

Job satisfaction among control room operators of electrical systems

Amanda A Silva Macaia^{a,*}, Elaine C Marqueze^a, Lúcia Rotenberg^b, Frida Marina Fischer^a, Claudia R C Moreno^a

^aEnvironmental Health Department, School of Public Health, University of São Paulo, Dr. Arnaldo Av, 715 Zip-Code 01246-904, São Paulo, Brazil.

^bLaboratory of Health and Environment Education, Oswaldo Cruz Institute – Fiocruz/RJ. Av. Brasil, 4365, Zip Code 21040-4242. Rio de Janeiro, Brazil.

Abstract. Shift workers from control centers of electrical systems are a group that has received little attention in Brazil. This study aimed to compare workers' job satisfaction at five control centers of a Brazilian company electrical system, and according to their job titles. Method: The Organization Satisfaction Index (OSI) questionnaire to assess job satisfaction was used. ANOVA was used to compare OSI means, according to job title and control center. The results showed that there is no difference in job satisfaction among job titles, but a significant difference was found according to the control center. A single organizational culture cannot be applied to several branches. It is required to implement actions that would result in job satisfaction improvements among workers of all studied control rooms centers. The high level of education of operators working in all centers might have contributed to the similar values of perceived satisfaction among distinct job titles.

Keywords: job satisfaction, electrical systems, organization culture, work organization

1. Introduction

Job satisfaction is a phenomenon whose definitions depend on the theoretical reference adopted. Despite this, there is no doubt it affects the health-disease process at the workplace and worker's life [4]. This present study is based on the concept of Locke [3], in which job satisfaction is the result of the evaluation of workers on their work or the achievement of their values through the work activity.

Robertson et al [8] stated that job satisfaction includes the achievement with value and growth, the job itself, the organizational design, the organizational processes and personal relationships.

Due to the fact that job satisfaction is a subjective assessment, this may be different according to the workplace, as well as the function performed [5,9]. In this context, this study presents the following hypotheses: (a) the worker's job title, considered in a hierarchical scale, influences its job satisfaction, and (b) branches of the same company should differ in

relation to this aspect, even when they are prescribed by the same management policies.

In this study, we focused on shift workers working in electrical systems control rooms centers, a group that has received little attention in Brazil. In electrical plants, there are sets of processes, instruments and equipment designed for the transmission, generation, distribution, and commercialization of electric power. The job demands are related to an extensive range of activities that can be conducted in this sector [6,7,10]. The activities performed in a control room are characterized by significant mental and psychosocial demands, such as the time pressure, significant responsibility, work load, problem solving, decision-making, sustained attention and adjustment to new technologies. The objective of this study was to compare perceived job satisfaction in a company of the electric sector, over its five control centers and in relation to job titles (supervisor /senior, operators and junior/trainees).

* Corresponding author. E-mail: amandaas@usp.br / Phone: +55 11 3061-7115.

2. Methods

This cross-sectional study was conducted in 2009, and had the participation of all male workers operating control rooms (n=98) of five control centers of a Brazilian electrical company. The control centers are identified by their location: A, B, C, D and E. Employee participation was voluntary, according to the precepts of the ethics in research with human beings [1].

2.1. Data collection

The operators (all males) were invited to fill out a self-administered questionnaire. It included questions on sociodemographic data, work characteristics and health outcomes. The latter comprised of Occupational Stress Indicator (OSI) [8,11] to assess job satisfaction and the Brazilian Portuguese version of the Finnish questionnaire, the Work Ability Index (WAI), to evaluate whether the worker is fit to perform his job, based on his health status and physical and mental abilities [13].

The OSI was used to analyze workers' perceptions about their own health and performance based on the work environment and content, organizational conditions, and the skills and requirements of the workers. This scale has a total score that varies from 22 to 132 points.

2.2. Data analysis

To test the normality we performed the Kolmogorov-Smirnov test. ANOVA was performed for the comparison of means, per job title and control centers

of company. The post-hoc test, LSD multiple comparison, was used as well. All tests were considered statistically significant when $P < 0.05$. SPSS version 17.0 was used to all data analysis.

