Brief Communication

Shift work is a source of stress among Military Police in Amazon, Brazil

Eduardo L. França, *MSc, PhD,*
Núbia A. Silva, *BSc, MSc Student,*
Rosaline R. Lunardi, *BSc, MSc,*
Adenilda C. Honorio-França, *MSc, PhD,*
Carlos K. Ferrari, *MSc, PhD.*

Stress or the general adaptation syndrome has 3 basic stages: alarm reaction, resistance phase, and the stage of exhaustion. The alarm phase is the initial conscious or unconscious reaction to a stressor characterized by physiologic changes to counteract the stressor. The sympathetic nervous stimulation results in substantial release of catecholamines, adrenocorticotropin, cortisol, and antidiuretic hormone, leading to increased heart rate, blood pressure, and sodium and water retention due to the stimulation of the renin-angiotensin-aldosterone system. During the alarm phase, the subject can have headache, abnormal blood pressure, insomnia, and tachycardia. The resistance phase is a compensation response to the initial alarm stage. Cortisol secretion remains from the alarm phase, but now at a lower level. The adaptation phase could be chronicalized causing fear, nervousness, hair loss, changes in appetite, and social isolation. Unable adjustment to a chronic stressor causes an exhaustion phase, which compromises homeostasis, and is characterized by the onset of heart disease, gastrointestinal disorders, and depression. In some cases, it may lead to shock, multiple organ failure, and subsequently death. Lipp[1] has characterized a fourth stage of stress, between the resistance and exhaustion phases, called near-exhaustion. This phase occurs when the individual becomes unable to adapt or resist the stressor, leading to the initiation of disease pathogenesis, when the diseases are not as severe as those manifested during the exhaustion phase.[2] Occupational stress can discharge organism energy affecting productivity and satisfaction at the workplace. In Military Police work, a strong burden of social, community, and self-personal stress is experienced by workers that face conflicts, tension, violence, uncertainty, poor health care support, society criticism, and other factors that result in job dissatisfaction and occupational distress.[1] Shift work is another factor that disturbs police life, resulting in a chronobiological disruption frequently associated with disorders, immunological impairment, and sleep quality problems among those professionals.[3] Considering those referred assumptions, the objective of this study was to evaluate stress responses among police officers who work in shifts.

The study design was an observational, descriptive, and prospective investigation regarding stressful factors and the resulting signs and symptoms in military personnel. This study was conducted at the 2nd Military Police Battalion of the State of Mato Grosso (2nd Battalion/MT), Barra do Garças - MT, Brazil, from July to October 2009. The study population consisted of 237 military police officers representing 25% of the effective military unit. The inclusion criteria were voluntary participation of the police, and 2 years or more of service in the corporation. The exclusion criterion was age under 22 years old, and above 50 years old. The Inventory of Stress Symptoms for Adults,[1] which presents 3 tables containing physical and psychological symptoms of each stress stage, was used. Altogether, the LSSI consists of 53 items - 34 of somatic, and 19 of psychological domains. The criteria for stress were the following: display more than 6 of the 15 stress symptoms for the last 24 hours, or more than 3 of 15 stress symptoms in the last week, or more than 8 of the 23 stress symptoms during the last month.[2] The socioeconomic characterization of the population was carried out using a 7 item questionnaire adapted from Moreno et al.[4] The frequency of sleeping disorders during shift work was evaluated by a 22 item questionnaire adapted from Braz et al.[5]

Statistical analysis was performed using the nonparametric Mann-Whitney test for comparing 2 independent samples, and the nonparametric Kruskal-Wallis test for comparing 3 independent samples by the Bio-Estat 2.0® software. Statistical significance was considered for a p-value lower than 0.05.

Following the Brazilian Ethical resolution No. 196/10/1996, the study design was approved by the Research Ethics Committee of the Júlio Müller University Hospital from the Federal University of Mato Grosso (protocol nº 601/CEP-HUJM/09). All participants gave their signed informed consent.

The study was characterized by male predominance (81%), with age ranging from 22-44 years old (mean 30 years). This is a relatively young population with 6-10 years of service time, and 51% had incomplete college level education. According to the LSSI, 52% of the sample was not stressed, but 48% of participants had clear stress symptoms. Seventy percent of policewomen were found in some stage of stress, and 43% the policemen had also been stressed. Resistant stress predominated corresponding to 35%, whereas exhaustion stress afflicted 13%. **Figure 1** shows that 40% of policewomen, and 34% of policemen had stress at the resistance stage (p<0.05). The exhaustion phase was also found in both genders, predominantly among females

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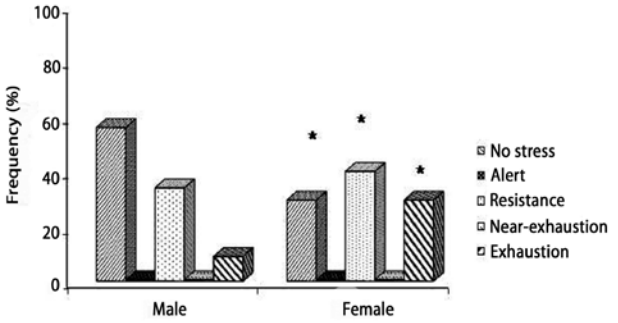

Figure 1 - Distribution of police officers by the stage of stress and gender. *Indicates differences between males and females, considering the same stress phase (p<0.05).

