163 - EVALUATION OF MENTAL WORKLOAD ON PUBLIC EMPLOYEES IN THE ADMINISTRATIVE SECTOR

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INTRODUCTION

The industrialized work, mechanized and the application of computer techniques, coupled with an intensive search for productivity and quality, have imposed conditions that are extremely unhealthy for human health as a whole. These changes in the sphere of work have influenced the forms of organization of production and labor, as well as the relationships at workplace (CAÑETE, 2001). The restructuring process has caused transformations which have reflected on the job, on workers and business models. Particularly on workers, there are risks mainly in relation to their health. Because, the information revolution requires profound changes in the sphere of labor, with characteristic increasingly multidisciplinary and more cognitive content (FERNANDES, PACE e PASSOS, 2000).

According to data released by Fundacentro between 2000 and 2005, were recorded 144.789 occupational diseases. And a Research from Laboratory of Occupational Health at the University of Brasilia showed a very significant increase in the rate of absenteeism for cognitive disorders, that during the period from 200 to 2006 increased by 260%. The cognitive aspects coupled with the physical and psychological aspects, compose the workload. Similarly, Corrêa (2003) states the division of workload between physical and mental is consensus. Then the cognitive demand is defined as the amount of mental activity that is requires during execution of certain task. Being directly related to mental workload, which defined by the union of mental and cognitive aspects, the first is related to affective factors at work, while the second comes from the cognitive demands of tasks, such: use of memory, decisions and quick thinking.

According to World Health Organization (WHO), health of any individual includes a complete physical, mental and social welfare. Therefore, to achieve this balance the employee must control the physical and mental overload suffered during their work, in order to maintain their health and be able to perform their work tasks without negative interferences.

So, the objective of this study was to evaluated the metal workload of the labor activity of public employees in the administrative sector from rectory of Universidade Estadual do Oeste do Paraná (Unioeste) Campus Cascavel.

METHODOLOGY

The present work is a quality-quantitative study of epidemiological type, realized at Universidade Estadual do Oeste do Paraná (UNIOESTE) of Cascavel, with servers of the sectors of Directorate of Human Resources (DHR) and Department of Informatics (DI).

The study was approved by the Ethics Committee on Human Research of Universidade Estadual do Oeste do Paraná (Unioeste) of Cascavel.

To development the study, the inclusion criteria were: have as its main function in the workplace computer use. The exclusion criteria were: be an employee of another sectors than the rectory of the university and/or sectors that require higher manual than cognitive work; servers with a diagnosis of psychological disorders or to submit two or more answers on questionnaire, or even no response.

Employees who were in accordance with the inclusion and exclusion criteria were informed about the purpose and procedures of the research and signed an informed consent (IC) to participate in it.

The population consisted of 37 employees, two of the employees did not adequately answer to the questionnaire then were excluded from the sample, so the sample consisted of 35 employees.

The evaluation was performed in a questionnaire during the period of 22 to 25 February 2011, at the end of the workday and by a single evaluator.

For adequate fulfillment of NASA-TLX instrument, employees participants in the research received information about the definitions of the six sub-scales of the questionnaire and other necessary information, the servers could interrogate the evaluator in case of doubt.

The data for the characterization of the sample were tabulated and a descriptive analysis was performed using the statistical program SPSS 15.0. The NASA-TLX questionnaire has its own methodology, so, it was interpreted as described in the topic instrument.

RESULTS

The sample consisted of 35 employees, among them 13 are male and 22 female. The average age was 36,40 years (maximum 58 and minimum 18 years). The average service time was 107 months (sd: 76,7965) with a maximum of 288 months and a minimum of 3 months.

In the analysis of results obtained using NASA-TLX, before the LG sessions, the dimensions with the highest level of relevance were: mental demands (x: 25.07; sd: 6,05) and time pressure (x: 19,06; sd: 7,34). And with less relevance were physical demand (x: 1,03; sd:6,05) and level of frustration (x: 1,03; sd:7,37).

The others sub-scales, effort and performance, respectively had an average of 17,99 (sd: 7,70) and 13,87 (sd: 7,37).

The total average of dimensions analyzed was 79 (SD: 11.05), representing a high rate of mental workload and service time with moderate intensity ($p = 0,0346$), performed by analysis of variance ANOVA two-way.

The average of mental workload of employees with service time up to 12 months was 68.43. While the average mental workload of employees with service time greater than 100 months was 82.89. The level of significance between the first 12 months and 100 months was $p= 0,0012$.

Comparing the mental workload between the female and male, by t test (bipolar), the averages were respectively of 79,32 and 78,46, with correlation index equal to 0,829697.

DISCUSSION

METAL OVERLOAD

From the data obtained, it was observed that for this kind of work with low physical demands, using the computer most part of the journey, there is a high rate of mental overload.

