



Quality of Work Life and Work-Related Musculoskeletal Disorders among Nursing Professionals*

Qualidade de Vida no Trabalho e Distúrbios Osteomusculares Relacionados ao Trabalho entre profissionais de enfermagem

Calidad de Vida en el Trabajo y Disturbios Osteomusculares Relacionados al Trabajo entre profesionales de enfermería

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ABSTRACT

Objective: To evaluate the association of Quality of Work Life (QWL) with musculoskeletal disorders (MSDs) among nursing professionals working in the surgical unit. **Methods:** A quantitative descriptive, cross-sectional and correlational approach, in which 211 nursing workers participated, from 11 hospitals in Londrina, Paraná, Brazil. For data collection, three instruments were used: sociodemographic and professional characteristics, the Visual Analogue Scale, and the Nordic Questionnaire. **Results:** The majority of participants were auxiliary nurses (62.6%), female gender (87.1%), married (54.5%), with a mean age of 40 years. Among the participants, 38.9% presented with musculoskeletal complaints in the lumbar region and 37.9% in the shoulder region. In this study, the QWL obtained a statistically significant association with the musculoskeletal disorders in the lumbar region and shoulders over the past 12 months ($p = 0.00$). **Conclusion:** The absence of lumbar pain contributed significantly to elevating the measure of QWL ($p = 0.010$), although the final regression model explained only 22.6% of the variance of the measure of QWL.

Keywords: Quality of life; Cumulative trauma disorders; Surgicenters

RESUMO

Objetivo: Avaliar a associação de Qualidade de Vida no Trabalho (QVT) com os distúrbios osteomusculares (DORT) entre profissionais de enfermagem que trabalham em bloco cirúrgico. **Métodos:** Estudo de abordagem quantitativa, descritivo, transversal e correlacional, do qual participaram 211 trabalhadores de Enfermagem de 11 hospitais de Londrina-PR, Brasil. Para coleta de dados, foram utilizados três instrumentos: caracterização sociodemográfica e profissional, Escala Visual Analógica e o Questionário Nórdico. **Resultados:** A maioria dos participantes era de auxiliares de enfermagem (62,6%), do sexo feminino (87,1%), casados (54,5%), com idade média de 40 anos. Dentre os participantes, 38,9% apresentavam queixas osteomusculares na região inferior das costas e 37,9%, na região dos ombros. Neste estudo, a QVT obteve associação estatisticamente significante com os distúrbios osteomusculares na região lombar e dos ombros nos últimos 12 meses ($p=0,00$). **Conclusão:** A ausência de lombalgia contribuiu significativamente para elevar a medida de QVT ($p=0,010$), embora o modelo final de regressão tenha explicado, apenas 22,6% da variância da medida de QVT.

Descritores: Qualidade de vida; Transtornos traumáticos cumulativos; Centros de cirurgias

RESUMEN

Objetivo: Evaluar la asociación de Calidad de Vida en el Trabajo (CVT) con los disturbios osteomusculares (DORT) entre profesionales de enfermería que trabajan en una área quirúrgica. **Métodos:** Estudio de abordaje cuantitativa, descriptiva, transversal y correlacional, en la que participaron 211 trabajadores de Enfermería de 11 hospitales de Londrina-PR, Brasil. Para la recolección de los datos, fueron utilizados tres instrumentos: caracterización sociodemográfica y profesional, Escala Visual Analógica y el Cuestionario Nórdico. **Resultados:** La mayoría de los participantes era de auxiliares de enfermería (62,6%), del género femenino (87,1%), casados (54,5%), con edad promedio de 40 años. De los participantes, 38,9% presentaban quejas osteomusculares en la región inferior de la espalda y 37,9%, en la región de los hombros. En este estudio, la CVT obtuvo asociación estadísticamente significativa con los disturbios osteomusculares en la región lumbar y de los hombros en los últimos 12 meses ($p=0,00$). **Conclusión:** La ausencia de lumbalgia contribuyó significativamente a elevar la medida de CVT ($p=0,010$), a pesar que el modelo final de regresión haya explicado, apenas el 22,6% de la varianza de la medida de CVT.

Descriptorios: Calidad de vida; Trastornos de traumas acumulados; Centros quirúrgicos

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INTRODUCTION

Although it is a current topic, there is still no consensus definition about the meaning of Quality of Work Life (QWL) and it is often used to describe situations and methods with different goals, given the broad scope and subjectivity which involves it ⁽¹⁾. Oftenly, the term is used to describe various basic dimensions of the task and other dimensions not directly dependent on the task, but capable of providing motivation and satisfaction on different levels, mainly aiming at improving the quality of services and productivity ⁽²⁾.

