



RESEARCH ARTICLE

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EXPOSURE TO PSYCHOLOGICAL RISK FACTORS FOR 100 SALARIED EMPLOYEES OF THE NATIONAL ELECTRICITY COMPANY OF OUAGADOUGOU (NECO)

^{1,2}NANA, Brigitte, ^{1,2}SAWADOGO, Amidou, ¹OUEDRAGO, Alexis, ²TANIMOMO, Libérat, ³Afsata, KABORE /PARE and ²EDOH, Pierrot Koffi

¹Institut des Sciences du Sport et du Développement Humain (ISSDH) / Université Joseph Ki- Zerbo, Burkina Faso

²Institut National de Jeunesse de Education Physique et du Sport (INJEPS)/ Université d'Abomey Calavi, Bénin

⁽³⁾Université Norbert Zongo/Burkina Faso

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ABSTRACT

Introduction: The information of stress's factors among the salaried employee of the NECO have never been determined. **Objective:** the goals of this survey are to establish the tie between the stress's factors and the professional category and to study the potential connection between anxiety/depression and the practice of APS. **Method:** It was a Cross-sectional study. We surveyed 100 employees (63 men and 37 women) using a questionnaire of Karasek and the HAD scale. **Results:** The results showed a relation between the decisional latitude ($p = 0,001$), the social support ($p = 0, 02$) and the professional category (workers and middle class). As, a meaningful association has been returned between the APS practice and the scores of depression and anxiety ($p = 0.000$). **Conclusion:** The study showed an unequal distribution of the factors of stress of Karasek according to the professional category of these salaried employee. The practice of APS can permit to reduce the levels of anxiety and depression. These analysis reveal that professional stress is a reality for these salaried and must be addressed.

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INTRODUCTION

Considered a secondary sector, formal private companies contribute 21.7% of Burkina Faso's economic volume (Yaméogo, 2009). They are the engine of development because they employ a critical mass of the working population (SCADD, 2011). One such company, NECO, Burkina Faso's national electricity company, employs more than 1,000 salaried workers. It is regarded as a dynamic private company, ranking fifth of the 20 top companies in Burkina Faso, according to the National Institute of Statistics and Demography (INSD, 2011), and thus contributes to job creation, given the government's limited capacity to generate sufficient jobs in number and quality; it also hires from among new graduates (INSD, 2011).

*Corresponding author: NANA, Brigitte,
Institut des Sciences du Sport et du Développement Humain (ISSDH) /
Université Joseph Ki- Zerbo, Burkina Faso

However, NECO's transition to a state company has created numerous issues among salaried employees, both executives and workers alike. Executives experience pressure from political authorities because of an electric grid failure, lack of sufficient coverage, or dependence on neighboring countries (such as Ghana or the Ivory Coast). Upper class, middle class and lower class workers face serious occupational hazards (e.g., exposure to gases and chemical products, overwhelming job requirements and workload, excessive noise in the powerhouses, etc.). Not only are employees under pressure to meet their key metrics, but they also frequently work overtime, putting in far more than the recommended eight-hour workday. Notably, as in many countries sub-Saharan region, the majority of the workers in Burkina Faso are under a temporary employment contract with competitive wages, bonuses, and low-paid (BAF, OECD, UNDP, CEA, 2012). Aggravating these various constraints is the unemployment rate estimated at more than 6.6% of the working population (INSD, 2015). In

the academic literature, these different constraints in the professional environment are called psychosocial risks and vary according to socio-professional category. Lang *et al.* (1995, 1997) reported that these are the low and middle class workers who presented the highest risks. For Niedhammer *et al.* (2001), salaried employees in the lowest professional categories (low workers and middle class workers) are exposed to negative psychosocial conditions more frequently through unfavorable work. These authors add that psychosocial factors, namely psychological demand, decisional latitude, and social support, increase with socio-professional category (working class, middle class and upper class). Thus, the situation is considered very risky from a health perspective and, according to Karasek, the combination of strong demand and weak latitude occurs more frequently for supervisors than for executives, and even more frequently for front-line workers (Niedhammer *et al.*, 2001). Literature on psychosocial risks at work has abounded since Karasek published his survey in 1979 (Niedhammer *et al.*, 1998). Indeed, the psychosocial risks at work include all the risks that threaten the physical and mental well-being of salaried employees, which affects companies' output. Epidemiological research by Karasek and other authors has conceptualized work-related stress, the main psychosocial risk, as a state of tension between what is required of a worker and the resources that worker possesses. Karasek's model, first published in 1979 and developed further throughout the 1980s (Karasek & Theorell, 1990), relies on a validated questionnaire (Niedhammer *et al.*, 2001) to identify three types of stress factors: (a) psychological demand, designated as psychological load, which is associated with the constraints bound to a task's execution (quantity, complexity, time constraint, etc.); (b) decisional latitude, defined as the control one has over one's work (i.e., the autonomy with which one organizes tasks and makes decisions), the ability to use one's expertise and qualifications, and the capacity to develop new expertise; and (c) social support, which Karasek added after subsequent research and which includes the support of the company hierarchy and one's colleagues (Langevin *et al.*, 2011).

