

Prevalence of musculoskeletal pain among surgical nursing teams

Prevalência de dor osteomuscular em profissionais de enfermagem de equipes de cirurgia em um hospital universitário

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ABSTRACT

Among the health professions, nursing, in particular, has been affected by musculoskeletal disorders. The WMSD produce changes in the lives of these workers, impossible of them held daily activities and labour. **Objective:** Investigating the prevalence of musculoskeletal pain and associated with the quality of life in nursing professionals who work in surgery teams. **Method:** Cross-sectional study conducted between March 2011 and January 2012 in a tertiary university hospital in southern Brazil. We evaluated 110 workers nursing teams. It was excluded workers on sick leave, vacation or other absence during the period of data collection. The musculoskeletal pain was assessed using the Nordic Musculoskeletal symptoms questionnaire the quality of life was assessed by the Medical Outcomes Study 36 - Item Short-Form Survey (SF-36). The relationship between musculoskeletal pain and quality of life were analyzed by the U of Mann-Whitney test, using a significance level of 95%. **Results:** The prevalence of musculoskeletal pain found in this study was 91.81%. With respect to anatomic regions, it was considered the complaints of musculoskeletal pain retroactive twelve months ago, where there was the predominance of neck pain (56%) and shoulders (56%). When we consider sick leaving for musculoskeletal pain we found the prevalence of low back pain (34%). The group who reported no musculoskeletal pain showed better indices of quality of life in the areas of physical functioning, physical aspect, bodily pain, vitality, social and mental health aspect. **Conclusion:** the higher prevalence of musculoskeletal pain in the neck and shoulder regions. Moreover, the largest number of sick leaves occurs because of the prevalence of low back pain among nursing staff of the surgical teams. The pain influenced the quality of life affecting six of the areas assessed.

Keywords: Cumulative Trauma Disorders, Operating Room Nursing, Quality of Life

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RESUMO

Dentre as profissões da área da saúde, a enfermagem, em particular, tem sido afetada pelos distúrbios musculoesqueléticos produzindo alterações na vida desses trabalhadores, impossibilitando-os de realizarem atividades cotidianas e laborais. **Objetivo:** Investigar a prevalência de dor osteomuscular e a associação com a qualidade de vida em profissionais de enfermagem que atuam em equipes de cirurgia no Hospital de Clínicas de Porto Alegre. **Método:** Estudo transversal realizado entre março de 2011 e janeiro de 2012, em um hospital universitário terciário do sul do Brasil. Foram avaliados 110 trabalhadores de enfermagem das equipes de cirurgia. Foram excluídos os trabalhadores em licença saúde, férias ou outro tipo de afastamento durante o período de coleta dos dados. A dor osteomuscular foi avaliada através do questionário Nórdico de Sintomas Osteomusculares e a qualidade de vida foi avaliada através do questionário *Medical Outcomes Study 36 - Item Short-Form Survey (SF-36)*. As relações entre dor osteomuscular e qualidade de vida foram analisadas através do Teste U de Mann-Whitney, utilizando nível de significância de 95%. **Resultados:** A prevalência de dor osteomuscular encontrada neste estudo foi de 91,81%. Com relação às regiões anatômicas, considerou-se as queixas de dor osteomuscular retroativo há doze meses, onde o predomínio foi de dor no pescoço (56%) e ombros (56%). Quando consideramos afastamento por dor osteomuscular encontramos a prevalência de dor lombar (34%). O grupo que não relatou dor osteomuscular apresentou melhores índices de qualidade de vida nos domínios de capacidade funcional, aspectos físicos, dor, vitalidade, aspectos sociais e saúde mental. **Conclusão:** A dor osteomuscular apresenta maior prevalência nas regiões do pescoço e ombros. Além disso, o maior número de afastamentos ocorre por prevalência de dor lombar entre os trabalhadores de enfermagem das equipes de cirurgia. A dor influenciou na qualidade de vida afetando seis dos domínios avaliados.

