

# Suicidal ideation and chronotype assessment in nurses and police officers

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**BACKGROUND:** Nurses and police officers are professionals that work in shifts and have jobs that require attention and responsibility. They work under conditions that can cause stress, anxiety and changes in sleep patterns.

**OBJECTIVE:** This study aims to identify symptoms of anxiety and depression, chronotype and the presence of suicidal ideations in nurses and police officers in the city of Arapiraca/Alagoas, Brazil.

**METHODS:** This is a descriptive and quantitative study. The interviews were conducted using (i) identification records and general data, (ii) the Beck Anxiety Inventory, (iii) the Center for Epidemiologic Studies Depression Scale and (iv) the Horne-Östberg Questionnaire.

**RESULTS:** Fifty-three nurses and 111 police officers participated in the research. Nurses and police officers exhibited indifferent to moderate matutinal chronotypes. Most of the nurses and police officers reported minimal to light levels of anxiety. Nurses and police officers presented elevated risk for depression. Five nurses and six police officers had considered attempting suicide at the time of the research. There were no significant differences between the study groups with respect to anxiety and depression symptoms, chronotype and suicidal ideations.

**CONCLUSION:** The nurses and police officers examined presented high risk for symptoms of anxiety and depression; a considerable number of nurses and officers had lifetime suicidal ideations. Implementation of preventive measures is necessary for the early diagnosis of anxiety and depressive disorders in order to prevent complications, including possible suicide.

**KEYWORDS:** Nursing, Police, Anxiety, Depression, Suicidal ideation, Chronobiology phenomena.

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## INTRODUCTION

Conditions in the workplace influence workers' health; these changes may generate a conflict in the relationship between the bodily functions and work requirements, resulting in alterations in health.<sup>1</sup>

One of the ways of organizing work is through the introduction of night shift work; this organization is performed in order to meet the demands of the population and establish uninterrupted services to the community.<sup>1</sup>

Work performed in shifts, mainly at night, may harm the health of workers from the perspective of chronobiology, because damage can be caused by

temporary changes in organic function.<sup>2</sup> Fast-paced work, excessive journeys and work shifts are factors that can induce occupational stress.<sup>3</sup>

Chronotype relates to the adaptability and performance of daily activities when changes in sleeping habits cause deprivation or deficit of this important functional state.<sup>4</sup> The human population can be divided into three basic chronotypes: matutinal, vespertine (both of which can be extreme or moderate) and indifferent.<sup>5</sup>

Work performed in shifts relates not only to the emergence of sleep disorders, but also to increased daytime drowsiness and decreased alertness. The effects of these changes in the sleep-wake cycle can cause an increased risk for negative outcomes such as accidents at work and impairment of the quality of life.<sup>6,7</sup>

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Police personnel are subject to specific challenges. In Brazil, public safety suffers from a continuous growth of various forms of violence and crime.<sup>8</sup> Intensification of violence requires more effective public security policies, resulting in a physical and emotional overload for police officers. In addition, to dealing with the pressure of society to provide efficient policing, the often precarious working conditions in Brazil interferes with the performance of these professionals, affecting their health and generating dissatisfaction, which in turn results in symptoms of stress and psychological suffering.<sup>9-11</sup>

Nursing personnel are likewise subject to specific challenges. Hospital environments are unhealthy places that can be painful and dangerous and may subject workers to an increased risk of illness. Hospital work is often characterized by long commuting, contact with stressful situations, and high levels of tension; these factors can lead to physical and mental health problems such as repetitive strain injury, anxiety, anguish and stress, to name a few.<sup>12</sup>

The intense pace of activity in the nursing profession infringes upon the human biological rhythm. In addition, absenteeism, long distances covered during workdays, inadequate provisioning of security, large amounts of work information and vigilant attitudes can cause physical wear as well as mental fatigue and stress. These factors predispose nursing professionals to physical and mental illnesses.<sup>13</sup>

The importance of studies examining psychiatric co-morbidities in these two populations lies in the need to generate contributions which may alert authorities, society, health professionals and public safety experts about the occupational risks and in the need for mental health care in these two professions.

Because the professional routines of nurses and police officers involve an overload of activities and inadequate work shifts, this study aims to identify symptoms of anxiety and depression, chronotype and the presence of suicidal ideations in nurses in a hospital emergency service and in police officers in the city of Arapiraca (population: 214 thousand), in the state of Alagoas, Brazil.

## ■ METHODS

This study was conducted at the Hospital of Urgency and Emergency and at the Police Battalion, in Arapiraca.

