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The impact of work shift on psychosocial risks: a case study

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ABSTRACT

The present study aims to analyse the impact of the work shift in the prevalence of Burnout syndrome, anxiety, depression and stress. This study was conducted in a metal-mechanic industry, covering a total of 175 workers of the production sector, spread over three shifts (morning, afternoon and night). The Burnout syndrome was assessed by the Shirom-Melamed Burnout Measure and the anxiety, depression and stress were measured through the Depression Anxiety Stress Scales (DASS). Results showed that while workers experienced a low level of Burnout and stress, they were found to exhibit higher levels of anxiety and depression. Against expectations, morning shift presented higher levels of psychosocial risks. However, no significant differences were found between the three shifts. These results can be explained by several factors such the age of the workers, years of work or type of employment contract. This study emphasizes the need to implement measures to reduce workers' exposure in the morning shift.

KEYWORDS: Anxiety; Burnout syndrome, Depression, Psychosocial risks, Stress; Work shift

1. INTRODUCTION

The work environment has undergone significant changes during recent years. In Portugal these changes have been highlighted due to the economic crisis, including an increase in weekly working hours, changes in work schedules, temporary work, increase workload and time pressure for workers, among others. These changes have contributed to the increase of psychosocial risks (Loureiro et al., 2014). According to the Eurofound and EU-OSHA (2014) psychosocial risks “arise from poor work design, organization and management, as well as a poor social context of work, and they may result in negative psychosocial, physical and social outcomes”. In fact, work schedule is an important factor of the work context that can lead to psychosocial risks, mainly in what regards to shift work, night work, long and unsociable working hours or rotating shifts (Eurofound and EU-OSHA, 2014).

The results of the 5th European Working Conditions Survey report showed that shift work is carried out by 17% of workers and 18% reported working in the night shift (Eurofound, 2012). Although the benefits of this type of work, such as competitiveness and productivity, there are important negative consequences for the workers that do their job under these schedules. Some studies suggest that work shift is related to the disruption of human biological rhythms that could negatively affect the sleep quantity and quality and contribute to absence of family life, loss of relationships and social activities (Costa, 2010; Boivin and Bordeau, 2014). These factors can contribute to the increase of psychosocial risks such as stress, anxiety, Burnout syndrome and depression. In fact, some studies point to an increase of psychosocial risks in night workers compared to daytime workers (Bara and Arber, 2009; Wisetborisut et al., 2014). However, the effects of this type of work in the incidence of psychosocial risks are still not well characterized and other work shifts can also be related to these risks. In view of this, this study aims to analyse the impact of the work shift in the prevalence of Burnout syndrome, anxiety, depression and stress.

2. MATERIALS AND METHOD

2.1. Sample

This study was conducted in a sheet metal industry located in the North of Portugal. A total of 191 workers that operate in three different 8 hours work shifts were included in the study: shift 1 between 6 a.m. and 2 p.m.; shift 2 between 2 p.m. and 10 p.m.; shift 3 between 10 p.m. and 6 a.m. (night shift).

2.2. Instruments

A questionnaire was developed and applied for the analysis of the prevalence of Burnout syndrome, anxiety, depression and stress. The first part of the questionnaire included questions for workers' sociodemographic and professional characterization such as age, gender, years of work in the present shift, existence of a second job, type of employment contract. The second part of the questionnaire was composed by different scales to measure the psychosocial risks under analysis. The Burnout syndrome was assessed through the Shirom-Melamed Burnout scale developed by Shirom and Melamed (2006) and adapted for Portuguese language by Gomes (2012). This scale measures the level of the Burnout syndrome through 14 items assessed by a 7 point Likert scale (1=never; 7=always). The value 5 (sometimes) was assumed as a cut-off in the Likert scale, to be used as an indicator of high levels of Burnout. The Cronbach's alpha for this scale was 0.92 in the present study. The depression, anxiety and stress were measured through the Depression Anxiety Stress Scales (DASS) developed by Lovibond and Lovibond (1995) and adapted for Portuguese language by Ribeiro et al. (2004). The scale has a total of 21 items, seven for each subscale and uses a Likert scale ranging from 0 to 3 (0=did not apply to me at all; 3=applied to me very much or most of the time). The risk level for the three subscales was computed and classified according the DASS manual as: normal, mild, moderate, severe and very severe. In the present study, the Cronbach's alpha scores for the depression, anxiety and stress subscales were 0.87, 0.81 and 0.80, respectively.

The questionnaire was given to the workers by the research team and the aim of the study was explained to each of them. The workers completed the questionnaire at the end of the shift and delivered them to the responsible researcher.

2.3 Data Analysis

SPSS version 22 was used for the statistical analyses. Kruskal Wallis Test was used to analyse differences between the three shifts and Mann-Whitney Test was used to analyse differences in psychosocial risks according nominal variables (gender, type of employment contract and second job). Significance level was set at 5% ($p < 0.05$).