For Karasek, the combination of strong psychological demand and weak decision-making latitude led to a socio-emotional distress situation (Niedhammer *et al.*, 2001) that could be worsened by lack of social support. Subsequently, Karasek set forth two concepts of strain: job strain and iso-strain. Job strain occurs in a work situation that combines strong psychological demand and weak decisional latitude, whereas iso-strain integrates psychological strong demand, weak decisional latitude, and lack of social support (Niedhammer *et al.*, 2001). Referring to Karasek's interactionist model, Kivimaki *et al.* (2012) asserted that the stress factors of heavy work requirements and weak control may lead to increased cardiovascular mortality. That is, heavy job strain and a lack of balance between effort and reward may increase the risk of cardiovascular mortality. Focusing on the impact of stress on salaried employees' health, numerous authors have shown that prolonged exposure to professional stress frequently leads to nervous breakdown, anxiety, and other behavioral and mental disorders (Chouanière *et al.*, 2003; Chouanière *et al.*, 2013, p. 3; Grebot, 2008). Similarly, Bellinghausen and Valiant (2008) and Leruse *et al.* (2004) showed that people exposed to stress factors experience negative symptoms and reactions such as anguish, depression, or fatigue; crying or nervous fits; and other behaviors that may lead to social isolation and, potentially, suicide. In their survey on Moroccan taxi drivers,

Berraho *et al.* (2006) found that 73% of the drivers reported symptoms of anxiety and fretfulness and that 80% reported headaches and the sensation of being ill at ease. Brun and Martel (2003) listed various negative reactions of stressed workers: depressed mood, despair, boredom, anxiety, and fretfulness. In addition, whether stress is acute (unforeseeable, single-instance, and intense) or chronic (repeated or ongoing), its consequences require a mixed treatment plan (medicinal, psychological, and physical). Baert and Dufour (2007) affirmed that there is a plethora of hold methods in charge of the consequences of the professional stress that must necessarily integrate to the sittings of physical exercise practice. Various research has supported the effects of physical exercise on psychological wellness. For example, Scully *et al.* (1998) found direct links between a lack of physical exercise and higher instances of depression, anxiety, and stress. Their research also revealed that physical exercise has a positive influence on depression. In particular, these authors found that aerobic exercise reduces psychological stress and that such exercise can prevent stress altogether. More recently, Hassmen *et al.* (2000) indicated a logical association between psychological wellness and regular physical exercise.

The current question of work-related stress is particularly important when companies are in the process of transition. Many factors currently explain the relationship between stress and work: long working hours, difficult working conditions, pressure, deadlines, precariousness of employment, and professional insecurity. These issues are not limited to a few developed countries; as economies worldwide grow and develop, work pressures increase and present additional challenges to the working population. Thus, previously considered primarily to be an Western problem, work-related stress now presents itself as a universal difficulty. The psychosocial risks of work-related stress and their consequences are recognized in the official spheres of African countries. However, despite acknowledging the importance of the issue, there is a lack of empirical data in this context. Unlike data for Western countries, data in developing countries on stress as a main psychosocial risk is still unavailable due to a lack studies of big scientific ranges (because stress problematic is underestimated) (Houtman *et al.*, 2008). Nevertheless, some research results permit us to note that the phenomenon of stress at work remains very much a reality, especially in African government administrations and state companies. For instance, among Moroccan taxi drivers, Berraho *et al.* (2006) recorded that 36% experience professional stress. They identified cognitive, mood, anxiety, and sleep disorders as serious consequences of stress in this population.