Palavras-chave: Transtornos Traumáticos Cumulativos, Enfermagem de Centro Cirúrgico, Qualidade de Vida

INTRODUCTION

Repetitive strain injuries (RSIs) and/or Work Related Musculoskeletal Disorders (WMSDs) are umbrella terms that refer to the disorders or diseases of the musculoskeletal system, especially of the upper limbs, whether or not occasioned by work activity. In the past 20 years, the world has seen their progressive increase. Musculoskeletal diseases are among the main public health problems and they often cause work disability, either temporary or permanent, as well as the generation of significant cost for public and private organizations and for the State.^{1,2} An RSI and/or a WMSD are characterized by the occurrence of many symptoms, concomitant or not, such as pain, paresthesia, sensation of weight, and insidious fatigue, generally in the cervical region, in the scapular belt and/or upper limbs, but it can also afflict the lower limbs.^{3,4}

Among health professions, nursing, in particular, has been affected by musculoskeletal disorders. Studies made in many countries show a prevalence higher than 80% occurring among nursing professionals, and Brazilian studies show prevalence of 93% of these disorders.^{5,6}

In a hospital environment, workers are exposed to a series of occupational risks stemming from physical and chemical factors that may provoke work accidents and illness when safety measures are not adopted.^{3,7} The RSIs and WMSDs produce changes in the lives of these professionals, making it difficult to perform not only their professional activity, but most of their daily life activities. These problems usually become chronic and there is the permanent presence of pain in more than 60% of the cases.^{8,9}

This was a descriptive and retrospective study on musculoskeletal disorders in 23 institutions served by the Workers Health Assistance Division (*Divisão de Assistência a Saúde do Trabalhador*) carried out at the Hospital Foundation of the State of Minas Gerais (*Fundação Hospitalar do Estado de Minas Gerais*), in Brazil, with 469 active nurses and 3.045 nursing aides, found a high numbers of dorsopathies and soft tissue disorders where the vertebral column was one of the structures most affected by musculoskeletal disorders¹⁰ However, very little has been studied about the prevalence of musculoskeletal pain and quality of life of nursing professionals at surgical centers. These professionals develop activities that go from acquisition, handling of

specific equipment, assistance to the patient in the pre, intra, and post surgical phases, and the presence of risk factors pertinent to the environment.¹¹

OBJECTIVE

The objective of this study was to evaluate the prevalence of musculoskeletal pain and risk factors in surgical nursing teams, and to verify whether the musculoskeletal pain affected their quality of life.

METHOD

This was a cross-sectional study conducted between March 2011 and January 2012 in a tertiary university hospital in southern Brazil, with nursing professionals of surgical units. The professionals evaluated belonged to the surgical block, ambulatory surgical center, recuperation room, and sterilized materials center. The team members worked both day and night shifts, with a workload of 36 to 44 hours per week, depending on their work contract specifications.

Meetings with the heads of the surgical teams were held to present the project and to request their permission, so that the nursing professionals could participate in the data collection during their work shifts. The evaluations were made on days previously arranged by the surgical team heads. Workers on sick leave, vacation, or any other type of absence during the data collection period were excluded.

The professionals profiles were traced with the help of a questionnaire structured with sociodemographic, anthropometric, and clinical factors. In accordance with the recommendation by the American College of Sports Medicine,¹² professionals who were active at least three times per week for 30 minutes were included in the study. As for Labor Gymnastics, those professionals who attended class five times a week, for 15 minutes each session, guided by a professional physical educator were also included. The musculoskeletal pain was evaluated through the Nordic Musculoskeletal Symptoms questionnaire, which is formed of multiple or binary choices on the occurrence of symptoms in the various anatomical regions. The participant must report the occurrence of symptoms considering the 12 months before

the test, as well as report the occurrence of any leave from routine activities during the past year.¹³ Their quality of life was evaluated through the questionnaire Medical Outcomes Study 36-Item Short-Form Survey (SF-36), with 36 items that measure eight domains (variables): functional capacity, physical aspects, pain, general state of health, vitality, social aspects, emotional aspects, and mental health. The questions are graded for the eight domains and range from 0 (zero) to 100 (one hundred), where 0 = worst and 100 = the best, for each domain.¹⁴ General pain was evaluated through the Visual Analogue Scale (VAS), which consists of a 10 cm horizontal line, with the words "NO PAIN" at one end and with "MAXIMUM PAIN" on the other. The volunteer marks with a line on the point that represents the intensity of the pain.¹⁵ The functional capacity of the spinal column was evaluated through the questionnaire Oswestry Disability Index 2.0. This questionnaire is composed of 10 sections (Pain intensity, personal care, standing up, walking, sitting, remaining in the standing position, sleep, sexual life, social life, and traveling) with six questions each, scoring from zero to five, and the final value is obtained by the total sum and given in a percentage from zero to 100%.¹⁶