The hospital staff included 70 nurses, 53 of which participated in this study. The inclusion criterion was: nurses that worked at the emergency hospital unit. Exclusion criterion: nurses that were on vacation or on license from the hospital service for any reason.

The Battalion included 280 officers, 111 of which participated in the study. We included police officers that currently or previously carried out combat activities outside of the headquarters. Officers on license from service or that were not active in external police activities were excluded from the study.

The Committee of Ethics in Research at the Federal University of Alagoas approved this study.

Instruments used in the data collection of this study were Identification Records and General Data, Beck Anxiety Inventory, CES-D (Center for Epidemiologic Studies Depression Scale) and the Horne-Östberg Questionnaire (Matutinal types - Vespertine).

Data collection in the hospital occurred from January to August 2013. Data collection in the battalion occurred from October 2012 to February 2013. Data analysis was performed using the Epi Info 2000 program (Atlanta, Georgia, USA). The chi-squared test was used to evaluate the differences between the groups. The level of significance for this study was  $p < 0.05$ .

## ■ RESULTS

Fifty-three nurses participated in the study, 51 (96%) of them were female and two (4%) were male. Most of nurses were between 21 and 30 years of age ( $n = 22$ ; 41%), as shown in Table 1.

One hundred and eleven police officers were interviewed from different ranks; 93 (84%) were male and 16 (14%) were female. Most of police officers were between 21 and 30 years of age ( $n = 46$ ; 41%), as shown in Table 1.

When evaluated on the predictive signs and symptoms of anxiety, it was found that most of the nurses presented minimal levels of anxiety ( $n = 27$ ; 51%), followed by light ( $n = 16$ ; 30%), moderate ( $n = 7$ ; 13%) and severe ( $n = 3$ ; 6%), as shown in Table 2. Most of the police officers ( $n = 61$ ; 55%) presented minimal level of anxiety, followed by light ( $n = 25$ ; 22%), moderate ( $n = 13$ ; 12%) and severe ( $n = 10$ ; 9%) as shown in Table 2. The evaluation of anxiety between the groups was conducted using the chi-squared test. There were no significant differences ( $p > 0.05$ ) between the groups.

Among the nurses in our study, 17 (32%) presented elevated risk for depression (Table 2). Among police officers, 30 (27.0%) presented elevated risk for depression (Table 2). The evaluation between the groups was conducted using the chi-squared test. There were no significant differences ( $p > 0.05$ ) between the groups.

With regard to the chronotype of study participants, most of the nurses interviewed presented indifferent chronotype ( $n = 25$ ; 47%), followed by the moderate matutinal chronotype ( $n = 20$ ; 38%) as shown in Table 2. Among the police officers, 51 (46%) presented indifferent chronotype, followed by the moderate matutinal chronotype ( $n = 48$ ; 43%), moderate vespertine chronotype ( $n = 7$ ; 6%) and extreme vespertine chronotype ( $n = 5$ ; 4%), as shown in Table 2. The evaluation between the groups was conducted using the chi-squared test. There were no significant differences ( $p > 0.05$ ) between the groups.

**Table 1** - Age of the included police officers and nurses

Age (Years)	Police Officers		Nurse		p
	N	%	N	%	
21 - 30	46	42	22	41	0,872
31 - 40	26	23	17	32	0,323
41 - 50	37	33	10	19	0,083
+ 50	2	2	2	4	0,595
Indeterminate	-	-	2	4	-
Total	111	100	53	100	-

**Table 2** - Evaluation of anxiety and depression, chronotype and suicidal ideations in included police officers and nurses

Anxiety	Nurse		Police Officers		x <sup>2</sup>	p
	N	%	N	%		
Minimum	27	51	61	55	0.10	0.753
Light	16	30	25	22	0.75	0.386
Moderate	7	13	13	12	0.00	0.985
Severe	3	6	10	9	0.19	0.551
Not responded	-	-	2	2	-	-
Total	53	100	111	100	-	-
Depressão	N	%	N	%	x <sup>2</sup>	p
Without risk of depression	35	66	76	69	0.02	0.894
With risk of depression	17	32	30	27	0.23	0.628
Not responded	1	2	5	4	0.15	0.665
Total	53	100	111	100	-	-
Chronotype	N	%	N	%	x <sup>2</sup>	p
Indifferent	25	47	51	46	0.00	0.984
Moderate matutinal	20	37	48	43	0.25	0.617
Extreme matutinal	3	6	5	4	0.00	0.714
Moderate vespertine	3	6	-	-	-	-
Extreme vespertine	1	2	7	6	0.71	0.439
Not responded	1	2	-	-	-	-
Total	53	100	111	100	-	-
Suicidal Ideation	N	%	N	%	x <sup>2</sup>	p
Yes	5	9	6	5	0.40	0.336
No	48	91	102	92	0.00	0.771
Not responded	-	-	3	3	-	-
Total	53	100	111	100	-	-