In this sense, other authors ⁽³⁾ found that there is no consensus among researchers about the concept and domains of QWL in studies in Brazil. The concept of QWL is related to job satisfaction components, such as income, autonomy, professional status, sometimes related to greater worker participation within the organization, which proves that QWL has been evaluated under different approaches.

Physical health is an extremely important factor in people's lives, and its association with QWL can generate subsidies to support the well-being of nursing professionals. A recent study highlighted that among nursing professionals the QWL measure was higher among those who had no health problems related to the musculoskeletal system ⁽⁴⁾.

Low back pain was pointed as the most common musculoskeletal disorders among adults, it will reach about 60 to 80% of people in the world at some stage in their life ^(4,5,6). Although there are several studies on musculoskeletal disorders, the exact cause of back pain is not yet fully understood. There is strong evidence that long routines of workload may contribute to aggravate preexisting conditions ^(5,7).

Low back pain is usually the result of cumulative trauma, it is also considered one of the most important musculoskeletal disorders among nurses, with a prevalence higher than 87% and an incidence of 47% per year ⁽⁵⁾. This morbidity is a major public health problem and it has been explored in order to determine the conditions of the occupational environment, the injury intensity, treatment, rehabilitation, inability to work, preventive measures and quality of life of individuals affected by this disease ⁽⁸⁾. The pain in the shoulder region has also been described in the literature for its high prevalence, over 40% among nurses ^(5,7,9,10).

Considering these aspects, this study was designed with the following objectives: to assess the associations between Quality of Work Life measures and the presence of musculoskeletal disorders with sociodemographic characteristics and nursing professionals who work in Surgical Units; to test whether, after adjusting sociodemographic and professionals variables, adding physical health problems would contribute to lower QWL among nursing professionals of Surgical Units.

METHODS

The study approach is quantitative, observational, descriptive and cross-sectional, it was approved by the Ethics and Bioethics Research Committee of the Irmandade Santa Casa de Londrina, Bioiscal, under the protocol number 235/06 according to Resolution 196/96 from the National Health Council/MH.

The study population was composed of 340 professionals from nursing professionals of the Surgical Center and/or the Materials and Sterilization Center of 11 hospitals in the city of Londrina-Parana, Brazil. There were 211 (66.8%) nursing professionals who agreed to participate in the study by signing the Consent Form, completing the data collection instrument and returning it to the researchers.

Data collection took place between May and November 2007, using three instruments: sociodemographic and professional characterization; Visual Analogue Scale (VAS) from zero (worst possible QWL) to 10 (best possible QWL), for measuring QWL; the general instrument derived from the Nordic Musculoskeletal Questionnaire ⁽¹¹⁾ in its adapted and validated version for Portuguese ⁽¹²⁾. In this study, VAS was chosen for QWL measurement due to evaluation of this construct on a continuous scale and also because it is more sensitive to changes than measurements based on categorical lists of adjectives ⁽¹³⁾. The obtained value by VAS was converted into millimeters, generating a score which ranged from zero to 100.

The Nordic Questionnaire, self-administered in this study, was built on a human body figure, it is a posterior view divided into nine regions (neck, shoulders, upper back, elbows, wrists/hands, low back, hips/thighs, knees, ankles/feet). This instrument consists of dichotomous answers (Yes; No) on the presence of musculoskeletal disorders in the past 12 months and also in the last 7 days, besides, it investigates the occurrence of functional disability and the seeking for professional help in the last 12 months by the presence of problems related to the musculoskeletal system. The results were analyzed by the frequency of symptoms in different body parts ⁽¹¹⁾.

Aiming at identifying possible difficulties in completing the instrument by the potential participants, a pretest was performed in April 2007. 20 nursing professionals, selected randomly through the replacement scale from the departments involved in the research, participated of this pretest, in addition they had to work in both hospitals that participated in the study. The number of returned questionnaires was 15, their analysis has shown a large number of missing data in the returned Nordic Questionnaire, therefore the instructions were changed, reinforcing the need for answering all items.

Still, in data collection, there were many variables missing which were not fulfilled, even after the pilot study and identification of limiting answers in the restatement and instructions.

The collected data were processed and analyzed by the software "Statistical Package for Social Science (SPSS) version 15.0 for Windows." All variables underwent descriptive analyzes and categorical variables were analyzed for a simple frequency, while continuous variables were analyzed as central tendency measures (mean and median) and dispersion (standard deviation). To evaluate the association of sociodemographic variables, professional and physical health status with QWL, univariate analysis was used, primarily through the Student's t-test and the probability test (chi-square). We also conducted a multiple regression analysis to examine the association between the QWL measure and sociodemographic variables, professional and physical health status of Surgical Unit nursing professionals. The significance level adopted was equal to or less than 0.05.