From a total of 276 nursing professionals from the surgical teams invited to participate in this study, 110 professionals accepted the invitation and signed the Free and Informed Consent term. The result was a prevalence of 85% of musculoskeletal pain with total amplitude of 0.15 in a confidence interval of 95%. This study was approved by the Committee for Ethics in Research of the Hospital de Clínicas in Porto Alegre.

The data collected was analyzed through the Statistical Package For Social Sciences program (SPSS version 18.0). The category variables are shown by absolute frequencies and percentages. The continuous variables were submitted to normality analysis through the Kolmogorov-Smirnov and the Shapiro-Wilk tests. Variables with normal distributions were presented by average and standard deviation, and those without normal distribution were presented as median and interquartile range (AIQ). The association between the SF-36 domains and the findings of the Nordic Musculoskeletal Symptoms questionnaire was analyzed by the Mann-Whitney U test. In all the analyses, a value of $p < 0.05$ was considered significant.

RESULTS

From the 276 nursing professionals working in surgical teams invited to participate in this study, 110 accepted. In Table 1 are shown the demographic, anthropometric, and clinical variables of those nursing professionals.

The prevalence of musculoskeletal symptoms was observed in 91.81% of the nursing professionals. Table 2 shows the distribution of musculoskeletal symptoms in the last 12 months and the respective sick leaves due to pain.

In Table 3 can be seen the values of the scores obtained for each domain of the SF-36 among the nursing professionals, considering that the score in each domain can vary from zero to 100.

In Table 4 can be seen the values for the SF-36 domains of the professionals who showed the presence musculoskeletal pain (91.81%) and for those who showed the absence of pain (8.19%).

DISCUSSION

In the present study, the nursing professionals showed a high prevalence of musculoskeletal pain in the neck, shoulder, and lumbar region over a period of 12 months, which was similar to the findings by Morofuse et al.¹⁷ who referred to the occurrence of 94.8% of musculoskeletal symptoms in the last 12 months indicating that nurses, nursing aides, and orderlies had the same areas affected, that is: upper limbs and vertebral column. Similar studies show a high occurrence of musculoskeletal disorders in nursing professionals over the previous 12 months, where the predominance of pain is localized in the upper limbs between 80% to 93%.^{6,10,18,19}

This data confirms the study by Alencar et al.⁴ who found symptoms of musculoskeletal pains over the previous 30 days in 62.7% of the workers, with the most prevalent pains in the lumbar and cervical regions, in the shoulders, and in the knees. The pace of work, time pressure, and insufficiency of employees for the

demand also influenced the presence of musculoskeletal pain, which leads to the conclusion that factors related to the organization of work had influenced musculoskeletal disorders.

As for the sick leaves of the nursing professionals, the highest indices occurred due to lumbar pain, and of those a high percentage showed low functional capacity of the column. Similarly, the study made by Gurgueira et al.⁶ shows the relation of musculoskeletal pain with sick leaves due to lumbar pain (93%) in the a period of 12 months before the study. Parada et al.²⁰ made a survey in the Reports of Work Accidents (*Comunicações de Acidente de Trabalho - CAT*) for the period from 1990 to 1997, in a university hospital and identified that, from the 531 accidents reported, 37 (7%) were related to vertebral column injuries. The most afflicted professionals were the nursing aides (39.1%) and orderlies (39.1%), due especially to the moving and transferring of patients and to falling on slippery floors.

In their study, Pignati et al.²¹ showed the importance of the lumbar region for the work of nursing professionals, for it is a region that supports the body, essential for the rotation of the trunk and, many times, used inappropriately due to bad posture and to carrying weight. The back musculature is the one that suffers the most with lifting weight, for when lifting any weight with the hands, the effort is transferred to the vertebral column. The structure of the vertebral column, composed of superimposed disks, although capable of supporting great force in the vertical direction, is very fragile to forces that do not have the same direction as its axis.