Among the nurses, five (9%) reported suicidal ideation by the time of the interview (Table 2), reporting reasons such as relationship problems or losses. When asked about the time at which the suicidal ideations occurred, four (80%) mentioned that the ideations occurred more than 3 years ago. Psychotherapy (n = 2; 40%) was the solution that was most cited as the reason for resolution of the suicidal ideations.

Among the police officers, six (5%) reported suicidal ideation by the time the interview (Table 2). The police officers cited the following reasons for suicidal ideations: problems with stress, anxiety, and/or depression (n = 1; 17%), finances (n = 1; 17%), as well as other reasons.

Among the officers that reported suicidal ideations at least once in their lives, three (50%) indicated that the ideations occurred more than three years ago, two

(33%) reported that it occurred less than one year ago and one (17%) reported that occurred between one and two years ago. Regarding the reason for the resolution of their suicidal ideations, two (33%) reported that they had taken no action, one (17%) reported having had medical follow-up, one (17%) reported that he sought religious assistance and with a professional psychologist, one (17%) sought religious assistance and one (17%) simply tried to stop thinking about it. Evaluation between the groups was conducted using the chi-squared test. There were no significant differences ( $p > 0.05$ ) between the groups.

## ■ DISCUSSION

Most nurses in this study were females (96%); this result is consistent with the predominance of this gender in the nursing profession. In Brazil, in spite of the admission of men into the nursing labor market, nursing is still a predominantly female profession (87%).<sup>14</sup> A study has shown that, among women, the risk for mental health problems was relatively high when they were exposed to continuously occurring stressors at work.<sup>15</sup>

The police officers participating in our study reflects the fact that police duty is typically a male profession in Brazil. We find that 84% of officers are male; this finding may be related to the traditional philosophy of the police force, which are influenced by the National Army. The same study cited above has shown that, among men, a recent episode of stress at work is associated with a high risk of developing mental health problems such as anxiety and depression.<sup>15</sup>

A study examining the chronobiology, sleep-wake cycle and anxiety level of nurses working in different shifts showed that 47% had between 31 and 40 years of age.<sup>2</sup> Another study evaluating the correlation between everyday stress levels and chronotype in nurses found that 87% of nursing professionals had between 20 and 39 years of age,<sup>16</sup> similar to the data found in the current study. The age of the majority of police officers in our study is between 21 and 30 years of age (41%). A study described in a military report shows an average age of 33.5 years.<sup>8</sup> Depression is more evident in the younger than in the older age groups.<sup>17</sup> This finding may have influenced the higher frequency of depressive symptoms seen among police officers.

Nurses are the professionals that most interact with people in of need help.<sup>18</sup> Studies of nurses and nursing assistants in a public hospital in São Paulo show the increased mental health demands of nurses, reporting that the diseases most referred to by workers, without a medical diagnosis, were emotional disorders including depression, anxiety and insomnia.<sup>19</sup>

A study of nursing professionals showed that situations within the work environment could cause anxiety.<sup>20</sup> These situations include instability or deterioration of the state of health of patients; lack of materials, equipment

and/or personnel; relationships with the patient's family; difficulties with the systematization of nursing care and high-complexity procedures.<sup>20</sup>

A Study of nurses involved in perioperative care showed that these professionals require greater attention to mental health care because of the intensity of physical and mental work, professional liability, complexity of care, shift work and urgent/emergency situations that can create anguish and anxiety.<sup>21</sup>

A study used the Beck Anxiety Inventory to evaluate anxiety in nursing professionals and found 49% of nurses with moderate to severe anxiety symptoms.<sup>22</sup>

A study conducted in Rio de Janeiro<sup>23</sup> examined the impact of professional activities on the physical and mental health of uniformed and civilian police and noted that 34% of police in the study reported psychological suffering (psychosomatic symptoms, depression and anxiety) compared to a rate of 20% among other civilians.

