case example:

During my first year of teaching, I was also a master student. It was hard to take the sufficient sleep due to my responsibilities as a teacher for the first time and as a master student. It was a struggle to

maintain patience and to be organized on the days that I hadn't enough hours of sleep due to my responsibilities. I faced difficulties in managing classrooms and to stay calm and it was very difficult to regulate stress and bad mood due to the lack of sleep. Moreover, it was hard to engage students while feeling stressed, tired and mentally exhausted. This aligns with the information presented above regarding the bad effects of insufficient sleep on people's performance.

- According to Souza, J. C. D., Sousa, I. C. D., Belísio, A. S., & Azevedo, C. V. M. D. (2012), the socioeconomic status of teachers affects the quality of life. Teachers have to teach by different shifts due to low salaries and thus have longer working hours and starting their work activities much earlier than others, and end them much later, they face a constant daily challenge of updating their teaching methodology due to the lack of free time to prepare lessons in a more modern way, lack of rest and the deficiency in sleep. This meets with our topic from the same hand that we are talking about teachers with more responsibilities, less amount of rest and less sleep hours. This supports the idea that sleep deficiency affects negatively the teaching effectiveness of teachers by affecting their life quality and their health.

- To ensure the importance of the topic of this research that emphasizes on the relation between sleep and teaching effectiveness of teachers that are also master students who face difficulty in getting enough sleep, here comes additional resources and literature review about the bad effects of sleep on teaching performance: In the academic field, workplace accidents in addition to low teaching performance and high rate of absenteeism could be an outcome associated with sleep deficiency. Moreover, "In 2008, it was found that adults working at least 30 hours per week for pay in the United States were averaging 6.7 hours of sleep per night. In addition, 33% of respondents reported getting a good night sleep only a few times per month or less. Individuals in these categories were much more likely to report that they experienced high levels of daytime sleepiness, which interfered with their daily activities" (Amschler, D. H., & McKenzie, J. F., 2010). Moreover, a study of 588 employees in San Francisco area showed that a lower job satisfaction and more missing work days were reflected from 80% of employees that are experiencing sleep problems. The studies which do exist have been largely conducted in Great Britain and other European countries, where the Sleep Council of Great Britain compared 8 categories of working adults by their average sleep hours per night. Teachers were one of these 8 categories. They averaged six hours of sleep per night ranked as the third lowest average of the averages of the eight professions. Moreover, "in a study of perceived fatigue related to work, they found that among 94 teachers, "lack of energy" was the main fatigue dimension reported". Moreover, they found that 58.5% of the teachers reported difficulties with sleeping while 49.6% reported having sleep problems. The teachers were also more likely to smoke, drink alcohol daily and miss work because of sickness. (Amschler, D. H., & McKenzie, J. F., 2010). Moreover, Cropley et al. in 2013 found that among 143 public school teachers surveyed, those reporting higher levels of job strain(N=98) also experienced poorer sleep quality.

Based on the above literature review, it is very clear that teachers with poor sleep hours and poor sleep quality face problems in achieving high teaching effectiveness and maintain their mental and physical health. However, Rinhard Pekrun in 2021 stated that teachers need self-regulation, motivation and emotions and the extent researches have documented weak effects of these variables. So, he discussed possible reasons for the failure of proving the important effects of such variables on teachers. "In addition to conceptual problems, research has focused too much on using between-person designs, variables with truncated distributions and reduced variance, and samples from single Western

countries". He added: more fine-grained theoretical models that explain the mechanisms regarding these variables must be done in order to understand the effects of teacher variables on student outcomes. Hence according to Pekrun, there are many variables that could affect the teaching effectiveness of teachers that are not taken into consideration in most researches; hence a teacher could have sleep deficiency but with a high teaching effectiveness due to other variables like self-regulation and motivation.

