



## Dock worker: profile of occupational diseases diagnosed in an occupational health service\*

*Trabalhador portuário: perfil de doenças ocupacionais diagnosticadas em serviço de saúde ocupacional*

*Trabajador portuario: perfil de enfermedades ocupacionales diagnosticadas en un servicio de salud ocupacional*

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### ABSTRACT

**Objective:** To identify the diseases diagnosed in dock workers, obtaining outpatient occupational medicine at the dock. **Methods:** A quantitative descriptive study with retrospective analysis, which used the medical records of dock workers between 2000 and 2009 as a data source. Data collection was developed by application of a predetermined form and proceeded to descriptive quantitative analysis of 953 medical records of workers. **Results:** A total of 953 medical files (94.7%), of which 90.47% were from male workers, 52% of those aged over 50 years, and 51.7% with over 19 years experience. 527 diagnoses were identified, with the principal related to work being: hypertension (8.3%), back pain (6.2%), other pulmonary diseases (1.7%) and depressive episodes (1.2%). **Conclusion:** There is involvement of the worker in occupational disorders of the mental, circulatory, respiratory and musculoskeletal systems, showing morbidities that affect and interfere with their quality of life and productivity of labor activities. **Keywords:** Public health nursing; Occupational health; Pathology; Nursing diagnosis.

### RESUMO

**Objetivo:** Identificar as doenças diagnosticadas em trabalhadores portuários avulsos, atendidos em um ambulatório de medicina do trabalho portuário. **Métodos:** Estudo quantitativo descritivo com análise retrospectiva, que apresentou como fonte de dados as fichas de atendimento médico dos trabalhadores portuários avulsos entre 2000 e 2009. A coleta de dados desenvolveu-se mediante aplicação de um formulário predeterminado e procedeu-se à análise quantitativa descritiva em 953 fichas médicas dos trabalhadores. **Resultados:** totalizou-se 953 fichas médicas (94,7%), das quais 90,47% pertenciam a trabalhadores do sexo masculino, 52% na faixa etária acima de 50 anos e 51,7% com mais de 19 anos de atuação. Identificaram-se 527 diagnósticos, sendo os principais relacionados ao trabalho: hipertensão (8,3%), lombalgia (6,2%), outras doenças pulmonares (1,7%) e episódios depressivos (1,2%). **Conclusão:** constatou-se o acometimento do trabalhador por patologias ocupacionais de ordem mental, circulatória, respiratória e osteomuscular, evidenciando morbididades que o afetam e interferem em sua qualidade de vida e na produtividade das atividades laborais. **Descritores:** Enfermagem em saúde pública; Saúde do trabalhador; Patologia; Diagnóstico de enfermagem.

### RESUMEN

**Objetivo:** Identificar las enfermedades diagnosticadas en trabajadores portuarios independientes, atendidos en un consultorio externo de medicina del trabajo portuario. **Métodos:** Estudio cuantitativo descriptivo con análisis retrospectivo, que presentó como fuente de datos las fichas de atención médica de los trabajadores portuarios independientes entre 2000 y 2009. La recolección de los datos se desarrolló mediante la aplicación de un formulario estructurado y se procedió a realizar el análisis cuantitativo descriptivo de 953 fichas médicas de los trabajadores. **Resultados:** De un total de 953 fichas médicas (94,7%), el 90,47% pertenecían a trabajadores del sexo masculino, el 52% se encontraba en el grupo etéreo arriba de los 50 años y el 51,7% con más de 19 años de actuación. Se identificaron 527 diagnósticos, estando los principales relacionados al trabajo: hipertensión (8,3%), lumbalgia (6,2%), otras enfermedades pulmonares (1,7%) y episodios depresivos (1,2%). **Conclusión:** se constató el ataque del trabajador por patologías ocupacionales de orden mental, circulatorio, respiratorio y osteomuscular, evidenciando morbididades que lo afectan e interfieren en su calidad de vida y en la productividad de las actividades laborales. **Descriptores:** Enfermería en salud pública. Salud del Trabajador; Patología; Diagnóstico de enfermería.

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## INTRODUCTION

Nursing has been intensifying technical-scientific investments to further elaborate its body of professional knowledge, with a view to the expansion of health practices, following the needs of human life in the different environments it acts in. Particularly in occupational health, professional activities in distinct productive branches has demonstrated its increasing urge, given the multiple work conditions that constitute the still constant development of occupational illnesses<sup>(1,2)</sup>.