When referring to the association between psychopathology and sleep disorders, some have reported that this relationship is bidirectional.<sup>24</sup> Mental disorders affect the occurrence of sleep disorders, as disruptions in sleep patterns are related to the occurrence of mental disorders. It is widely recognized that night shift work alters the circadian rhythm of individuals, causing an increase in stress, which in turn changes sleep patterns, promoting a feedback loop of the situation.<sup>16</sup> Daytime sleep does not have the same restorative quality as nighttime sleep, causing night shift workers to develop a cumulative sleep debt, which results in decreased productive capacity.<sup>16</sup> Thus, the schedule of daily activities should focus on the schedule that is most compatible with the degree of alertness for each chronotype, with the aim of improving performance and quality of life.<sup>1</sup>

A study about chronotype and sleep deprivation status of nurses on the night hospital service showed that most presented an indifferent chronotype (64%), followed by moderately vespertine (24%) and moderately matutinal (12%) chronotypes. Extremes of matutinal and vespertine chronotypes were not seen.<sup>25</sup> In the current study, 25 (48%) nurses presented indifferent chronotype, 20 (38%) moderate matutinal chronotype.

A similar study was conducted in the city of Oporto, Portugal.<sup>26</sup> Gender differences are significantly related to the chronotype, with afternoon chronotypes being more prevalent in men compared with women.<sup>4</sup> This information may explain the fact that nurses are predominantly of the moderate matutinal chronotype because most of the sample was composed of women.

Chronotype classifications in the police officers of this study revealed that 46% police had indifferent chronotype and 43% police had moderate matutinal chronotype. No previous studies were found that examined chronotypes in military. Study of North American police officers showed that sleep disturbances were common and significantly



associated with an increased risk for problems related to health, performance and security.<sup>27</sup>

In this study, five nurses reported they had had suicidal ideations at the time of the study; the majority related that these ideations had occurred more than three years before. Depression sometimes represents the link between frames of anxiety and the risk of suicide.<sup>28</sup> A report on depressive symptoms and suicidal ideations among hospital nurses and doctors revealed that 4% attempted suicide.<sup>18</sup>

A study conducted with 24 tactical force police officers found that 92% always or sometimes felt stressed and that 21% reported having thought about suicide at some point.<sup>8</sup> Current study differs from these results, because only 5% admitted to having suicidal ideations.

## Summary

Nurses and military have high risk of anxiety and depression. Presence of suicidal ideation in their lives was relatively low. Indifferent and moderate matutinal chronotypes showed the highest prevalence in nursing and police.

Implementation of preventive measures is necessary for the early diagnosis of anxiety and depressive disorders in order to prevent complications, including suicide.

The limitation of this study is related to the fact that the measurement instruments were applied during the routine of work. This may have compromised the answers. To partially alleviate this situation, the interviews were made in a reserved place.

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## IDEAÇÃO SUICIDA E AVALIAÇÃO DE CRONOTIPO EM ENFERMEIRAS E POLICIAIS MILITARES

**INTRODUÇÃO:** Enfermeiros e policiais militares são profissionais que trabalham em turnos e têm empregos que exigem atenção e responsabilidade. Eles trabalham sob condições que podem causar estresse, ansiedade e mudanças nos padrões de sono.

**OBJETIVO:** Este estudo visa identificar sintomas de ansiedade e depressão, cronotipo e a presença de ideação suicida em enfermeiros e policiais militares de Arapiraca/Alagoas, Brasil.

**MÉTODO:** Este é um estudo descritivo e quantitativo. As entrevistas foram realizadas usando registros de Identificação e Dados Gerais, o Inventário de Ansiedade de Beck, a Escala de Depressão do Centro de Estudos Epidemiológicos e o questionário cronotipo de Horne-Ostberg.

**RESULTADOS:** Cinquenta e três enfermeiras e 111 policiais militares participaram do estudo. Militares e enfermeiras apresentaram cronotipo matutino indiferente e moderado. A maioria das enfermeiras e militares relatou níveis mínimos e leve de ansiedade. As enfermeiras e os policiais militares apresentaram um risco elevado para depressão. Cinco enfermeiras e seis policiais militares pensaram em tanto suicídio até o momento da pesquisa. Não houve diferenças significativas ( $p > 0,05$ ) entre os grupos de estudo com relação aos sintomas de ansiedade e depressão, cronotipo e ideação suicida.

**CONCLUSÃO:** As enfermeiras e policiais militares estudados apresentaram um alto risco de sintomas de ansiedade e depressão. Um número considerável de enfermeiras e policiais militares tiveram ideação suicida ao longo da vida. A implementação de medidas de prevenção é necessária para o diagnóstico precoce de ansiedade e transtornos depressivos para evitar complicações, dentre estas, o suicídio.

**UNITERMOS:** Enfermagem. Polícia. Ansiedade. Depressão. Ideação suicida. Fenômenos de Cronobiologia.

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