In the present study a high index of workers was found who do not practice any type of physical activity, making it a factor that may be associated with the appearance of musculoskeletal pains. A report from the World Health Organization shows the importance of exercise in the muscular conditioning and in the reduction of occurrences of muscular injuries due to effort and in the increase of flexibility of the support structures of the vertebral column.²² Although many studies have already confirmed the benefits of regular physical exercise, there is a dramatic portion of the population that is sedentary. Among Brazilians, 80.3% do not practice any sport regularly.^{23,24}

In relation to the quality of life, the present study showed that the group that reported musculoskeletal pain had significantly

Table 1. Characteristics of the sample

Variables	n = 110
Age (years)	45 ± 8.78
Female	99 (90%)
BMI (Kg/m ²)	26 ± 4
Active smoker	6 (5%)
Physical activity	18 (16%)
Labor gymnastics	32 (29%)
General pain	4 (4%)
Lumbar pain	67 (61%)
FCC	16 (11%)
Workload	72 (65%)

BMI: Body Mass Index; FCC: Functional Capacity of the Column; Workload: Up to 36 hours of work per week

Table 2. Distribution of the musculoskeletal symptoms by body region

	Pain in the last 12 months n (%)	Sick leaves in the last 12 months n (%)
Neck	62 (56%)	34 (31%)
Shoulder	62 (56%)	34 (31%)
Dorsal	45 (41%)	31 (28%)
Elbows	16 (14%)	7 (6%)
Forearm	21 (19%)	10 (9%)
Wrists/Hands	34 (31%)	17 (15%)
Lumbar	57 (52%)	38 (34%)
Hips/Thighs	32 (29%)	23 (21%)
Knees	32 (29%)	18 (16%)
Ankles/Feet	39 (35%)	23 (21%)

Table 3. Descriptive analysis of the domains of the SF-36 Quality of Life questionnaire

Domains	M ± SD
Functional Capacity	76 ± 21
Physical Aspects	74 ± 39
Pain	40 ± 12
General state of health	71 ± 19
Vitality	61 ± 20
Social Aspects	76 ± 23
Emotional Aspects	83 ± 33
Mental Health	72 ± 21

SF-36 shown with scores from zero to 100 points

Table 4. Distribution of the averages and medians of the SF-36 Quality of Life questionnaire domains among the nursing professionals in the presence and in the absence of musculoskeletal pain

Domains SF-36	Musculoskeletal Pain N = 101		No Musculoskeletal Pain N = 9		p
	Average ± SD	Median (25%-75%)	Average ± SD	Median (25%-75%)	
Functional capacity	74 ± 21	80 (60-90)	96 ± 6	95 (95-100)	0.001*
Physical aspects	72 ± 40	100 (37.50-100)	100 ± 2	100 (100-100)	0.007*
Pain	39 ± 13	41 (31-44)	47 ± 6	50 (44-50)	0.011*
General state of health	70 ± 19	72 (57-87)	80 ± 24	92 (62-96)	0.071
Vitality	59 ± 20	55 (47.5-75)	81 ± 9	85 (72.5-85)	0.001*
Social aspects	74 ± 23	75 (62.50-100)	97 ± 6	100 (93.5-100)	0.001*
Emotional aspects	82 ± 34	100 (67-100)	100 ± 1	100 (100-100)	0.087
Mental health	71 ± 22	76 (60-86)	87 ± 9	88 (78-84)	0.026*

* Statistically significant differences ($p < 0.05$) found through the Mann-Whitney U test

worse indices in the domains of functional capacity, physical aspects, pain, vitality, social aspects, and mental health. Corroborating these findings, the study by Célia et al.¹⁹ with nursing professionals found various aspects that are compromised in the quality of life, especially pain, social aspects, and vitality. In the study by Oler et al.¹¹ with nursing professionals from the Surgical Center, the results point out that the quality of life was affected in the domains of pain, vitality, social aspects, physical aspects, and mental health, which clearly shows that the musculoskeletal pain is an important factor in the quality of life of surgical nursing professionals. This leads to the supposition that this type of activity is subject to significant risk factors, physical as well as organizational.