These characterize a challenge to put in practice and plan the prevention and rehabilitation actions health professionals construct, in view of the complexity involved in the analysis and recognition of the health damage the heterogeneous and dynamic risks in different work environments can bring about<sup>(2)</sup>.

In nursing, the specific study of occupational illnesses is identified in a small number of scientific productions<sup>(1-5)</sup>, as most of them focus on occupational risks, causal factors of diseases and occupational accidents, mainly among health professionals themselves. Thus, this knowledge focuses on health workers as the object of nursing work, but workers in multiple professions and existing job realities need to be professionally approached. This permits knowledge about the harmful conditions in productive processes, so as to constitute professional clinical knowledge and deriving occupational health care.

Some of the nursing studies on occupational illnesses in distinct professional realities focus on legal, industrial sewing, civil construction, hospital residue management, driving, bus ticket collecting and hospital hygiene workers<sup>(1-5)</sup>.

In that context, this study presents port workers active in six different professional categories as: terminal handlers, stevedores, public weight masters, freight repairers, vessel guards and maintenance workers. The productive activities expose them to different occupational risks, such as noise, whole body vibrations, bad weather, contact with chemical substances, manual load lifting and use of inadequate tools<sup>(6)</sup>.

In addition, the workers are also exposed to risks in the environment external to their work, including the use of chemical substances (alcohol and illegal drugs), which can contribute to the development and occurrence of occupational accidents, generating risks for the workers themselves and the work team involved<sup>(7)</sup>. Based on this kind of information, nurses need professional preparation to formulate systematic action strategies in this field.

In view of the importance of obtaining concrete and integrated data about the subjects' environment and health situation, with a view to knowledge production

and nursing intervention planning for dock workers, the **aim** of this study is to identify the illnesses diagnosed in temporary dock workers attended at a medical outpatient clinic for dock work.

## METHODS

A quantitative and descriptive study with retrospective analysis was developed at the Port of Rio Grande/RS. Data sources were the medical care files of the Medical Outpatient Clinic for Dock Work, affiliated with the *Órgão Gestor de Mão de Obra do Trabalho Portuário Avulso do Porto Organizado do Rio Grande* (OGMO-RG), the entity that manages temporary dock work in that port.

For data collection, the records obtained between 2000 and 2009 were used. A predetermined form was adopted, constructed based on the documents recommended by the Ministry of Health and on existing information in the service files – obtained after providing previous information about the research – as well as questions from other occupational health information collection instruments<sup>(6,7)</sup>. For theoretical support, the Activity Table of occupational health physicians and nurses was used, described in the Brazilian Classification of Occupations (CBO)<sup>(8)</sup>, as well as theoretical foundations resulting from the literature review.

The instrument consists of four sections: subject characteristics, clinical data and medical diagnoses, professional health actions and actions to assess the worker's health conditions upon his return to work. Data organization and analysis included information typing in EPINFO 6.04 software, permitting double data entry with a view to reliability. For analysis purposes, Statistical Package for the Social Sciences (SPSS) software, version 13.0 was used.

For statistical analysis, clinical data were presented as categorical (yes and no) and dichotomized qualitative variables. The continuous variables 'age and time of work' were dichotomized based on the median of each variables (Age: 50 years; Activity time: 19 years), permitting analysis through proportions and the elaboration of contingency tables for estimates in Pearson's Chi-square test. Significance was set at  $\alpha=0.05$ .

Concerning ethical aspects, approval to develop the research was requested from the OGMO-RG. The research project entitled "Occupational Health, Risks and Illnesses – an integrated study in different work environments", which this research is part of, was properly submitted to the Ethics Committee in Health Research at *Universidade Federal do Rio Grande – FURG*, and received approval under Opinion No. 109/2010. The involved researchers assumed the commitment not to disseminate the subjects involved with a view to preserving data secrecy.

## RESULTS

Based on the data collected from 953 medical files, 523 (54.9%) were terminal handlers, 309 (32.4%) stevedores, 66 (6.9%) public weight masters, 28 (2.9%) vessel guards, 14 (1.5%) maintenance workers and 11 (1.2%) freight repairers. Two medical files did not indicate the worker's professional category (0.2%).

The files permitted the identification of a predominantly male worker population (90.47%), with the age range under 50 years as the most representative group (52%). Concerning work time, the majority showed at least 19 years of dock work (51.7%), ranging from 12 months to 45 years. With regard to lifestyle, 57 (6.0%) records of workers with alcohol-consumption habits

were identified, predominantly terminal handlers (n=28 – 2.9%). Also, drugs users in general were identified, totaling 19 (2.0%) records, also predominantly terminal handlers (n=12 – 1.3%).