4. Methodology of the research

A quantitative research was done in order to know the type of the relationship between sleep and teaching effectiveness of teachers as Master students, and to verify if the prediction was valid or not, a questionnaire was sent to the Mater students in the Lebanese University- Faculty of Education-Deanery. This questionnaire was made up of an introduction that provides guidelines for the participants and 21 questions divided into 3 parts: demographics, questions related to sleep hours and sleep quality and questions related to the teaching effectiveness (how teachers see their performance and their students' performance in the class). This questionnaire was seen by an expert and before sending it to a sample, this question was sent to 3 master students to ensure the validity of the research by piloting. The sample was chosen by snowball sampling. 54 students responded to our questionnaire, but only 48 master students are also teachers. So, our sample was 48 students of different majors with different teaching subjects and years of teaching experience. 46.3% of the sample were aged between 20 and 29 years. 85.2% were females, and the others were males. Most of the individuals in our sample have from 1 to 5 years of teaching experience. The results were collected, and it was organized in a table (excel file) and then analyzed using regression analysis (SPSS). Using SPSS, Cronbach alpha = 0.571 and this indicates poor reliability. All the variables related to the teaching effectiveness were transformed and computed to one variable to be the dependent variable, and all the variables related to sleep were the independent variables in order to make the regression analysis which is considered the best test to identify the type of the relation between sleep and teaching effectiveness of teachers as master students and to test the significance of such relation.

Limitations of the study

- The small sample size was a result of dealing with participants from behind the screens which results in smaller responses to the questionnaire, and thus the inability to generalize the results due to the sampling method and the sampling size.
- The self-reported data that may affect the reliability of the research
- The data was collected in a short period of time (2 weeks). This data outcomes could be different if the duration was longer.

Although there was no significant relationship found between sleep and teaching effectiveness in this study, and the results can't be generalized to the population due to the sampling method (snowball sampling) and to the small sample size, yet this study can be used for future researches according to the following recommendations :

-Even though sleep is important, and plays an important role in our daily achievements, yet there are many other variables that can affect our achievements in a direct or in an indirect way. To be more specific, regarding teachers that are doing their master's degree and teaching at the same time, sleep may affect such teachers differently. This is because other extraneous variables like stress, age, experience... can be the cause behind their teaching effectiveness in the class. Hence, these variables should be considered in future researches in order to avoid the bias :

-Future researches should include qualitative research including interviews with teachers and students and observation which can provide richer data more than questionnaires, and it can help to explore the teaching effectiveness in a clear and more objective way.

- Future researches should use objective sleep data to avoid the self-reported bias.

-In the future researches, it is recommended to increase the sample size to ensure the reliability and thus the validity of the research, and thus to increase the statistical power of the study and to represent the population studied and thus helping to generalize the results.

- The teaching effectiveness must not be measured through students' scores and outcomes only. Other observations and feedbacks must be taken into consideration.

5. Results and discussion

- The regression analysis showed a $p\text{-value} = 0.385 > 0.05$ which indicates that the relation between the overall effectiveness of teachers has no significant relation with the average sleep hours, feeling rested after waking up, waking up during the night, and difficulty in falling asleep all TOGETHER. (Table 1).
- Table 2 shows that only the quality of sleep and the average hours each alone has a negative relation with the overall effectiveness of teachers, however there is a positive relation between the overall effectiveness and each of: how much they feel rested after waking up, difficulty in falling asleep and waking up during the night.
- Regression equation: $\text{Effectiveness Overall} = 4.244 + 0.103 \times \text{feel rested after waking up} - 0.109 \times \text{quality of sleep on a typical night} + 1.252 \times \text{waking up during the night} + 0.015 \times \text{difficulty in falling asleep} - 0.13 \times \text{average hours}.$

This means that:

- When all the independent variables are set to zero, the teaching effectiveness is equal to 4.244.
- As much as the teachers feel more rested after waking up by one unit, their teaching effectiveness increases by 0.103.
- As the quality of sleep on a typical night increase by one unit, the teaching effectiveness decreases by 0.109.
- As the waking up during night increase by one unit, the teaching effectiveness increases by 1.252.

- As the difficulty in falling asleep increases by one unit, the teaching effectiveness increases by 0.015.
- As the average hours of sleep increase by one unit, the teaching effectiveness decreases by 0.13.