3. Results

The mean age of respondents was 38.5 years (SD 11.8 years), and average of working time in the company of 6.8 years (SD 3.1 years). Majority of participants were married or living with a partner (94.1%) and had no second job (76%). The average family income was US\$ 4,100.00 (SD US\$ 2,173.00). All participants at least finished the second degree education (high school). An important contingent was attending college degree (35.6%) or has already completed it (27.8%). The work schedules were rotating shiftwork, including night work. Table 1 shows the work characteristics and health of workers according to control center.

The aspects of job dissatisfaction most cited were: a) in all five centers: the way the company takes advantage of the potential the worker believes he has, b) in four centers: the way changes and innovations are implemented and, c) in two centers, the way conflicts are solved.

The results of ANOVA showed that there is no statistically significant difference of job satisfaction in relation to job title. However, there is a statistically significant difference compared to the control centers (Figure 1).

The post hoc test showed that workers at the "E" control center have lower job satisfaction compared to "A", "C" and "D".

Table 1
Work and health characteristics per control centers.

Variable	A n (%)	B n (%)	C n (%)	D n (%)	E n (%)
Job title					
Supervisor/Senior Operator	8 (44.4)	13 (76.5)	7 (46.6)	8 (30.8)	7 (31.8)
Operator	7 (38.9)	4 (23.5)	4 (26.7)	8 (30.8)	12 (54.6)
Junior/Trainees	3 (16.7)	0 (0)	4 (26.7)	8 (30.8)	3 (13.6)
WAI					
Poor work ability	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Moderate work ability	1 (5.6)	0 (0)	0 (0)	2 (7.7)	3 (13.6)
Good work ability	9 (50)	10 (58.8)	4 (26.7)	14 (53.8)	13 (59.1)
Excellent work ability	8 (44.4)	7 (41.2)	11 (73.3)	10 (38.5)	6 (27.3)
Satisfaction with available leisure-time					
Not at all satisfied	3 (16.7)	4 (23.5)	2 (13.3)	3 (11.5)	2 (9.1)
Satisfied to some extent	11 (61.1)	9 (52.9)	8 (53.3)	15 (57.7)	14 (63.6)
Very satisfied	4 (22.2)	4 (23.5)	5 (33.3)	8 (30.8)	6 (27.3)
Satisfaction with available family-time					
Not at all satisfied	3 (16.7)	3 (17.7)	2 (13.3)	4 (15.4)	7 (33.3)
Satisfied to some extent	13 (72.2)	13 (76.4)	7 (46.7)	18 (69.2)	11 (52.4)
Very satisfied	2 (11.1)	1 (5.9)	6 (40)	4 (15.4)	3 (14.3)

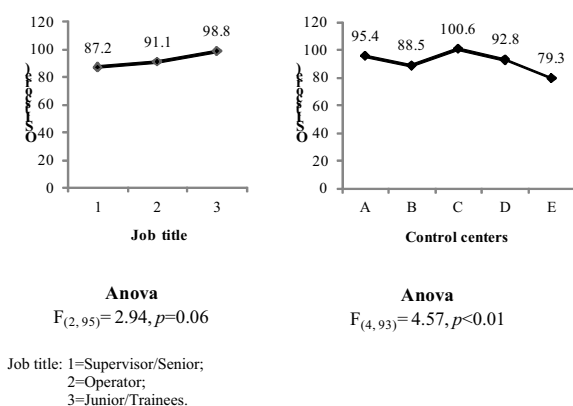


Figura 1 – Satisfação no trabalho por função e centro de controle.

Workers of the center of “B” have a lower job satisfaction when compared to “C”.

