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Features of registered occupational diseases in Greece: a veil of ignorance

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Summary
Introduction: Background: *Under-registration of occupational diseases is a global problem.* **Objectives:** *The aim of this study was to describe the characteristics of the reported cases of occupational diseases, in the context of the largest insurance scheme in Greece.* **Methods:** *Socio-demographic characteristics related to the identified cases of occupational diseases were collected from the archives of the special medical committee of the Social Insurance Institute (Idrima Koininikon Asfaliseon, IKA) for the year 1999. This year was chosen given that it largely represents the highest number of registered occupational diseases in comparison to the period 2000-2009.* **Results:** *Sixty-seven (67) occupational diseases were recognized (3.4 cases/100,000 employees). There were 32 new cases (incidence rate: 1.64/100,000 employees). Occupational skin conditions and diseases of the respiratory system accounted for 85% of all diagnoses. Builders and unskilled blue collar workers were the most frequent occupational groups affected.* **Conclusions:** *These findings indicate a high rate of under-registration of occupational diseases in Greece, compared to data from the European Union. This under-registration could be attributed to a variety of limitations related to the current model of occupational health in Greece. The present pattern of registered occupational morbidity reflects the under-development of occupational health in Greece and stresses the need for further and intensified work in order to create modern occupational health services in this country.*

Riassunto
«Andamento delle malattie professionali in Grecia: il velo dell'ignoranza». **Introduzione:** *È un fatto di preoccupazione in tutto il mondo la sottostima delle malattie professionali, data anche la scarsa propensione alla loro denuncia.* **Obiettivi:** *Analizzare le caratteristiche dei casi registrati di malattie occupazionali da parte del più grande gruppo assicurativo in Grecia.* **Metodi:** *Dagli archivi dell'anno 1999 dell'apposito Comitato Medico dell'Istituto di Assicurazione Sociale (Idrima Koininikon Asfaliseon, IKA) sono state ricavate le caratteristiche socio-demografiche dei casi riconosciuti affetti da malattie occupazionali. L'anno 1999 è stato scelto perché esso ha visto di gran lunga il*

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maggior numero di malattie occupazionali registrate in confronto all'arco temporale 2000-2009. **Risultati:** *Sono stati riconosciuti sessantasette (67) casi di malattie occupazionali (3.4 casi ogni 100.000 occupati) ed i nuovi casi sono stati 32 (1.64 ogni 100.000 occupati). Le affezioni cutanee e le malattie dell'apparato respiratorio hanno rappresentato l'85% di tutte le diagnosi. Gli addetti all'industria delle costruzioni e gli operai non specializzati rappresentano i gruppi più frequentemente colpiti.* **Conclusioni:** *Questi risultati indicano come vi sia un considerevole numero di malattie occupazionali non denunciate in Grecia in confronto a quanto avviene nell'Unione Europea. Le motivazioni di questa scarsa denuncia devono essere attribuite ad una serie di limitazioni legate all'attuale modello di salute occupazionale in Grecia che di fatto è da considerare molto lontano da quanto è seguito nei paesi industrializzati e mette in evidenza la necessità di creare servizi maggiormente adeguati di Medicina del Lavoro in Grecia.*