Among Congolese textile workers, Kitronza and Mairiaux (2015) calculated a prevalence of professional stress of 28% according to the Karasek model and 22% according to the Siegrist model. Moreover, among salaried employees in Morocco, Benraiss *et al.* (2000) demonstrated that the limitations of career evolution or career limitations themselves were important sources of work-related stress. Additionally, interviews with hypertensive subjects among workers in the autonomous harbor of Abidjan revealed stress and worry (Koffi *et al.* 2001). Gombet *et al.* (2007) found that professional stress and lack of regular physical activity were correlated in 70% and 60% of hypertensive bank agents in Brazzaville, the capital of the Republic of Congo. The risk of hypertension doubles when associated with a work

environment that combines more intensive psychological requirements with weak decisional latitude (Taleb *et al.*, 2003). Furthermore, in Burkina Faso, Zagr  (2007) found a prevalence of professional stress of 38.8% among the salaried employees of the Society of Public Transportation of Ouagadougou (SPTO). An estimated 20% of salaried employees experienced "high" work-related stress, and an estimated 6.7% experienced "very high" stress. Sawadogo (2009) identified stress as the fourth most negative effect of work experienced by the salaried employees of Yalagdo OUEDRAOGO Teaching Hospital, with a prevalence of 18.54%, after back pain, fatigue. These results show that professional stress is a lived reality for Burkinabe salaried employees. Against this backdrop, the questions of how stress factors are related to one's professional category and how physical exercise affects symptoms of stress among NECO employees in Ougadougou are both worth investigating. The objective of this survey is to explore how the stress factors Karasek identified are linked to different professional categories and then to investigate potential correlations between the stress symptoms of anxiety and depression and the level of physical exercise among salaried NECO employees.

MATERIALS AND METHODS

This Cross-sectional study with descriptive aiming has been achieved in the city of Ouagadougou. The population surveyed consisted of the salaried employees of NECO. Using a sampling technique based on Schwartz's (1976) formula, the sample comprised 100 salaried employees with an average age of 34 years $\pm 8 = 6$ with extremes of 20 years and 60 years. The survey was distributed in 17 workplaces to 32 agents of mastery and 51 agents of execution, of whom 63 were men and 37 were women. As for physical exercise, one counted 38 practitioners against 62 non practitioners. A French version of the Karasek questionnaire on psychosocial stress factors was validated with a total of 26 items, of which nine related to demand, nine to decisional latitude, and eight to social support. The scores of the three scales (decisional latitude, psychological demand, and social support) were constructed according to Karasek's (1985) recommendations. They are interpreted as follows: a salaried employee whose psychological demand score is greater than or equal to 21 experiences strong psychological demand, whereas an employee whose decisional latitude score is less than or equal to 70 has weak decisional latitude. A salaried employee whose psychological demand score is greater than or equal to 21 and whose decisional latitude score is less than or equal to 70 therefore suffers from job strain, whereas an employee who experiences job strain and whose social support score is less than 24 suffers from iso-strain. The authors used Zigmond and Znaith's (1983) HAD scale, which measures the impact of stress on employee health, to evaluate symptoms of anxiety and depression according to the following scoring:

- 0 to 7: absence of anxiety and depressive disorders
- 8 to 10: anxiety and/or depressive disorder suspected
- 11 to 21: anxiety and/or depressive disorder demonstrated.

The researchers used Excel and SPSS Statistics v. 21 to complete the statistical analyses. Responses were analyzed according to sex, professional category, and presentation of anxiety and depression symptoms, using the χ^2 test. The analyses involved (a) comparing men's and women's average

scores for psychological demand, decisional latitude, and social support; (b) comparing average scores for Karasek's stress factors among different professional categories; and (c) comparing the anxiety/depression scores of those who exercised regularly with those who did not.

RESULTS

Table 1 presents the distribution of the survey sample according to kind, professional category, and engagement in physical exercise.

Table 1. Distribution of Survey Population

Feature	Men N = 63		Women N = 37	
	n	%	n	%
Upper class	11	17,50	6	16,20
Middle class	20	31,70	12	32,40
Lower class	32	50,80	19	51,40
Practicing APS	32	32%	31	31%
No Practicing APS	6	6%	31	31%

Table 2. Score Averages of Karasek Stress Factors According to Kind and Professional Category

	latitude decisional	Psychological demand	social support
Type			
Men	63,74	25,52	22,10
Women	59,55	26,24	22,75
	p = 0,014	ns	ns
Professional Category			
Middle class	63,37	25,64	21,05
Lower class	59,88	26,15	22,45
	p = 0,001***	ns	p = 0,02*

Note: not significant; ***: significant to $p < 0.001$; *: significant to $p < 0.05$

Table 2 reveals the distribution of the averages of the scores of Karasek's three factors according to kind and professional category. It shows a statistically meaningful relationship between the decisional latitudes of men and women ($p = 0.01$). The women present the most unfavorable scores. Regarding the professional category, there is a statistically meaningful difference ($p = 0.001$; $p = 0.02$) between the settings and the workers with respect to the levels of decisional latitude and social support.