(30%) (p<0.01). Policewomen with shift work were most affected by stress when compared to the men, possibly because they accumulate maternal family obligations beyond the service work, which requires more effort, and, sometimes, yet more hardship. Both physical and psychological symptoms were associated among the stressed police officers representing 91% of sample, which reflect the hard conditions imposed on the body by the shift work, and just 9% of the sample had only physical symptoms. All women had both physical and psychological stresses, whereas 89% of men did. The remaining 11% of the policemen who had only physical symptoms, represented the police staff working only in administrative office services. According to the LSSI[1,2] the predominant symptoms during the resistance stage of stress found in this study were irritability (61%), memory problems (59%), chronic loss of the physical stamina (44%), chronic obsessive thinking (44%), chronic tiredness (37%), malaise (26%), appetite change (24%), excessive emotions (18%), tingling of extremities (18%), doubt about yourself (13%), and dizziness/vertigo (11%). Considering the burnout stage, predominant symptoms were insomnia (46%), irritability (43%), excessive fatigue (35%), mood disorders (31%), and daily anxiety (31%). During sleep, snoring was the predominant symptom, corresponding to 33% of the sample. Panic waking up, headaches and paralysis were also commonly found. Twenty-six percent of the subjects showed no symptoms during sleep. The police staff had an average of 6 hours sleep per night, with 33% frequently bothered by insomnia, 56% with excessive sleepiness during their shift work, and 9% had suffered some kind of accident at work because of drowsiness.

According to the LSSI, 52% of the sample was not stressed, but 48% of participants had clear stress symptoms. This result corroborated 2 studies in which 43% and 47% were affected by stress.[1,3] Seventy percent of policewomen were found in some stage of stress, and 43% the policemen had also been stressed. Lipp[1] found that 54% of female and 40% of male police officers were affected by stress. Rosetti et al[2] revealed that 59% of female and 32.3% of male police officers were affected by stress, which was further corroborated by Costa et al.[3] The resistant stress phase predominated in this study. Costa et al[3] found very similar results, as 40% of the police were afflicted by the resistance stage, although the exhaustion stress stage affected only 0.4% of the police officers. The exhaustion phase was found in both genders, predominantly among females (30%). Forty-one percent of female officers and 35% of male police officers were at that stage of resistance.[4] In Rosetti et al's[2] study, the resistance phase was predominant. In the current study, just 9% of the sample had only physical symptoms. Contradicting this study, Costa et al[3] found 76% of the sample with psychological, and 24% with physical symptoms, with no concomitance of both symptoms. Women were completed affected by both psychological and physical stress, suffering more from exhaustion stress than men. This is in accordance with previous reports.[1] Our data also indicated less frequency of stress among those working in administrative functions. This study showed that the predominant symptoms were irritability, memory problems, loss of physical stamina, chronic obsessive thinking, and tiredness. Calais et al[6] showed that among resistance phase sufferers, the emotional symptoms represented 89%, whereas loss of physical stamina was higher (87%), followed by memory problems (84%), obsession (83%), irritability (82%), and chronic fatigue (81%). The burnout stage of stress symptoms was represented by insomnia (46%), irritability without apparent origin (43%), excessive fatigue (35%), loss of sense of humor (31%), and daily anxiety (31%). The exceeding physical and psychological disorders found in this study reveal that Brazilian police working conditions are poorer than the inadequate working conditions reported in developed countries. Our results could be plausible considering a police staff study from Switzerland,[7] which reported inadequate working schedules, lack of organizational support, and bad working conditions as the major risk factors for both stress and psychiatric disorders.

Some limitations of this study were the lack of evaluation of personal chronotype, gender-specific issues, and the small sample size.

In conclusion, the current study suggests that Brazilian police officers are more prone to suffer from stress and sleeping-related problems, which compromise the quality of life of those professionals. Future studies are needed to investigate the stress prevalence among police personnel in developing and non-developed countries, as well as gender-related stress responses,

lifestyle issues, and occupational strategies concerning stress prevention at work.

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From the Biomedical Research Group (França, Honorio-França, Ferrari), and the School of Nursing (Silva, Lunardi), Institute of Biological and Health Sciences, Campus Universitário do Araguaia, Campus II, Federal University of Mato Grosso, Mato Grosso, Brazil. Address correspondence and reprint requests to: Dr. Eduardo L. França, Biomedical Research Group, Institute of Biological and Health Sciences, Campus Universitário do Araguaia, Campus II, Federal University of Mato Grosso, Pontal do Araguaia, MT, Rodovia BR 070, Km 5 s/no, Barra do Garcas, MT, CEP 78600-000, Brazil. Tel. +55 (663) 4021117. E-mail: elfranca@ufmt.br

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