Introduction

Estimates of the occupational disease burden involve from 4 to 10 million cases of occupational diseases annually worldwide (14). The financial cost ranges between 2 and 14% of the Gross National Product across various countries (15). A considerable number of occupational diseases are under-registered, mainly due to the long latency period which is required for the clinical manifestations of such conditions, and the medical-legal issues which may influence the assessement of occupational diseases at personal and community level (4, 22). In Europe, the lack of comparative data on occupational diseases epidemiology among member-states of the EU is widely recognized (6). In Greece, a list of 52 occupational diseases was developed in 1979 for the employees registered with the Social Insurance Institute (SSI) or Idryma Koinonikon Asfaliseon (I.K.A), which covers almost 50% of the working population (1, 12, 16). The population registered with SSI (IKA) for 1999 was 1.941.265 workers. This means that about 2 million workers were registered with other insurance schemes. The prescribed list includes five groups of occupational diseases. The first group of diseases is related to intoxications from various chemical hazards (24 diseases in total). The second group includes occupational diseases due to exposure to infectious agents (No.=7 diseases). The third group consists of diseases due to occupational exposure to physical hazards (No.=10). The fourth group includes occupational skin diseases (No.=2) and the last group is related to occupational lung diseases (No.=9). It is of interest that pleural mesothelioma is the only new disease added to the original list in 2005. The aim of the present descriptive study was to investigate the pattern of the registered occupational diseases in Greece in the context of the SSI for the year 1999. This year was chosen given that it largely represents the highest number of registered occupational diseases in comparison to the period 2000-2009. In particular, the diachronic trend of data (IKA) on occupational diseases in Greece during the years 2003-2009 is as follows: 2003: 39 cases (11 new); 2004: 32 (2 new); 2005: 30 (9 new); 2006: 31 (8 new); 2007: 24 (2 new); 2008: 21 (2 new); 2009: 19 (5 new cases).

Consequently, our results should reflect the best case scenario (67 cases) for the official burden of occupational diseases in Greece.

Materials and Methods

Data on occupational diseases for the year 1999 were collected from the archives of the SSI (IKA) special medical committee. Socio-demographic characteristics of the registered cases (gender, age, occupation) and type of identified occupational disease conditions were tabulated. Descriptive statistics were carried out. Statistical analysis was performed by the use of SPSS software. All cases of occupational diseases reported to IKA were considered as registered (recognized) occupational diseases.

Results

Of the 85 applications submitted to the special medical committee, 67 cases were registered as occupational diseases (76.5%). The rate of occupa-

tional diseases per 100,000 employees was 3.4. Thirty-one (53%) out of the 67 cases were cases with first diagnosis in previous years, and 32 (47%) were new cases of occupational diseases (incidence: 1.64/100,000 employees). The average age was 53.3 years (Standard Deviation, SD: 8.3 years). Sixty-two were males (93%) and 5 were females (7%). All subjects were manual workers. Builders represented the largest group (No.=20, 30.8%) followed by labourers (No.=11, 16.9%), metal workers (No.=8, 13.8%), painters (No.=8, 12.3%), textile workers (No.=3, 4.6%), carpenters (No.=3, 4.6%), battery workers (No.=1, 3.1%) and sandblasters (No.=2, 3.1%). Occupation and disease conditions are shown in table 1. The predominant diagnosis was allergic contact dermatitis (44.6%). Builders and painters most frequently had allergic contact dermatitis (17 and 6 cases respectivelly). Diseases of the respiratory system accounted for 40% of all diagnoses. There were 10 cases of pneumoconiosis (of

Table 1 - Distribution of recognized occupational diseases, (Greece, 1999)

Disease	n_1	%	Occupation	n_2
Lead intoxication	4	6.2	Metal worker,	1
			labourer,	1
			battery worker,	1
			sandblaster	1
Allergic contact dermatitis	29	44.6	Builder	17
			Painter	6
			Marbler	1
			Tanner	1
			Carpenter	1
			Labourer	3
Pneumoconiosis	10	15.4	Metal worker	5
			Labourer	3
			Sandblaster	1
			Seaman	1
Chronic obstructive lung disease	8	12.3	Labourer	3
			Carpenter	1
			Builder	1
			Painter	1
			Carpenter	1
			Plastics worker	1
Occupational asthma	7	10.8	Builder	2
			Shoe- worker	1
			Carpenter	1
			Textile worker	1
			Labourer	1
			Painter	1
Noise induced hearing loss	2	3.1	Textile worker, painter	2
Diver's disease	1	2	Diver	1
Toxicity due to Mn	1	2	metal worker	1
Lung fibrosis + noise induced hearing loss	1	2	metal worker	1
Noise induced hearing loss + lead intoxication	1	1.5	Labourer	1
Byssinosis	1	1.5	Textile worker	1