Considering that quality of life is the perception that every person has of him or herself at a given moment and remembering also that health and quality of life are always correlated, the presence of disease, of pain, and of physical or psychological illness radically compromises the quality of life. It can be said that the musculoskeletal pain greatly influences this perception

and that it has unacceptable repercussions on how satisfied, happy, and cared-for in his or her life expectations this professional is.²⁵

CONCLUSION

Nursing professionals are afflicted by a high prevalence of musculoskeletal pain that especially affects the regions of the neck and shoulders. In addition, pain in the lumbar region is responsible for the greater number of sick-leaves among surgical nursing professionals. The group that did not report musculoskeletal pain showed better indices for quality of life in the domains of functional capacity, physical aspects, pain, vitality, social aspects, and mental health.

REFERENCES

- Santos AC, Bredemeier M, Rosa KF, Amantéa VA, Xavier RM. Impact on the Quality of Life of an Educational Program for the Prevention of Work-Related Musculoskeletal Disorders: a randomized controlled trial. *BMC Public Health*. 2011;11:60. DOI: <http://dx.doi.org/10.1186/1471-2458-11-60>

- Maciel RH, Albuquerque AMFC, Melzer AC, Leônidas SR. Quem se beneficia dos programas de ginástica laboral? *Cad Psicol Social Trab*. 2005;8:71-86.
- Freitas JRS, Lunardi Filho WD, Lunardi VL, Freitas KSS. Distúrbios osteomusculares relacionados ao trabalho em profissionais de enfermagem de um hospital universitário. *Rev Eletr Enf*. 2009;11(4):904-11.
- Alencar MCB, Schultze VM, Souza SD. Distúrbios osteomusculares e o trabalho dos que cuidam de idosos institucionalizados. *Fisioter Mov*. 2010;23(1):63-72. DOI: <http://dx.doi.org/10.1590/S0103-51502010000100006>
- Magnago TSBS, Lisboa MTL, Souza IEO, Moreira MC. Distúrbios musculoesqueléticos em trabalhadores de enfermagem: associação com condições de trabalho: revisão. *Rev bras enferm*. 2007;60(6):701-5. DOI: <http://dx.doi.org/10.1590/S0034-71672007000600015>
- Gurgueira GP, Alexandre NMC, Corrêa HR Filho. Prevalência de sintomas músculo-esqueléticos em trabalhadoras de enfermagem. *Rev Latino-Am Enfermagem*. 2003;11(5):608-13. DOI: <http://dx.doi.org/10.1590/S0104-11692003000500007>
- Van de Ven G, Draskovic I, Adang EM, Donders RA, Post A, Zuidema SU, Koopmans RT, Vernooij-Dassen MJ. Improving person-centred care in nursing homes through dementia-care mapping: design of a cluster-randomised controlled trial. *BMC Geriatr*. 2012;12:1. DOI: <http://dx.doi.org/10.1186/1471-2318-12-1>
- Sheikhzadeh A, Gore C, Zuckerman JD, Nordin M. Perioperating nurses and technicians' perceptions of ergonomic risk factors in the surgical environment. *Appl Ergon*. 2009;40(5):833-9. DOI: <http://dx.doi.org/10.1016/j.apergo.2008.09.012>
- Werner RA, Franzblau A, Gell N, Ulin SS, Armstrong TJ. Predictors of upper extremity discomfort: a longitudinal study of industrial and clerical workers. *J Occup Rehabil*. 2005;15(1):27-35. DOI: <http://dx.doi.org/10.1007/s10926-005-0871-2>
- Morofuse NT, Marziale HPM. Doenças do sistema osteomuscular em trabalhadores de enfermagem. *Rev Latino-Am Enfermagem*. 2005;13(3):364-73.
- Oler FG, Jesus AF, Barboza DB, Domingos NAM. Qualidade de vida da equipe de enfermagem do centro cirúrgico. *Arq ciênc saúde*. 2005;12(2):102-7.
- Haskell WL, Lee IM, Pate RR, Powell KE, Blair SN, Franklin BA, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc*. 2007;39(8):1423-34. DOI: <http://dx.doi.org/10.1249/mss.0b013e3180616b27>
- Pinheiro FA, Troccoli BT, Carvalho CV. Validação do Questionário Nórdico de Sintomas Osteomusculares como medida de morbidade. *Rev Saúde Pública*. 2002;36(3):307-12. DOI: <http://dx.doi.org/10.1590/S0034-89102002000300008>
- Kiezbak GM, Pierson LM, Campbell M, Cook JW. Use of the SF36 general health status survey to document health-related quality of life in patients with coronary artery disease: effect of disease and response to coronary artery bypass graft surgery. *Heart Lung*. 2002;31(3):207-13. DOI: <http://dx.doi.org/10.1067/mhl.2002.124299>
- Ciena AP, Gatto R, Pacini VC, Picanço VV, Magno IMN, Loth EA. Influência da intensidade da dor sobre as respostas nas escalas unidimensionais de mensuração da dor em uma população de idosos e de adultos jovens. *Semina ciênc biol saude*. 2008;29(2):201-12. DOI: <http://dx.doi.org/10.5433/1679-0367.2008v29n2p201>