As for the diseases, 527 diagnoses were identified according to the Classification of Occupational Illness Groups<sup>(9)</sup>, which indicates that 14 groups exist. The diagnoses registered at the service under analysis belonged to ten groups (71.4%). Four illness groups displayed the highest frequencies: musculoskeletal diseases (15.8% - n=152), circulatory diseases (9.1% - n=87), respiratory diseases (2.6% - n=25) and mental disorders and behavior (2.2% - n=17). In each group, the most frequent illnesses were back pain (6.2% - n=59); systemic arterial hypertension (8.3% - n=79); other respiratory

**Table 1:** Most frequent illnesses and their distribution among different professional categories of dock workers. Rio Grande, RS, 2010 (N=953 medical files).

Category	Diabetes		High Cholesterol		Obesity		Depressive Episodes		Hearing loss		SAH		Back pain		Respiratory diseases		Lumbar sciatic pain		Corrective lenses	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Terminal handlers	5	0.5	20	2.1	20	2.1	5	0.5	20	2.1	33	3.5	32	3.4	7	0.7	3	0.3	9	0.9
Stevedores	19	2.0	15	1.6	26	2.7	3	0.3	8	0.8	19	2.0	20	2.1	4	0.4	4	0.4	30	3.1
Public weight masters	2	0.2	1	0.1	3	0.3	3	0.3	2	0.2	20	2.1	5	0.5	3	0.3	3	0.3	2	0.2
Freight repairers	0	0	0	0.1	1	0.1	0	0	0	0	1	0.1	0	0	0	0	1	0.1	0	0
Vessel guards	1	0.1	1	0.1	1	0.1	0	0	0	0	4	0.4	1	0.1	1	0.1	0	0	0	0
Maintenance workers	2	0.2	1	0.1	2	0.2	0	0	0	0	2	0.2	1	0.1	1	0.1	0	0	0	0
<b>Age range</b>																				
<50	4	0.4	14	1.6	29	2.8	3	0.3	17	1.8	15	1.8	23	2.4	6	0.6	2	0.2	24	2.5
>50	25	2.6	24	2.4	24	2.7	8	0.8	13	1.4	64	6.5	36	3.8	11	1.0	9	0.9	17	1.8
<b>Work Time</b>																				
<19	12	1.3	19	2.0	31	3.3	4	0.4	16	1.7	36	3.8	25	2.6	10	1.0	2	0.2	29	3.0
>19	17	1.8	19	2.0	22	2.3	7	0.7	14	1.5	43	4.5	34	3.6	6	0.6	9	0.9	12	1.3

diseases, like bronchitis and asthma (1.7% - n=17) and depressive episodes (1.2% - n=11).

Besides the above, some diseases were not directly related to work, according to the Ministry of Health's reference manual, the most recurrent of which were: obesity (5.6%), high cholesterol levels (4%) and diabetes (3%), among endocrine, nutritional and metabolic disorders; hearing loss (3.1%), among ear diseases; lumbar sciatic pain (1.2%) as a musculoskeletal disease and the use of corrective lenses (4.3%) among diseases of the eye and adjacent parts.

Among the other groups of identified diseases, the following stood out: infectious and parasitic (3.3%); blood and hematopoietic organs (0.5%); nervous system (0.1%) and skin and subcutaneous tissue diseases (0.6%).

Data in Table 1 display the occurrence of the most frequent diagnoses, related with the workers' professional category, age and work time. The highest frequency levels for diabetes (2.6%), high cholesterol (2.4%), depressive episodes (0.8%), hypertension (6.5%), back pain (3.8%), respiratory diseases (1.0%) and lumbar sciatic pain (0.9%) affected the age range of workers over 50 years of age. The age variable showed a significant association with diabetes ( $p=0.000$ ), hypertension ( $p=0.000$ ), back pain ( $p=0.038$ ) and lumbar sciatic pain ( $p=0.024$ ), indicating a relation of dependence between the variables.

