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Determinants for acknowledgement of occupational related causes among Italian Police Officers

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ABSTRACT. *The aim of this work was to evaluate associations between invalidating health problems and the main demographic and professional determinants among the employees of the Police Headquarter of the Province of Foggia (South Italy). Personal records of the employees on active service between November 2009 and May 2010 (N. 798 files) have been analysed.*

241 personal service records reporting at least an acknowledged occupational related cause were examined. Low educational level increases the risk of occupational related causes (OR=2.03; 95% CI=1.03-3.2; p<0.002). Traumatism (49.4%) and osteoarticular system diseases (23.6%) were the most frequent reasons for acknowledgement of work-related causes. The risk of causes related to traumatism was lower among employees with lower educational level (OR=0.59; 95% CI=0.36-0.97; p=0.0038) and higher length of service (OR=0.83; 95% CI=0.79-0.87; p<0.001).

Occupational-health physician knowledgeable about police work plays an important role by screening for specific conditions and educating the Police Officers about increased risks.

Key words: *epidemiological studies, occupational disease, occupational related causes, police officers.*

RIASSUNTO. Lo scopo di questo lavoro è stato quello di valutare l'associazione tra le patologie che hanno portato al riconoscimento di una causa di servizio e i principali determinanti demografici e occupazionali tra i dipendenti della Questura di Foggia (Puglia, Italia). Sono stati analizzati i fogli matricolari del personale in servizio attivo nel periodo luglio 2009 - maggio 2010 (798 fascicoli) gestiti dall'Ufficio Sanitario Provinciale. In 241 fogli matricolari era riportata almeno una causa di servizio riconosciuta. Un basso titolo di studio aumenta il rischio di ricorrere ad una causa di servizio (OR=2.03; 95% CI=1.03-3.2; p<0.002). Le motivazioni più frequentemente riportate per il riconoscimento sono risultate i traumatismi (49.4%) e le malattie dell'apparato osteoarticolare (23.6%). La probabilità di andare incontro ad una causa di servizio per traumatismi è risultata inferiore tra il personale con un titolo di studio di licenza elementare/media inferiore (OR=0.59; 95% CI=0.36-0.97; p=0.0038) e si riduce con il progressivo aumento dell'anzianità di servizio (OR=0.83; 95% CI=0.79-0.87; p<0.001). La conoscenza delle mansioni lavorative svolte dagli operatori di pubblica sicurezza da parte dei medici competenti ha un ruolo cruciale nella precoce identificazione di condizioni patologiche professionali e nella educazione dei lavoratori sui potenziali rischi per la salute.

Parole chiave: studi epidemiologici, malattia professionale, causa di servizio, pubblica sicurezza.

Introduction

In recent years, the analysis of the most frequent occupational diseases has received great attention from the Public Health Services. In Italy, the assessment of the risk related to work activities is a contractual obligation of each employer, in that it is bound to estimate the degree of all intrinsic hazards and take effective preventive measures (1-3). The main critical aspect of the risk assessment process basically lies in the coexistence in either a public body, private firm or, more simply, the same work setting of personnel with very different tasks and assignments. As more specifically concerns police force environment, determination of specific risk levels is made much more difficult by both multiplicity of tasks involved to defeat crime and grant the public order, and by heterogeneity of personal variables, such as sex, age, cultural level and professional skills (4-6).

In the last two decades a large number of risk factors related to maintenance of public order have been identified, with the highest ratings attributable to traumatic events, which sometimes lead to a fatal outcome. In this context, traumatism often contribute to the development of invalidating pathologies together with the exposure to some physical agents (macro and micro climatic conditions, noise, and so forth), chemical agents (combustion side products, lead, solvents, etc.) and, though more rarely, biological agents. Moreover, an ever-growing body of evidence has been collected suggesting that workers responsible for the citizens' security and protection are exposed to significantly higher levels of stress than other professional groups, with frequent development of burn-out syndromes (7-9).

The aim of this work was to screen the pathologies leading disability retirement pension among the employees of the Police Headquarter of the Province of Foggia (South Italy), and to evaluate possible associations between invalidating health problems and the main demographic and professional determinants.

Population and methods

According with the current privacy Law, the study protocol obtained the approval of the Head of Police Admin-

istration of the Province of Foggia (about 682,000 inhabitants), South Italy in November 2009. The permission was granted to use the results of the study only for scientific aims on November 2009. Provincial Police Administrations are local Offices of Italian Government. Data were collected in anonymous form.

Personal records of the employees on active service between November 2009 and May 2010 (N. 798 files) have been analysed. Collected data have been stored in an Access database.

To assess the association among variables, double-entry contingency tables (2x2) has been defined and χ^2 test performed, by considering as significant p values <0.05. Odds Ratio (OR) and the related Confidence Intervals (CI) at 95% have been calculated too. T test for independent samples has been carried out to evaluate differences among continuous variables (age at recruitment, length of service), by considering as significant p values <0.05.

To assess the relations among the studied variables, linear regression and multivariate logistic models have been performed.

Data has been processed using Epi Info 3.3 and STATA-MP 10.1 software for Mac OS X.

Results

Between November 2009 and May 2010, 241 personal service records reporting at least an acknowledged occupational related cause were examined. Four hundred occupational related causes were scrutinized, 370 among males (92.5%) and 30 among females (7.5%). The mean age for the first occupational related cause was 29.1±5.8 years (range: 20-49). The length of service at the time of the first occupational related cause resulted 6.9±5.7 years (range: 0-26). Over 50% of the subjects resulted to have a high-school degree. In 145 subjects (60.2%) one occupational related cause was only reported. The maximum number of occupational related causes reported for each subject was 6.