Astrand et al. (2006) claim that the static muscular work of typists leads to growing problems, particularly in relation to stress and unfavorable conditions at work. This fact may explain the mental workload observed on the servers participants in this study, since they perform a similar function to the typists.

Guimarães et al. (2009) also evaluated the mental workload using NASA-TLX questionnaire, in this study the sample consisted of 45 systems analysts with an average age of 50,26 years and average service time of 204 months. One of the objectives proposed by the study was to evaluate ergonomic conditions, in order to know the factors causing physical and cognitive overload. The results obtained by Guimarães et al. [13] were similar to this study, because the sub-scale that had greater relevance was the mental demand (67,95) and the lesser relevance was physical demand (0,66). The author further claims that high mental workload can be found caused by the main characteristic of the work, the computer use. Because, this is a task requiring great concentration, reasoning, making decision and memory. Therefore, very similar characteristics of work to the population studied, as well with the average age and time service.

In the ergonomic evaluation performed by Kipper and Moro (2008) with two employees of an office computer, it was used the method of labour macroergonomics analysis, together with RULA and NASA-TLX questionnaires. The item from NASA-TLX that stood out above others was mental demand, due to the nature of work, according to the author. While the physical demands proved to be irrelevant. Similar results with this article. However, the sample size is smaller.

NASA SUB-SCALES

According to Astrand et al. (2006) the performance is influenced, to a significant degree, by psychological factors, notably the motivation, the attitude in relation to work and the desire to raise their own resources to accomplish the task. This relation between performance and mental workload is also observed in this study, it was observed a decrease in mental workload and an increase of performance server.

For Guerin et al. (2001) and Fernandes et al. (2010), psychological problems provide an open way to changes in physical and mental health, including causing the development of occupational diseases. Similarly, the study by Bongers et al. (2002) focuses on psychosocial problems as risk factors for occupational diseases, warning that rapid pace of work activities, that is, high time pressure, provides high levels of displeasure with work. According to Astrand et al. (2006) the fast pace of work, which corresponds to the time pressure on NASA-TLX questionnaire, is an important stress factor that in some cases, it becomes unbearable or harmful to the individual. In addition, changes in psychosocial factors may originate outside such as dissatisfaction at work, a factor corresponding to the level of frustration from NASA- TLX. But these are results that differ with the results obtained in this study, because in this was found a high pressure time with a low level of frustration.

FACTOR AGE, GENDER AND TIME OF SERVICE

The analysis of mental workload in relation to age, gender and time of service, showed a weak relationship with the mental workload. Therefore, these factors do not show significant interference in the incidence of mental workload in this research. A similar result was also found in research Ramminger (2002) which states that there are few studies pointing to the importance of the age factor in relationship between mental health and work. However, many point the service time as an important factor in this relationship.

In this study, the level of mental workload was directly proportional to time of service, that is, the longer the service, the greater the mental workload. Similarly, Marco et al. (2008) observed in a population of 203 employees, who worked in the service department of psychiatry at a university ,the relationship between time of service and satisfaction with the relationship to the service. Professionals with longer time of service presented with less satisfaction in the workplace, that is increased level of frustration, and consequently more mental overload.

Kipper and Moro (2008) in his study mentioned earlier, observed that there was difference in perception about mental workload between each employee. The employee with longer time of service showed a higher level of mental workload. That is, mental workload is directly proportional to time of service; confirming in this way, the condition between the mental workload and time of service.

As in the present study, the population evaluated by Bellusci and Fischer (1999) composed of 807 officials of an institution federal judicial was observed a predominance of cognitive demand and observed the relationship between conditions and health, comparing males and females. The greatest risk was presented by women, which have 2.2 times more likely than men to present a index of capacity at work (how well a worker is able to do so) low or moderate. Even respecting the large difference in sample size of the Bellusci and Fischer study, it was also observed a predominance of mental workload in females.

Still on the relation among gender and cognitive demand, Rocha and Ribeiro (2002) evaluated the impact of working of health systems analysts (women and men) through semi-structured interviews and filling out questionnaires by auto apply designed by the authors. The sample consisted of 553 systems analysts and results in relation to mental fatigue (or mental overload) was 59,1% and 76,4% in men and women, respectively. Indicating, again, the females with a greater cognitive load compared to males.

CONCLUSION

From the results obtained using the NASA-TLX, it was found a high mental workload of the rectory of workers from UNIOESTE – Cascavel. And, a directly proportional relationship between the mental workload with the age, gender and time of service. But, this is a weak relation, showing no significant interference in mental workload. In addition, it was identified a relationship between a high rate of mental workload with a high time pressure.

It is then suggested a new research evaluating the mental workload and the possible factors that may be relationship.