which 4 cases where asbestosis), 8 cases of Chronic Obstructive Pulmonary Disease (COPD), 7 cases of occupational asthma, and one case of byssinosis was recorded. Most diagnoses of pneumoconiosis were registered among metal workers (5 cases) and unskilled blue collar workers (3 cases). COPD diagnosis was most frequent among non-specialized workers (3 out of 8 cases). From the seven cases of occupational asthma registered, 2 were among builders and the remaining 5 were observed among painters, carpenters, shoe-workers, unskilled blue collar workers and textile workers. Four cases of lead intoxication were reported. Two cases of occupational noise-induced hearing loss and one case of decompression sickness were registered. Lastly, one case of neurotoxicity due to Manganese was detected and two mixed diagnoses of pulmonary fibrosis and hearing loss in an aluminium worker and hearing loss with lead intoxication in an unskilled blue collar worker. No reported cases were recorded for diseases included in the list such as: Mesothelioma of peritoneum, skin cancer, nasal cancer, sino-nasal cancer, lung cancer, and diseases due to biological hazards. All subjects were Greek citizens.

Discussion

A short description of the economic sectors in Greece with emphasis on the sectors of agriculture/livestock, manufacturing and construction will be helpful for the interpretation of the results. According, the number of the population employed in the agriculture/livestock sector of the economy was estimated at 601.939 persons. The number of persons employed in the manufacturing and construction sectors were 531.566 and 376.777 persons, respectively. The observed incidence of occupational diseases (1.64/100,000 employees) was the lowest in the European Union and a similar incidence for the year 1998 was then classed as unreal by the Organization EUROGIP (5). Consequently, our results suggest a clear trend of under-registration of occupational diseases in the context of the largest insurance scheme in Greece, despite the fact that we have used the best case scenario (year 1999) in terms of the number of registered occupational diseases. It is expected that "traditional" forms of occupational diseases (e.g. asbestosis, mesothelioma, occupational hearing loss), as well as more "contemporary" forms of occupational diseases (e.g. musculoskeletal disorders, disorders of mental health) will be equally under-registered and underestimated. Moreover, in table 1 only 12 diseases (out of 52 prescribed diseases included in the list) are reported. Examples of diseases included in the list but without registered cases are: Mesothelioma of peritoneum, skin cancer, nasal cancer, sino-nasal cancer, lung cancer, viral hepatitis, brucellosis. Regarding diseases not included in the prescribed list in 1999, two interesting examples are pleural mesothelioma (which was the only disease that was added to the initial list of 52 prescribed diseases in 2005) and Carpal Tunnel Syndrome. Our results suggest that occupational skin diseases and disorders of the respiratory system comprise the majority of the registered occupational diseases in Greece for the year 1999. The complete absence of emigrants and the under-representation of women (only 7.7%) among the identified cases of occupational diseases possibly suggest a significant occurrence of "informal forms of employment" (of workers not registered with mandatory social security schemes). Furthermore, the distinction of unskilled workers as the 2nd prevalent occupational group indicates their increased vulnerability and their 'critical' working conditions in terms of health and safety. It is rather surprising that only 4 cases of asbestosis were registered, while no case of mesothelioma was detected, despite the fact that Greece has had major asbestos industries in the past. For instance, in 1995 Greece ranked 7th among asbestos producing countries on a worldwide scale. Greece was a country with major asbestos industries as regards both asbestos production (chrysotile mines in Northern Greece) and asbestos-cement products. Asbestos has been banned in Greece since 1 January.2005 according to European Union Directive (7, 18). For the year 1999, the 4 identified cases of asbestosis yielded an average rate of 2 cases/1,000,000 insured employees within the Greek IKA, while in the EU the corresponding average rate was 30 cases of asbestosis per 1,000,000 insured employees (11). In particu-