A significant association emerged between low educational level and acknowledgement of two or more occupa-

tional related causes (OR=2.3; 95% CI=1.3-4; $\chi^2=9.8$; p=0.002). Employees with two or more occupational related causes were hired at a lower age (mean: 21.7±3.3 years), compared to subjects with only one cause (mean: 23.4±3.8 years; t=3.4; p=0.001). Using a logistic regression model, a lower educational level increased the probability to have two or more occupational related causes (OR=2.03; 95% CI=1.03-3.2; p<0.002). Furthermore, the length of service increased the risk of occupational related causes (R²=0.09; exp(b)=1.05; 95% CI=1.03-1.06; p<0.001).

Traumatism (49.4%) and osteoarticular system diseases (23.6%) were the most frequent reasons for acknowledgement of work-related causes (Table I).

In 4.5% of cases more than one pathology was reported as a cause for compensation claims.

Subjects with traumatism had a higher average age at recruitment (23.3±3.9 years) than employees with a different occupational related cause (21.9±3.4 years; t=-2.67; p=0.004). The length of service, at the moment of the accident, was lower among subjects with a traumatic work-related cause (5.8±4.9 years), compared to the others (11.7±6.1 years; t= 10.3; p<0.001). Employees with a lower educational level had a lower risk of traumatism work-related cause (OR=0.37; 95% CI=0.24-0.56; $\chi^2=23.80$; p=0.0000). Instead, subjects enrolled in the so called "Di-gos/Anticrimes" or "Mobile" sections had higher risk to undergo an occupational-related cause due to traumatism (OR= incalculable; p=0.00185 and OR=3.2; 95% CI=0.9-12.5; p=0.0371 respectively). By logistic regression, the risk of causes related to traumatism was lower among employees with lower educational level (OR=0.59; 95% CI=0.36-0.97; p=0.0038) and higher length of service (OR=0.83; 95% CI=0.79-0.87; p<0.001).

The average age at recruitment resulted lower among employees with an osteoarticular system pathology acknowledged as a work-related cause (12.6±3.6 years), compared to the others (22.5±3.8 years; t=2.2; p=0.0013). The length of service, at the time of the diagnosis, was higher among employees with an occupational related cause for the osteoarticular system pathology (13.5±6.4 years) compared to the others (7.2±5.4 years; t=9.3; p<0.001). Subjects with lower educational level had a

Table I. Pathologies for which a work-related causality was recognized. Sex-stratified frequency

Pathology	Male		Female		Total	
	N	%	N	%	N	%
Traumatism	184	47.4	23	74.2	207	19.4
Osteoarticular system diseases	96	24.7	3	9.7	99	23.6
Otorhinolaryngologic diseases	41	10.6	2	6.5	43	10.3
Gastrointestinal diseases	34	8.8	3	9.7	37	8.8
Respiratory system diseases	15	3.9	0	0.0	15	3.6
Cardiovascular diseases	8	2.1	0	0.0	8	1.9
Nervous system diseases	6	1.5	0	0.0	6	1.4
Others	4	1.0	0	0.0	4	1.0
Total	388	-	31	-	419	-

higher risk (OR 1.9; 95%CI = 1.2-3.2; $\chi^2= 8.38$; $p=0.0038$). Working as Police Officer involved in traffic control increases the probability of a work-related cause for the osteoarticular system disease (OR=1.9; 95% CI=1-3.5; $\chi^2=5.9$; $p=0.0151$). By logistic regression, length of service resulted associated to osteoarticular pathology (OR=1.9; 95% CI=1.3-1.25; $p<0.001$).

Discussion

Due to the distinctive, multifaceted tasks involved in maintenance of the public order, Police Officers are exposed to a variety of professional risks. The high percentage (30%) of employees at the Police Headquarter of Foggia who were recognized at least one work-related disability during their working life span, along with the large amount (40%) of claims for compensation of two or more infirmities, strongly confirm such evidence.

Among the studied population a specific preventive intervention target could be represented by subjects hired in a younger age or with a lower educational degree who requested acknowledgement of two or more occupational-related causes.

In line with the lack of literature in the field (6), in our study population, traumatic accidents were the most frequent reason for the acknowledgement of a work-related infirmity (49.4%). In this regard, new employees with a higher educational level who carry out more strategic and operative assignments should be the target of closer preventive measures, compared to their colleagues with a higher length of service and lower educational degree.

On the other hand, pathologies of the osteoarticular system were found to be more frequently reported among employees with a higher length of service. Reasonably, this finding may be related to repeated traumas occurred in the past during fulfilment of ordinary tasks (10).

Police Officers' work is characterized by high levels of intrinsic stress due to the risk for own safety, the ongoing state of alert, the need for control of emotions when facing dramatic situations, the often exhausting rhythms of work, the consequent interference on circadian biological rhythms. Taken as a whole, these circumstances are possible causes for worsening the risk of undesirable events while carrying out work assignments.

The numerous and diversified hazards among public safety and security forces impose the adoption of several

occupational medicine measures, including continuous sanitary surveillance, rehabilitation of occupational accidents, prompt medico-legal evaluation of occupational-related compensation claims (6).

Occupational-health physician knowledgeable about police work plays an important role by screening for specific conditions and educating the Police Officers about increased risks (11).

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