Table 3. Distribution of Anxiety and Depression Scores vs. Practice of APS

	Anxiety	Depression	Test of χ^2
Practicing APS	12,08	10,18	0,000
No Practicing APS	12,33	10,52	

***: significant to $P < 0,001$; *: significant to $p < 0, 05$

According to Zigmond and Znaith's (1983) analysis model, Table 3 indicates that the practitioners of APS scored better on anxiety and depression than non-practitioners ($12.08 < 12.33$; $10.18 < 10.52$, respectively). Applying the χ^2 test to the different scores yields a meaningful difference between those who practice APS and those who do not.

DISCUSSION

The objectives of this study were to (a) explore links between stress factors identified by Karasek and different socio-professional categories and (b) establish the relationship between physical exercise and the consequences of stress. The

results establish a relationship between the stress factors Karasek described and the professional categories and between the practice of APS and the consequences of stress.

Karasek's Stress Factors and Professional Categories: Stress factors are distributed unequally with respect to kind and professional category. Based on Karasek's (1985) recommendations for score calculation, our survey sample demonstrated both job strain and iso-strain in that the calculated averages clearly showed on the one hand a strong psychological demand (25.52 for the men and 26.24 for the women, both greater than 21) with a weak decisional latitude (63.74 for men and 59.55 for the women, both clearly less than 70), indicating job strain; and on the other hand, demonstrating weak social support (22.10 for the men and 22.75 for women, clearly lower than 24), indicating iso-strain. Regarding the strength of the link between the kind of stress and Karasek's stress factors, Table 2 shows that, overall, the women demonstrated the most unfavorable stress factors. For two out of the three studied factors (i.e., psychological demand, decisional latitude), the women presented scores that indicate more risk than did men (59.55, less than 70 and less than the men's score of 63.73; and 26.24, greater than 21 and greater than the men's score of 25.52). Niedhammer *et al.* (2007) showed that the prevalence of job strain was frequently higher for women than for men, as the women were exposed to a weaker decisional latitude and a stronger psychological demand. Moreover, a statistically meaningful difference appeared between the average women's and men's scores and the level of decisional latitude. These results suggest that the kind of stress and the stress factors are correlated because the women occupy the positions requiring the fewest qualifications and which are therefore the most subject to coercion (e.g., secretary). These results corroborate those of the SUMER 2002–2003 investigation, in which the women experienced stronger psychological demand than the men: 21.5 for the men vs. 21.8 for the women (Guignon *et al.*, 2003).

For the SUMER 2002–2003 investigation analysis, the management of the animation research, studies, and statistics of France [DARES] (2008) showed that the women were more exposed to job strain than men, which presented a health risk. These results confirmed those of Niedhammer *et al.* (2007), which underlined meaningful differences between men and women, who were on average subject to stronger psychological demand and weaker decisional latitude. However, the analysis also shows that the women's average social support score (22.75) was slightly higher than that of the men (22.10), although the level of difference was not significant or meaningful. In their research, Niedhammer *et al.* (2007) also found no significant difference between the sexes regarding level of social support. Nevertheless, we can argue that in the context of Africa, and particularly that of Burkina Faso, women tend to be more interdependent between them in the services that the men. What testifies the less unfavorable score of the women testifies that of the men to the level of the social support according to the model of Karasek. Moreover, the results show that professional category and stress factors are closely linked. Table 2 informs us that decisional latitude and social support at the level of the settings and the agents of execution are closely linked, with $p = 0.001$ and $p = 0.02$, respectively. These results corroborate those of Niedhammer *et al.* (2001), which showed that the salaried employees who belong to the lowest professional categories are more often exposed to psychosocial conditions resulting from unfavorable