RESULTS

From the 211 participants, the majority were female (87.1%), married (54.5%), with completed secondary education (58.3%) and mean age was 40 years old (SD = 9.7). Regarding nursing professionals, most were nursing assistants 132 (62.6%), and 22 (10.4%) were nurses.

According to the institutions, 123 (58.3%) people worked in public/philanthropic institutions and 88 (41.7%) in private hospitals, with a mean time of experience in the Surgical Unit of 9.3 (SD = 8) years. The mean weekly working hours was 47.3 (SD = 16) hours and the income of 140 (68.3%) professionals was up to three minimum salaries. From those 207 workers who responded to the item related to having another job, only 48 (23.2%) reported having a dual employment.

Regarding the evaluation of QWL, considering the possible range of VAS from 0 to 100 which higher values indicated better perception of QWL, it was obtained a mean of 58.9 (SD = 27.7) among 201 nursing professionals who responded to this question.

There were no statistically significant differences between the QWL measures according to sociodemographic variables. However, the mean of QWL was higher in the group of female workers (M = 59.7, SD = 27.1) when compared to males (M = 53.0, SD = 29.4), and group of workers single/divorced/widowed (M = 60.6, SD = 27.9) when compared to the group of married professionals (M = 57.3, SD = 27.0).

The results of the univariate analysis between the QWL measure related to the professional characteristics showed a statistically significant difference in the assessment of this variable when considering the type

of institution where participants worked ($p = 0.003$), the income range ($p = 0.006$) and if their choice of the working department were respected ($p = 0.01$).

When investigating the physical health of nursing professionals, there was a big percentage of items that were not answered, which could have affected the assessment of this variable in this study. However, we chose to present the data, since they are extremely important for developing preventive measures for hospital environments, considered to be highly stressful and filled with predisposing factors for musculoskeletal disorders.

Hence, it was considered that some factors have contributed to the occurrence of this limitation. In the validation study of Nordic Questionnaire⁽¹²⁾, 65% of participants had a high educational level while in our study, many of the participants (58.3%) had completed secondary education. The self-administration tool for later return have shown limitations in studies that chose this strategy for data collection, which could also have contributed to the significant missing data in our study.

Figure 1 shows the annual and weekly occurrence of musculoskeletal symptoms by body parts. The analysis of workers who reported musculoskeletal symptoms in the past 12 months found that the majority reported these symptoms, especially in the low back region (n=82; 38.9%) and shoulders (n=80; 37.9%). Regarding the presence of pain in the last seven days, the predominant occurrence was musculoskeletal symptoms in the low back region in 43 (20.4%) workers.

It was also found that musculoskeletal symptoms in the low back were responsible as the most frequent problem to impair normal activities (11.4%) and for seeking help from health professionals (16.6%).

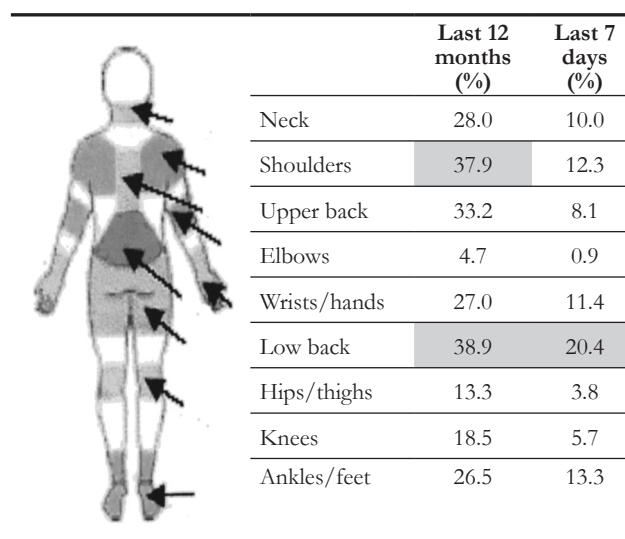


Figure 1. Frequency of musculoskeletal symptoms among nursing professionals from Surgical Unit in different body parts (n = 211). Londrina – PR, 2007.

The analysis of the frequency of musculoskeletal disorders in relation to sociodemographic and professionals showed statistically significant difference between the presence of complaints in the low back region in the past 12 months and the variables “dual employment” ($p = 0.03$) and “weekly working hours” ($p = 0.04$), when there was a greater frequency of low back pain among workers who had only one job and working up to 40 hours per week, as shown by the data in Table 1.