In the relation with service time, higher levels were found for diabetes (1.8%), depressive episodes (0.7%), hypertension (4.5%), back pain (3.6%) and lumbar sciatic pain (0.9%) among workers with longer time on the job (more than 19 years). A significant association was revealed with lumbar sciatic pain ( $p=0.025$ ) and use of corrective lenses ( $p=0.013$ ). The results appointed higher occurrence levels of diagnoses in the most representative categories, i.e. terminal handlers and stevedores, followed by public weight masters. In the analysis of morbidities for professional categories, an association was revealed with diabetes ( $p=0.000$ ), hypertension ( $p=0.000$ ), lumbar sciatic pain ( $p=0.022$ ) and use of corrective lenses ( $p=0.000$ ).

## DISCUSSION

Based on the results, it could be verified that the characteristics of dock work can contribute to the development of occupational and non-occupational illnesses. Both the peculiarities of work in the docks and the individual's living habits, considering health behaviors, can trigger some of the diseases identified. This reality makes the nursing approach to occupational health care even more complex, underlining the need

to elaborate health actions that are integrated into the workers' daily work and life context.

Thus, the occupational illnesses that affected temporary dock workers include mental disorders; among which depressive episodes were identified as the most frequent. Pathological symptoms comprise irritability, sad mood, loss of interest and pleasure in daily activities, which can enhance feelings of fatigue, concentration difficulties and sleep disorders<sup>(9)</sup>. In the dock environment, these symptoms entail occupational accident risks related to workers' falls, falls of suspended loads and run-overs when working with forklifts and vehicles in general.

Mental illnesses can be conditioned by the use of substances like alcohol and rugs, especially when risk factors for the development of the disease include contact with users of these substances<sup>(10)</sup>. In a study of 306 temporary dock workers, 43.12% indicated that they knew colleagues who had already worked under the effect of drugs<sup>(7)</sup>, emphasizing the need for educative interventions in health, with a view to interrupting the use of these substances and preventing illnesses associated with the habit. In the medical files, cases of chemical addicts were observed, some of whom the Outpatient Clinic forwarded to therapeutic communities for chemical detoxification. However, consumption time and substances involved were not explicitly presented in the data source, limited this type of description in the present study.

Concerning circulatory diseases, systemic arterial hypertension is highlighted which, in the particularity of the dock environment, can be related to occupational stress with harmful physical elements, such as exposure to the noise of machinery and mooring boats, as well as to anti-ergonomic aspects, related to excessive work, under pressure and intense responsibility and in shifts. As regards other factors, some studies present the existing association between high blood pressure and obesity<sup>(1,11)</sup>, corresponding to 5.6% among dock workers. These aspects reveal the risk of a possible connection with illnesses in different organic systems, which tend to weaken these workers' health even further.

Also, among the dock workers, a significant association was identified between age and the disease in question, in line with a study of workers at a steel and iron industry<sup>(12)</sup>. Thus, it can be inferred that the continuous practice of dock work as age increases weaken the workers' health conditions, increasing the possibility of diseases.

Cases of respiratory diseases were also identified, mainly asthma and bronchitis. The dock context enhances all professional categories' contact with pollutants from ships and the work environment itself, like industrial or urban areas, with high envi-



ronmental pollution rates, which often expose workers to respiratory and dermatological damage, which can justify the frequency of these diseases among the diagnoses<sup>(13,14)</sup>.

Musculoskeletal System and Connective Tissue diseases, such as Repetitive Strain Injuries and Work-Related Musculoskeletal Diseases (RSI/WRMD), were the most frequent category among the identified diagnoses. These are characterized by the presence of pain, numbness, feeling of heaviness and fatigue, mainly in the upper limbs. They are triggered based on excessive muscle burdens, subject to repetitive movements and local efforts, when workers stay in the same position for a long time and work under whole-body vibrations<sup>(9)</sup>.

In the dock environment, the handling and moving of heavy loads inside cellars and on decks, maintenance activities like painting, rust removal and boat cleaning, reparation and restoration of packing and goods, among others, often in anti-ergonomic conditions, facilitate the occurrence of these occupational illnesses. Moreover, the dock workers work on vehicles (cars, tractors, fork-lifts), receiving influence from whole-body vibrations, which lead to back pain, especially due to daily activities in this area, exposing them to vibrations of different magnitudes and converging towards bodily discomfort<sup>(9,14-15)</sup> and the possible development of this condition.

Besides the diseases established as occupational, others are not directly described in reference manuals<sup>(9)</sup>, but were also frequent among the temporary dock workers, including diabetes, hypercholesterolemia and obesity, as well as eye diseases, which lead to the use of corrective lenses/glasses, hearing loss and lumbar sciatic pain.

Among newly appointed illnesses, endocrine, nutritional and metabolic diseases condition the workers' quality of life, in view of their association with the development of occupational illnesses in other organic systems that are commonly affected among dock workers, such as the hearing and circulatory systems.