Table 1. Regression analysis- Anova

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.206	5	.241	1.081	.385 ^b
Residual	9.365	42	.223		
Total	10.571	47			

a. Dependent Variable: Effectiveness_Overall

b. Predictors: (Constant), average_hours, feel rested after waking up, waking up during the night, difficulty in falling asleep, quality of sleep on a typical night

Table 2. Regression analysis- coefficients

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.244	.526		8.075	.000
	feel rested after waking up	.103	.071	.232	1.447	.155
	quality of sleep on a typical night	-.109	.078	-.265	-1.399	.169
	waking up during the night	1.252E-5	.064	.000	.000	1.000
	difficulty in falling asleep					
	Avez-vous des difficultés à vous endormir ?	.015	.064	.037	.228	.820
	average hours	-.130	.175	-.117	-.744	.461

a. Dependent Variable: Effectiveness_Overall

Discussion

- It appeared that the teaching effectiveness is equal to 4.244 (which is considered a high effectiveness according to the likert scale made) even if the other independent variables that are related to sleep were negligible, this indicates that the teaching effectiveness could be high even with negligible variables related to sleep.
- Although it was expected a direct positive relationship with teaching effectiveness and each of sleep hours and sleep quality, yet it appeared that there is a negative relationship between these variables.
- The only expected relation was between the teaching effectiveness and feeling rested after waking up, so it appeared that the teaching effectiveness increases as how the teachers feel reseted after waking up.
- It was expected that when teachers face difficulty in falling asleep and wake up during the night, this will affect their teaching effectiveness negatively, however, the results show a positive relation between each of waking up during the night and difficulty in falling asleep with the teaching effectiveness.

Conclusion and Recommendations

By reviewing the literature, and according to the theoratical framework adopted, it was expected that sleep has a direct positive relation with the teaching effectiveness of teachers as master students and teachers at the same time. And it was expected that we will reach a positive relation between these variables : As the sleep hours and quality increases, the teaching effectiveness will increase. However, the hypothesis was not validated, and such relation isn't significant, and teachers with poor sleep hours and with poor quality had a high level of teaching effectiveness. This result was surprising and can be explained from different directions :

Regarding the measurement : The data was self-reported : It was very difficult to measure the teaching effectiveness of each individual of the sample through their students' academical outcomes beacuse the sample is a mix of teachers from different and far places. Because of this limitation, the teachers' effectiveness was measured through questions stated in the questionnaire and teachers made responses about their effectiveness that might be inaccurate.

Regarding the sample : Unfortunately, the sample was small. The population was around 700 individual, however only 48 of them responded to the questionnaire and were considered as the sample this gives us a low statistical power. 32.7% of the sample has between 16 and 20 years of teaching experience and this helps them to perform well despite the poor sleep.

Extaneous variables :

-Classroom resources : This will help the teacher to have a full set of tools that helps to create different learning styles and helps to engage the students and explain the complex concepts with an easier and more effective way.

-Personality traits : Curious, creative and flexible teachers always seek new teaching strategies and search for the ones that adapt to diverse the students' needs that help to increase their effectiveness.

-Caffeine use : Caffeine can increase the teachers' effectiveness by providing energy and regulating the mood when it is well consumed.

-School culture : A culture of supportive, sharing and encouraging team helps teachers to learn from each others by sharing information and builds and empowers teachers.

-Administrative support : Teachers with support are less stressed and more encouraged, hence they are more effective.

-Class size : Smaller classroom sizes usually have better academical and behavioral outcomes that usually help the teacher be more effective.

In the above article, we mentioned the bad effects of sleep deficiency on mood and on the stress levels, however, and according to the Self-Regulation Theory that "explains human behavior based on the idea of a feedback loop, where individuals monitor the achievement of personal goals, experience emotions caused by their lived experiences, and modify cognitions and behavior toward goal attainment" (Laulié, L., Briceño-Jiménez, G., & Henríquez-Gómez, G.,2023), master students with poor sleep hours and poor sleep quality can regulate their bad mood and their stress levels resulting from bad sleep and as teachers, provide their best in order to be effective during the class by preparing and providing the best tools needed to overcome their students' needs and thus increase their teaching effectiveness.

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