4. Discussion

The study hypothesis that function of the worker, considered in a hierarchy, would influence job satisfaction was refuted. According to Olkinuora and Leppanen [2], the meaning and challenge of work, as well as the skills required for the development of tasks will diminish in a range of professions as the hierarchical scale decreases. In nursing teams for example, the functions of the workers are well determined by the educational levels, with strong hierarchical character. Distinct job titles of nursing professionals show different perceptions about their conditions and work organization [5,9]. In this study, an important contingent has a degree or is attending College. Similar levels of education level might mean similar abilities to perform the tasks and perceptions on psychosocial factors of the work organization. This fact may have contributed to the homogeneity in job satisfaction, despite the subjective nature of evaluation.

Similarity was found in relation to dissatisfaction factors most cited in each control center. Dissatisfaction with the manner the electrical company uses the potential workers should be understood by similarity of education described above, as well as management policies practiced in each control center. Management practices and intrapersonal relationships probably differ among the centers, since differences in job satisfaction by control centers were found. This is not surprising, since in each center workers will find different ways to meet the prescribed standards and de-

mands, depending on the characteristics of the group and the company itself. Organizational culture, defined as the sharing of perceptions, values and beliefs in the workplace, influences the relationship between workers, in the forms of management and job satisfaction [12].

This study suggests that a single organizational culture cannot be applied to several branches, since each branch has its own characteristics. Actions that can improve job satisfaction must elapse this understanding. Furthermore, a similar and high level of education is as an important feature in this population, and possibly contributed to the similarity in job satisfaction between the job titles.

Acknowledgments: The study participants.

References

- [1] Brasil. Ministério da Saúde. Conselho Nacional de Saúde. Resolução n° 196. Brasília, DF; 1996.
- [2] Leppanen A, Olkinuora MA. Psychological stress experienced by health care personnel. *Scand J Work Environ Health*. 1987; 13:1-8
- [3] Locke EA. The nature and causes of job satisfaction. In Dunnette MD, editor. *Handbook of industrial and organizational psychology*. Chicago: Rand McNally. 1976:1297-349.
- [4] Marqueze EC, Moreno CRC. Satisfação no trabalho - uma breve revisão. *Revista Brasileira de Saúde Ocupacional*. 2006; 30: 69-79.
- [5] Martinez MC, Paraguay AIBB, Latorre MRDO. Relação entre satisfação com aspectos psicossociais e saúde dos trabalhadores. *Rev. Saúde Pública*. 2004; 38(1):55-61.
- [6] Martinez MC, Latorre MRDO. Saúde e capacidade para o trabalho de eletricitários do Estado de São Paulo. *Cienc Saúde Coletiva*. 2008; 13(3):1061-73.
- [7] Martinez MC, Latorre MRDO. Fatores associados à capacidade para o trabalho de trabalhadores do Setor Elétrico. *Cad. Saúde Pública*. 2009; 25(4):761-72.
- [8] Robertson IT, Cooper CL, Williams J. The validity of the occupational stress indicator. *Work Stress*. 1990; 4(1):29-39.
- [9] Silva AA, Souza JMP, Borges FNS, Fischer FM. Health-related quality of life and working conditions among nursing providers. *Rev Saúde Pública*. 2010; 44(4):718-25.
- [10] Souza SF, Carvalho FM, Araújo TM, Porto LA. Fatores psicossociais do trabalho e transtornos mentais comuns em eletricitários. *Rev. Saúde Pública*. 2010; 44(4):710-7.
- [11] Swan JA, Moraes LFR, Cooper CL. Developing the occupational stress indicator (OSI) for use in Brazil: a report on the reliability and validity of the translated OSI. *Stress Med*. 1993; 9:247-53.
- [12] Tsai Y. Relationship between organizational culture, leadership behavior and job satisfaction. *BMC Health Serv Res*. 2011; 11:98-106.
- [13] Tuomi k, Ilmarinen J, Jahkola A, Katajarinne I, Tulkki A. Índice de capacidade para o trabalho. Traduzido e adaptado para a língua portuguesa: Frida FM et al, 2005. São Carlos: Instituto Finlandês de Saúde Ocupacional/ EdUFSCAR.