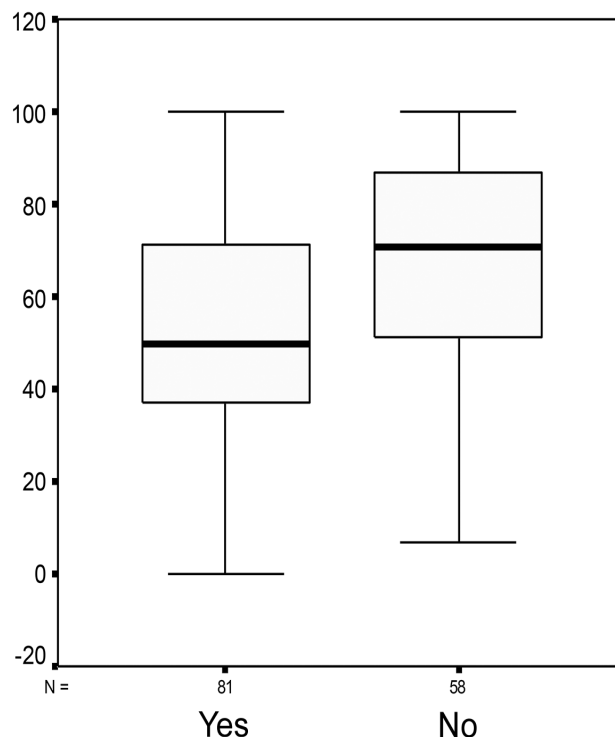
Table 1 – Distribution of nursing professionals of Surgical Units according to the presence of musculoskeletal disorders in the low back region for the past 12 months. Londrina – PR, 2007

	Presence of low back pain		P-value (C2* test)
	Yes n (%)	No n (%)	
Gender			0.07
Female	72 (61.5)	45 (38.5)	
Male	10 (41.7)	14 (58.3)	
Professional Category			0.66
Nurse	9 (52.9)	8 (47.1)	
Not Nurse	72 (58.5)	51 (41.5)	
Weekly Working Hours			0.04
Until 40 hours	34 (69.4)	15 (30.6)	
Above 40 hours	47 (51.6)	44 (48.4)	
Work shift			0.07
Day	57 (53.3)	50 (46.7)	
Night/Intermediate	24 (70.6)	10 (29.4)	
Dual employment			0.03
Yes	14 (42.4)	19 (57.6)	
No	66 (62.9)	39 (37.1)	

* Chi-square

Considering the associations between the variable QWL and the presence of musculoskeletal disorders, there was a statistically significant result between the values of QWL measure and presence of musculoskeletal disorders in the shoulder region in the past 12 months ($p = 0.00$). The group of workers with musculoskeletal disorders in the shoulder region had a mean QWL of 50.0 (SD = 29.5), and the other group (without pain) had a mean of 66.0 (SD = 24.0).

The association between musculoskeletal disorder in the low back region in the past 12 months and the QWL measure also showed a statistically significant result ($p = 0.00$), in which the presence of workers with low back pain had a mean QWL of 50.4 (SD = 27.8) and who did not feel pain, tingling or numbness in this region had a mean of 67.3 (SD = 24.2) (Figure 2).



Musculoskeletal disorders in the low back

Figure 2. Boxplots from groups of workers with and without the presence of musculoskeletal disorder in the low back region in the past 12 months, according to QWL measure. Londrina-PR, 2007.

Although the assumptions for the use of the techniques of multiple regression analysis have not been reached in its fullness for all variables highlighted in this study, these techniques were used in order to identify the existing relationship between the explanatory variables and QWL.

The performance of multiple regression analyzes aimed at testing the hypothesis: “*After adjusting the socio-demographic and professionals variables, the addition of problems related to physical health will contribute to reduce QWL among nursing professionals of Surgical Units.*”

In the regression model, the first variables inserted were the professional category, then the presence of dual employment, weekly working hours and type of institution, because it was judged that these variables

Table 2 – Analysis of multivariate linear regression using the QWL measure as the dependent variable. Londrina – PR, 2007

Exploratory Variables	Non standard coefficient	Standard error	Standard coefficient (β)	P*-value	R2 †
Step 1: exploratory variables					
Professional category (ref: Nurse)					
No nurse	7.937	7.394	0.099	0.285	
Dual employment (ref: No)					
Yes	-7.624	6.352	-0.121	0.233	
Type of institution (ref: Private)					
Public/filantropic	-14.706	5.311	-0.264	0.007	
Weekly working hours (ref.: until 40 hours)					
Above 40 hours	-4.420	6.060	-0.085	0.419	0.083
Step 2: exploratory variables					
Presence of low back pain (ref.: Yes)					
No	9.300		0.277	0.010	
Presence of shoulder pain (ref.: Yes)					
No	15.032		0.172	0.102	0.226

* p value for t-test of the null hypothesis in which the coefficient is zero.