work and that psychological demand, decisional latitude, social support, and rewards increase with them. In 1995, Langs and his collaborators affirmed that these are the workers and the employees who presented the highest risks. On this topic, Roquelaure *et al.* (2007) found that employees who have little autonomy and control with regard to their work (weak decisional latitude) and who must answer to challenging requirements (strong psychological demand) have an increased risk of psychological distress and physical illness, particularly cardiovascular disease. Several authors have observed that psychological demand and decisional latitude increase with professional category (Niedhammer *et al.*, 1998; Larocque *et al.* 1998; Schrijvers *et al.*, 1998). These results correlate with ours because in our survey population, the agents of execution (workers) experienced stronger psychological demand (26.15) and weaker decisional latitude (59.88) than the executives. It is in this sense that Larocque *et al.* (1998) showed that the combination of strong work demand and weak latitude is more frequent for the lowest category of salaried employee. Likewise, Niedhammer *et al.* (2001) found fundamental differences between such professional category extremes as those of executives and workers relative to aspects of decisional latitude, such as autonomy and room to maneuver; and psychological demand, which includes temporal pressure, psychological load, and task complexity. These elements summarize the daily experience of salaried NECO employees, where all (both executives and workers) work under pressure (for the executives, pressure from the authorities; for the workers, task complexity and psychological pressure). Similarly, DARES (2008) emphasized that lower-tier workers are more affected by job strain than professionals with more qualifications because they have the least room to maneuver? However, professionals with fewer qualifications are generally confronted with less psychological demand than the executives (Rauquelaure *et al.*, 2007).

Work demands and latitude are not the only factors which affect workers psychologically. In Karasek's model, social support refers to the social interactions at work that help individuals and that more frequently come from colleagues than from superiors. Social support plays an essential role in reducing stress because it curbs the negative effects of excessive workload requirements (Brun & Martel., 2003). Thus, although some American (Schwartz *et al.*, 1988) and Swedish (Johnson & Flight, 1993) studies have confirmed that social support is similar for different professional levels, our results demonstrated the opposite: a meaningful difference emerged between the executives and the workers regarding level of social support. This could be explained by the management styles of different companies or contexts. In African companies, social support is considered essential to providing services in the workplace, and interactions between workers are critical to doing business. This social support is better structured among the salaried employees who occupy the bottom of the scale than among those higher in the hierarchy (21.05 among middle class vs. 22.45 among workers). Unlike Western companies, in Africa, the need for group membership and power, in particular, take priority over the realization for the salaried employee occupying the bottom of the scale. The salaried employees try above all to preserve their function while establishing good relationships with one another. Their contribution to the success of the enterprise and their self-realization has weak importance to the look of this worry (Dia, 1991). The population surveyed appears to work in a situation characterized by notable job strain and iso-strain.

This situation confirms that, overall, salaried employees at SONABEL experience anxiety and depression.

Relationship between APS Practice and Consequences of Professional Stress: Regarding the potential links between the consequences of stress (e.g., anxiety and depression) and physical exercise, our results demonstrate that those who practice APS have better anxiety and depression scores than those who don't exercise. The χ^2 test yields a very meaningful difference between the scores of these two groups, which can be explained by the fact that APS reduces the negative effects of work-related stress on the health of NECO's salaried employees. The practice of APS provides a feeling of well-being and allows employees to bloom, while exerting a positive influence on the effects of stress. These results corroborated those of Shaijarearnwana (2007), which showed that the practice of APS reduces stress and permits one to acquire benefits corresponding with emotional intelligence. Likewise, Graziani *et al.* (2001, p. 97) showed that people suffering from stress who engage in physical exercise can decrease the negative effects of that stress. In short, several authors have demonstrated the beneficial effects of physical exercise: Scully *et al.* (1998) and Hassmen *et al.* (2000) found direct links between physical exercise and reduction of depression and anxiety. These authors also emphasized that regular physical exercise reduces psychological stress and heightens psychological well-being.

Conclusion

A survey of salaried employees of NECO in Ouagadougou identified the three factors of stress described in Karasek's model (weak decisional latitude, high psychological demand, and weak social support) as determinants of stress. It also highlighted considerable differences in exposure to stress factors between men and women and between professional categories. The determinants of stress vary according to professional category. Several studies have shown that the salaried employees who belong to the lowest professional categories are exposed to the most professional stress. Moreover, the survey showed a positive association between physical exercise and reduction of the consequences of stress (depression, anxiety) for salaried employees according to the HAD scale. These results may serve as the basis for future studies on managing work-related stress in Burkina Faso's utility sector.

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