3. RESULTS AND DISCUSSION

The majority of the workers considered for this study were males (58.4%) and aged 40.7 yrs (SD = 10.4 yrs). Most of respondents had permanent employment contracts (72.2%) and only 5.8% had functions in other companies. Through the analysis of respondents' distribution by work shift, results showed that in the shift 3 (10 p.m. to 6 a.m.) only worked males, which were the younger employees and the latest contracted ones by the company (Table 1).

Table 1 – Demographic and professional characteristics of the each shift

	Shift 1 (n=79)	Shift 2 (n=62)	Shift 3 (n=34)	Total (n=175)
Gender (%)				
Male	47.4	49.2	100.0	58.4
Female	52.6	50.8	0.0	41.6
Age (years), M (SD)				
	41.5 (9.3)	40.7 (9.5)	38.8 (13.8)	40.7 (10.4)
Years of work in the company, M (SD)				
	9.5 (7.4)	8.6 (9.5)	4.7 (3.2)	8.3 (7.9)
Type of contract (%)				
Permanent	82.1	70.5	54.5	72.7
Temporary	17.9	29.5	45.5	27.3
Years of work in the shift, M (SD)				
	8.0 (7.7)	6.6 (5.7)	4.1 (3.4)	6.7 (6.5)
Second job (%)				
Yes	7.8	6.6	0.0	5.8
No	92.2	93.4	100.0	94.2

M – Mean; SD – Standard Deviation

Results from Figure 1 show that the analysed workers experience low levels of Burnout syndrome. Only in the work shift 1 (6 a.m. to 2 p.m) high levels of Burnout were observed, but in a small percentage of workers (2.5%). These results are in line with other studies in other industries, such as forest industry (Ahola *et al.*, 2009), where a low prevalence of Burnout were identified. In fact, this syndrome is more prevalent in professions that deal with public assistance and where workers are at high risk for emotional exhaustion, particularly workers linked to health care and education (Coelho, 2010).

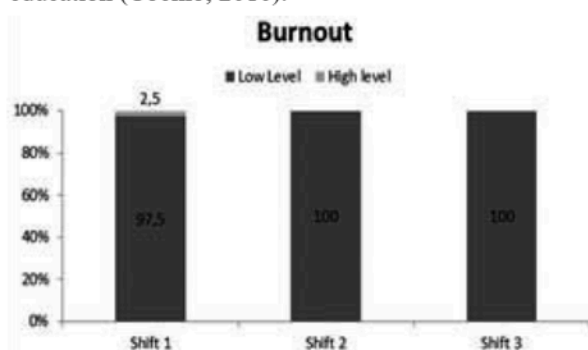


Figure 1 – Burnout levels by work shift

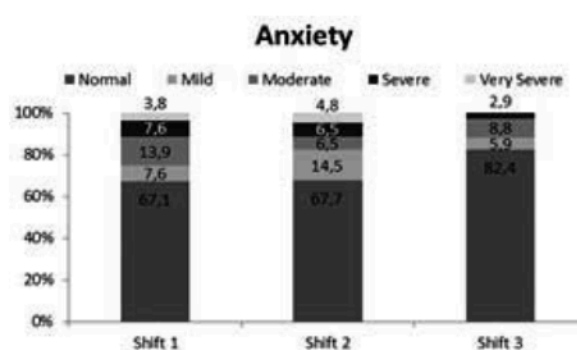


Figure 2 – Anxiety levels by work shift

Regarding to depression, anxiety and stress, higher risk levels were found for the second subscale. Very severe levels were identified in shift 1 and shift 2 (Figure 2). The stress levels were in general low (Figure 3); however, in shift 1, severe levels for 5.1% of workers were identified.

According the obtained results, in general, higher levels of psychosocial risks were found in the morning work shift (shift 1) and lower in the night work shift (shift 3). However, no significant differences were found between the three work shifts (Burnout: $X^2=2.44$, $P>0.05$; anxiety: $X^2=3.21$, $P>0.05$; depression: $X^2=0.92$, $p>0.05$; and stress: $X^2=2.07$, $p>0.05$). The higher levels of psychosocial risks found for shift 1 can be explained by several factors such as the workers' age and years of work at the company, which were higher between the workers of this work shift, type of employment contract, where most of them were permanent workers, the gender, as well as the presence of high work

demands and low task' control, when compared with the other work shift of the same company. In fact, when workers were grouped, significant differences were found in relation to age and gender for Burnout (age: $X^2=10.914$, $p<0.05$; gender: $U=2831.000$, $p<0.05$), years of work in the shift for stress ($X^2=10.926$, $p<0.05$), years of work at the company for stress ($X^2=15.065$, $p<0.05$), depression ($X^2=13.432$, $p<0.05$) and Burnout ($X^2=9.630$, $p<0.05$) and type of employment contract for stress ($U=1761.000$, $p<0.001$), depression ($U=1916.000$, $p<0.001$) and Burnout ($U=1807.500$, $p<0.001$). Higher levels of psychosocial risks were identified in the oldest workers, in the ones that work along more years at the work shift and at the company, in workers with permanent contract and in the females. Effectively, some studies showed that symptoms of Burnout are more frequent in older people and females (Ahola *et al.*, 2008). The workers with permanent contract present higher levels of psychosocial risks due to the longer time that they work at the company and higher age. On the other hand these results can be explained by the higher responsibilities that these workers have.