lar, it should be pointed out that mesothelioma of the pleura was not included in the list of prescribed diseases until 2005. Furthermore, Greece has not yet implemented the EU directive 477/1983 which provides for the relative adjustments regarding the establishment of a National Registry of mesothelioma and asbestosis cases. Fifty-eight cases with radiological findings attributed to asbestos-related diseases and 2 cases of pleural mesothelioma, involving seafarers were published in 1989 and 1991 respectively (19, 20). Moreover, a Greek study found an increased mortality due to mesothelioma over the period 1983-2003 (9). It is of interest that no case of occupational cancer was recorded in the present study. However, a Greek case-control study suggested that 9.9-16.6 % of lung cancer cases can be attributed to several occupational exposures, including asbestos (3). Additionally, despite the fact that from 1992 the list of prescribed diseases adopted by the IKA could be applied across the board to all Greek insurance schemes, in fact this does not work for all those employees registered with insurance schemes other than IKA (e.g. seafarers, farmers and public sector workers). Moreover, regarding farmers and livestock workers there are at least two studies from Greece suggesting a high incidence of brucellosis and also an independent association between occupation and risk of brucellosis (2, 10). The results of our study raise the question of why these data suggest under-registration of occupational diseases in Greece. Apart from the low number of specialized occupational physicians, the lack of occupational attribution, the low compensation awards, the absence of a unified recording and notification system for all insurance schemes, and the need for renewal of the prescribed list (on the basis of the European list of occupational diseases), there are more fundamental reasons for this under-registration (1, 8, 12, 17). There are no specific centres for the diagnosis of occupational diseases in Greece (e.g. under the National Health Service, at Medical Faculties, at Social Insurance Institutes). The system of insurance coverage for occupational risk (occupational disease, occupational injury) suffers significant limitations. Greece is an exception, in that in this country benefits for workers who become ill or injured during the course of their employment are covered by general sickness and invalidity insurance Schemes and not by separate schemes (21). In other words, the lack of a separate insurance branch responsible for covering occupational risk based on revenues (premiums) coming from contributions payable exclusively by the employers could be considered as having a negative impact on the development of occupational health and safety in Greece. If such an insurance branch could be established based on a bonus-malus system relating to the average premium variation, this could be an incentive for the employers to go beyond formal compliance with the legal provisions. It has been suggested that there is a strong advantage for employers to directly finance worker's occupational risk. If the costs are shared by everyone, employers make less effort in improving working conditions in order to avoid costs, as all costs are born by the entire society (13). At this point it should be stressed that if the costs are shared by society the workers also pay for insurance coverage of occupational risk, and this is in contrast to the generally considered employer's responsibility to safeguard health, safety and welfare at work for all employees. Regarding employers in Greece it is of note that their main goal is simply to demonstrate a minimum of compliance with the current legislation on health and safety at work. In addition, it should be noted that the prevention of occupational diseases has not received high priority in the Greek Trade Unions agenda. It is worth mentioning that the process related to the application for compensation for an occupational disease is complex and time consuming, and hence the insured workers became reluctant to apply for compensation for an occupational disease. On the contrary, they usually apply for compensation for a common disease. We believe that this argument is supported by our results and in particular by the data on cancer. Indeed, an impressive finding of our study is that no cases of occupational cancer were reported. Interestingly, two previous studies from Greece reported 1 case of cancer (2001) and 2 cases of cancer for the period 2003-2007 (1, 12). Lastly, it should be noted that IKA provides benefit (compensation) for partial disability due to an occupa-

tional disease (minimum degree of disability required: 50%) or for full disability due to an occupational disease (minimum degree of disability required: 67%). On the contrary, IKA does not provide benefits for partial disability (apart from compensation) due to an occupational disease such as an annuity or lump sum as is the case in several European countries. Based on the experience of these countries this type of benefit (e.g. annuity) could be awarded based on a minimum degree of disability required which is less than 50%. All the above mentioned factors discourage insured workers from making a claim for occupational disease compensation.

In conclusion, the present study shows a considerable burden of under-registration of occupational diseases in Greece, compared to data from the European Union. This under-registration could be attributed to a variety of factors. The under-registration of occupational diseases reflects the under-development of occupational health in Greece and stresses the need for further intensive work in order to create the context for the establishment of effective and updated occupational health services in Greece

NO POTENTIAL CONFLICT OF INTEREST RELEVANT TO THIS ARTICLE WAS REPORTED

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