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EVALUATION OF MENTAL WORKLOAD ON PUBLIC EMPLOYEES IN THE ADMINISTRATIVE SECTOR

ABSTRACT

The objective of this study was to evaluated the metal workload of the labor activity of public employees in the administrative sector from rectory of Universidade Estadual do Oeste do Paraná (Unioeste) Campus Cascavel. The present work is a quality-quantitative study of epidemiological type. The sample consisted of 35 employees. For data collection, it was used the NASA-TLX questionnaire to evaluate the mental workload of employees. The dimensions with the highest level of relevance were: mental demands and time pressure. And, with less relevance were physical demand and level of frustration. The total average of dimensions analyzed was 79, representing a high rate of mental workload and service time with moderate intensity (p = 0,0346). From the results obtained using the NASA-TLX, it was found a high mental workload of the rectory of workers from UNIOESTE – Cascavel. And, a directly proportional relationship between the mental workload with the age, gender and time of service.

KEY WORDS: NASA-TLX; Mental Workload; Gym Labor; Labor Physiotherapy

ÉCALUATION DE LA CHARGE MENTALE DANS LES EMPLOYÉS DU SECTEUR PUBLIC DE UNIOESTE ADMINISTRATIF

RESUMÉ

L'objectif de cette etude était d'évaluer La charge de travail em metal de l'activité de travail dês empluyés du secteur public dans Le secteurs administratif du rectorat de Universidade Estadual do Oeste do Paraná (Unioeste) Campus Cascavel. Le présent ouvrage est une étude quantitative de La qualité de type épidémiologique. L'échantillon se composait de 35 salariés. Pour La collecte dês données, Il a été utilisé Le questionnaire NASA-TLX pour évaluer La charge mentale dês employés. Les dimensions avec Le plus haut niveau de pertinence ont été exigences mentales et La pression du temps. Et avec, moins depertinence ont été La demande physique et Le niveau de frustration. La moyenne totale dês dimensions analysées étatit de 79, représentant um taux eleve de La charge mentale et Le temps de service avec une intensité modérée (p=0,0346). A partir des résultats obteuns à l'aide de La NASA-TLX, on a constate une charge de travail élevée mentalde du presbytère de travailleurs de UNIOESTE – Cascavel. Et une relationdirectement proportionnelle entre La charge mentale avec l'âge, Le sexeet Le temps de service.

MOTS-CLÉS: NASA-TLX; charge mentale, physiothérapie travail

EVALUACIÓN DE LA CARGA MENTAL DE LOS TRABAJADORES DEL SECTOR PUBLICO DE LA ADMINISTRACION UNIOESTE

RESUMÉN

Objetivo de este estúdio fue evaluar La carga de trabajo de metal de La actividad laboral de los empleados público en El sector administrativode La rectoría de La Universidade Estadual do Oeste do Paraná (Unioeste) – Campus Cascavel. El presente trabajo ES um estúdio de La calidad cuantitativa de tipo epidemiológico. La muestra estuvo conformada por 35 empleados. Para La recolección de datos, se utilizo El cuestionario NASA-TLX para evaluar La carga de trabajo mental de los empleados. Las dimensiones com El más alto nivel de relevancia fueron exigencias mentales y La presión Del tiempo. Y, con menor relevancia es demanda física y El nivel de frustación. El promedio total de lãs dimensiones analizadas fue de 79, lo que representa uma alta tasa de carga de trabajo mental y El tiempo de sericio con una intensidad moderada (p=0,0346) de los resultados obtenidos con el NASA-TLX, se encontró una alta carga de trabajo mental de la rectoría de los trabajadores de UNIOESTE- Cascavel. Y, una relación directamente proporcional entre La carga de trabajo mental com La edad, sexo y tiempo de servicio.

PALABRAS-CLAVE: NASA-TLX; la carga de trabajo mental; fisioterapia trabajo

AVALIAÇÃO DA CARGA MENTAL EM FUNCIONÁRIOS PÚBLICOS DO SETOR ADMINISTRATIVO DA UNIOESTE

RESUMO

O objetivo deste estudo foi identificar a carga mental da atividade laboral de funcionários públicos do setor administrativo da Reitoria da Universidade Estadual do Oeste do Paraná (Unioeste) Campus Cascavel. Trata-se de um estudo qualiquantitativo do tipo epidemiológico. A amostra foi composta por 35 funcionários. Foi utilizado o questionário NASA-TLX para identificação da carga mental dos funcionários. As sub-escalas que tiveram maior relevância foram a demanda mental e a pressão de tempo. E com menor relevância demanda física e nível de frustração. A média total das dimensões analisadas foi de 79, representando um alto índice de sobrecarga mental, com relação direta entre a sobrecarga mental e o tempo de serviço com intensidade moderada (p = 0,0346). A partir dos dados obtidos pelo questionário NASA-TLX, foi identificada uma alta carga mental dos trabalhadores da reitoria da UNIOESTE - Campus Cascavel. E, uma relação diretamente proporcional entre a carga mental com os fatores idade, gênero e tempo de serviço.

PALAVRAS-CHAVE: NASA-TLX; carga mental; Fisioterapia do Trabalho