Diabetes, for example, can entail greater hearing sensitivity. Associated with continuous work in noisy environment, this can cause noise-induced hearing loss<sup>(17)</sup>. It is highlighted that dock work involves exposure to the noise of machinery, ships and even vehicle traffic on the piers, collaborating towards a harmful conjuncture, besides ship maintenance and reparation, which entail the same exposure.

In addition to Diabetes, the harmful effects of high fat concentrations in the blood stream lead to obesity, hypercholesterolemia and demands for greater physical efforts to exercise productive activities<sup>(16)</sup>. Dynamics and agility are important characteristics in dock work and can be compromised in these pathological conditions,

in view of the rhythm demand for load movement and manipulation, with a view to reaching the productivity established in the hired dock operations.

The diseases reveal aspects external to work that act direct or indirectly on the development of diseases, like nutritional habits for example. The referred nutritional and endocrine diseases allude to health education as a possible prevention measure, aiming for the workers' nutritional control. Dock workers' temporary contract, however, does not offer meals, guaranteed among formal workers, so that it is not possible to monitor their diet. In that sense, different intervention alternatives need to be developed with a view to the adoption of healthy measures.

Another important characteristic of work in the research context refers to the use of corrective lenses or glasses among the workers. When the workers who need to do not use these, this increases accident risks, mainly when handling loads and working with machinery, like winches and cranes, which depend on the workers' observation and attention<sup>(18)</sup>. This information was widely found in the medical records; the diseases that led to the use of these devices, however, were not expressed in the data source, which represented one of the study limitations.

Another group of diseases comprises ear diseases, especially deriving from internal factors in the work environment and affecting different professional categories, such as marble, wood, iron and steel and cement factory workers<sup>(19)</sup>, machine operators, drivers and guards<sup>(20)</sup>, iron and steel industry, transportation, civil construction, textile and mining workers<sup>(21,22)</sup>.

These studies show that diseases occur among male workers, older than 40 years and with more than 15 years of professional practice in a noisy environment, indicating the relation between age range and work time on the one hand and diseases on the other. Although the association did not show significance, the appointed characteristics should be highlighted, as the same conditions are identified in the dock environment.

Hearing thresholds can already be affected at low frequencies, like between 3,000 and 6,000Hz<sup>(23)</sup>. Thus, workers' constant exposure to occupational noise beyond these levels can cause important hearing alterations, such as buzzing, difficulties to understand speech, low hearing levels and hearing-related vertigo<sup>(19-22)</sup>. In the dock environment, these can hamper the communication needed to perform activities like surveillance, loading and unloading and load movements.

Studies appoint clinical nursing actions in that sense, such as occupational anamnesis and the assessment of audiology measures<sup>(19)</sup>, in combination with professional knowledge on occupational hearing damage, which a view to planning clinical care in health.

Concerning non-work-related musculoskeletal disorders, lumbar sciatic pain is mentioned, characterized as one of the lumbar conditions that most causes work-related health disorders and absenteeism<sup>(24)</sup>, with disabling symptoms and leading to invalidity. A literature review identified this condition among physiotherapists and describes medication treatment among prevention and rehabilitation measures, in combination with physical exercise, varying with the forms the disease takes<sup>(25)</sup>.

## CONCLUSION

The study permitted identifying that dock work contributes to the development of occupational and non-occupational illnesses, which interact and interfere directly in workers' quality of life and in the productivity of professional activities.

Circulatory illnesses remit to the possible inefficiency of self-care measures as well as to inadequate work conditions, which cause tension in workers and can trigger pathological problems. The establishment of environmental control measures should also be

highlighted, including the use of specific individual protection equipment, so as to reduce the exposure of workers with respiratory conditions.

Productive activities in the docks also provoked mental disorders, emphasizing that activities involving a tiresome rhythm and the use of psychoactive drugs contribute to the development of diseases. The frequency of musculoskeletal problems, then, entails the need to work with these professionals, including job positioning measures and the encouragement of damage prevention actions in each type of dock work.

Obtaining the disease profile that affects these workers supports clinical nursing actions. When health information is available, nursing professionals can plan clinical actions for nursing interventions in that area. In addition, the identification of these illnesses demonstrates fertile ground to expand scientific production in Nursing in different productive environments, with a view to advancing on professional clinical knowledge on occupational and non-occupational illnesses, converging into clinical health promotion strategies at work.

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