16. Dawson AP, Steele EJ, Hodges PW, Stewart S. Utility of the Oswestry Disability Index for studies of back pain related disability in nurses: evaluation of psychometric and measurement properties. *Int J Nurs Stud.* 2010;47(5):604-7. DOI: <http://dx.doi.org/10.1016/j.ijnurstu.2009.10.013>
17. Murofuse NT, Marziale MHP. Doenças do sistema osteomuscular em trabalhadores de enfermagem. *Rev Latino-Am Enfermagem.* 2005;13(3):364-73.
18. Josephson M, Lagerström M, Hagberg M, Wigaeus Hjelm E. Musculoskeletal symptoms and job strain among nursing personnel: a study over a three year period. *Occup Environ Med.* 1997;54(9):681-5. DOI: <http://dx.doi.org/10.1136/oem.54.9.681>
19. Celia RCRS, Alexandre NMC. Distúrbios osteomusculares e qualidade de vida em trabalhadores envolvidos com transporte de pacientes. *Rev bras enferm.* 2003;56(5):494-8.
20. Parada EO, Alexandre NMC, Benatti MCC. Lesões ocupacionais afetando a coluna vertebral em trabalhadores de enfermagem. *Rev Latino-Am Enfermagem.* 2002;10(1):64-9. DOI: <http://dx.doi.org/10.1590/S0104-11692002000100010>
21. Pignati WA, Machado JMH. Riscos e agravos à saúde e à vida dos trabalhadores das indústrias madeireiras de Mato Grosso. *Ciênc saúde coletiva.* 2005;10(4):961-73. DOI: <http://dx.doi.org/10.1590/S1413-81232005000400019>
22. Pinho L, Araújo MGF, Goes SR, Sampaio FR. Dores na coluna em profissionais de enfermagem. *Acta Fisiatr.* 2001;8(2):75-81.
23. Barel M, Louzada JCA, Monteiro HL, Amaral SL. Associação dos fatores de risco para doenças cardiovasculares e qualidade de vida entre servidores da saúde. *Rev bras educ fís esp.* 2010;24(2):293-303. DOI: <http://dx.doi.org/10.1590/S1807-55092010000200012>
24. Sposito AC, Caramelli B, Fonseca FAH, Bertolami MC, Afiune Neto A, Souza AD, et al. IV Diretriz Brasileira sobre Dislipidemias e Prevenção da Aterosclerose: Departamento de Aterosclerose da Sociedade Brasileira de Cardiologia. *Arq Bras Cardiol.* 2007;88(suppl.1):2-19. DOI: <http://dx.doi.org/10.1590/S0066-782X2007000700002>
25. Lentz RA, Costenaro RGS, Gonçalves LHT. O profissional de enfermagem e a qualidade de vida: uma abordagem fundamentada nas dimensões propostas por Flanagan. *Rev Latino-Am Enfermagem.* 2000;8(4):7-14. DOI: <http://dx.doi.org/10.1590/S0104-11692000000400002>