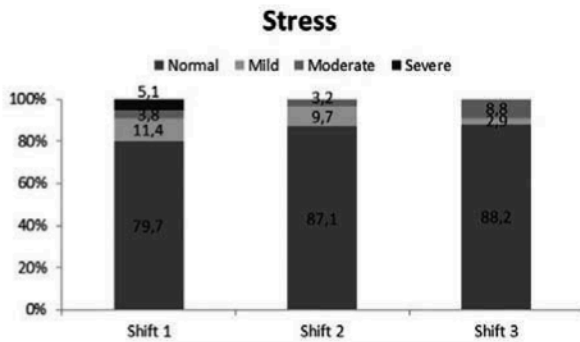


Figure 3 – Stress levels by work shift

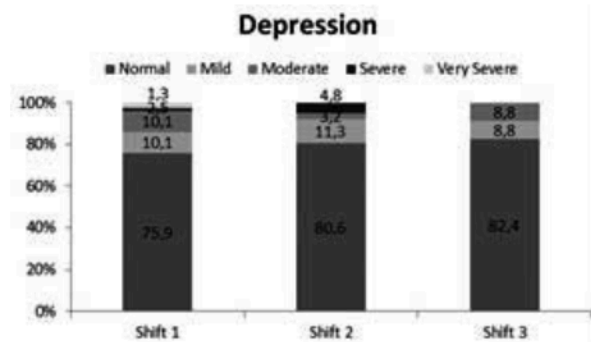


Figure 4 – Depression levels by work shift

4. CONCLUSIONS

This study showed that, in general, the workers of shift 1 experienced higher levels of psychosocial risks, emphasizing the importance to implement risk reduction measures. Factors related to workers age and gender, type of employment contact, years of work in the shift or at the company were found to play an important role in its prevalence. However, work demands and task control can also be important factors.

5. REFERENCES

- Ahola, K., Honkonen, T., Virtanen, M., Aromaa, A., & Lönnqvist, J. (2008). Burnout in relation to age in the adult working population. *Journal of occupational health*, 50(4), 362-365.
- Ahola, K., Toppinen-Tanner, S., Huuhtanen, P., Koskinen, A., & Väänänen, A. (2009). Occupational burnout and chronic work disability: An eight-year cohort study on pensioning among Finnish forest industry workers. *Journal of affective disorders*, 115(1), 150-159.
- Bara, A. C., & Arber, S. (2009). Working shifts and mental health—findings from the British Household Panel Survey (1995-2005). *Scandinavian journal of work, environment & health*, 361-367.
- Boivin, D. B., and Boudreau, P. (2014). Impacts of shift work on sleep and circadian rhythms. *Pathologie Biologie*, 62(5), 292-301.
- Coelho, J. A. (2010). *Prevenção de Riscos Psicossociais no trabalho em Hospitais*. 1ª Edição, Edições Universidade Fernando Pessoa. Porto.
- Costa, G. (2010). Shift work and health: current problems and preventive actions. *Safety and health at Work*, 1(2), 112-123.
- Eurofound (2012). *Fifth European Working Conditions Survey*. Luxembourg. Publications Office of the European Union.
- Eurofound and EU-OSHA (2014). *Psychosocial Risks in Europe: Prevalence and Strategies for Prevention*. Luxembourg. Publications Office of the European Union.
- Gomes, A. R. (2012). Medida de “Burnout” de Shirom- Melamed (MBSM). Relatório técnico não publicado. Braga: Escola de Psicologia, Universidade do Minho.
- Loureiro, I.F., Vale, C., Rodrigues, M. & Azevedo, R. (2014). Can the external environment affect the occupational safety conditions and unsafety behaviours? In Arezes, P., *et al.* (eds.) (2014). *Occupational Safety and Hygiene*. Pp. 423-427. CRC Press, Taylor & Francis: London, ISBN: 978-00144-2
- Lovibond, P., & Lovibond, S. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-343.
- Ribeiro, J. L. P., Honrado, A. A. J. D., & Leal, I. P. (2004). Contribuição para o estudo da adaptação portuguesa das escalas de ansiedade, depressão e stress (EADS) de 21 itens de Lovibond e Lovibond. *Psicologia, Saúde & Doenças*, 2004, 5 (2), 229-239
- Shirom, A., & Melamed, S. (2006). A comparison of the construct validity of two burnout measures in two groups of professionals. *International Journal of Stress Management* 13(2), 176-200.
- Wisetborisut, A., Angkurawaranon, C., Jiraporncharoen, W., Uaphanthasath, R., e Wiwatanadate, P. (2014). Shift work and burnout among health care workers. *Occupational Medicine*, 64(4), 279-286.