† R² (adjusted for the number of variables in the model) in a given row refers to the proportion of the variance which is explained by the model that includes all the variables to it or above this line.

could be effective to explain the relationship of QWL with musculoskeletal disorders. In a second moment, we entered the low back pain and the shoulder region pain.

The results of this model are shown in Table 2. Only the variable type of institution was significant in the model after the inclusion of other professionals variables. After adjusting for these four professionals variables, only the variable “lack of low back pain” was significant in the model. Thus, the final model explained 22.6% of the variance in the quality of work life measure indicating that other variables may be associated with QWL assessment by professionals.

DISCUSSION

This study identified a predominant group of females (87.1%), thus showing that there is a great need for male nursing professionals, due to the numerous procedures and tasks which require greater strength and physical training, which could reduce problems

related to the musculoskeletal system. However, what is happening currently is the homogenization of work for women and men, in which men and women develop the same activities.

The gender issue is extremely relevant in studies of physical health, however, the analyzes revealed no statistically significant result when comparing the genders of the participants and the presence of musculoskeletal disorders in low back and shoulder region ($p = 0.07$ and $p = 0.12$, respectively). Different results were found by other authors^(14,15), whose higher frequency of musculoskeletal disorders occurred among women.

Regarding the QWL measure and the professionals gender, we also have not found statistically significant results ($p = 0.26$), nevertheless, it was evident that women obtained a higher value of the QWL measure than men. Another study⁽¹⁶⁾ conducted with nurses also found no statistically significant difference ($p > 0.05$) between genders and the variable QWL. In

another investigation ⁽¹⁷⁾ the result was divergent, and the highest value for the measurement of job satisfaction occurred among men.

The divergent results in prior researches may be justified by the great problem of missing variables occurred during the data collection and also by the characteristics of the profession, which absorbs more female workers, so the comparison between variables whose N is very different, it is very limited; nonetheless the self-administration of the Nordic Questionnaire was configured as the largest bias in our study.

The age of the professionals did not show a statistically significant association with the QWL measure, although this relationship was direct, ie, the higher the age, for example, the greater the value of the QWL measure. This aspect can be justified because some institutions offer greater opportunities for workers aged between 40 and 55 years, resulting in greater satisfaction of these workers in enterprises ⁽¹⁸⁾.

Some professional characteristics showed statistically significant association with the QWL measure, such as employees' income ($p = 0.006$). Some authors pointed out, however, that salary is not the main cause of satisfaction among nursing professionals. Other aspects were previously reported as major sources of job satisfaction, such as autonomy, personal relationships, achievements and professional status ^(16,18-20). In this study, we observed other statistically significant associations with QWL measure, such as: the option for the department ($p=0.01$) and type of institution ($p=0.003$), confirming that the income is not the only factor generator of job satisfaction in nursing.

Yet, the regression model created for this study can be seen – in Table 2, the type of institution was the variable that most influenced the professional QWL measurement among study participants ($p = 0.007$), for example, working for a public institution or philanthropic could reduce QWL. This result may explain

the problems of material and human resources which occurs in public institutions, causing distress and suffering among nursing professionals, which could impair the QWL ⁽²¹⁾.

The association between the presence of musculoskeletal disorders and QWL revealed what is already known, professionals with the presence of musculoskeletal problems have a lower value for QWL measure. In step 2 of the regression analysis (Table 2), it was observed that the absence of low back pain had the highest effect on the QWL measure, which seems to be a significant precursor of QWL.

According to this result, it is possible to confirm the hypothesis of the study, since the absence of musculoskeletal disorder contributed to increase the value of QWL measure, although the final model has explained only 22.6% of the variance of QWL measure.

CONCLUSION

The results of this study were extremely important for the development of preventive measures for hospital work environments, regarded as highly stressful and filled with predisposing factors for developing a musculoskeletal disorder among their employees. However, the lack of association of base pathologies or comorbidities with musculoskeletal disorder in our study, has left a gap that should be investigated in the future to complement the findings of this study.

Nevertheless, the association of QWL and musculoskeletal disorders among nursing professionals may be the beginning of awareness of managers/administrators about the working conditions of these professionals, thus it can contribute to the growth of Nursing and promote programs with working and study groups to enable further research that may interfere with future strategies to promote health and better QWL.

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