

Editorial

OCCUPATIONAL HEALTH IN CROATIA – A BRIEF HISTORY AND FUTURE TRENDS*

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The Institute for Medical Research and Occupational Health is celebrating its 65th anniversary. This editorial is dedicated to its rich history and vital role in Croatian occupational health.

Development of occupational health in Croatia

In South Eastern Europe, industrialization began to develop rather late, which caused the development of occupational health and labour regulations to lag behind that of other European countries. This period was marked by extremely difficult working conditions for workers from all industries. The origins of occupational health in Croatia date back to the second half of the 19th century, when the first studies on occupational diseases began being published (1).

The end of World War II and victory over fascism marked a new era in world history. Many national freedom and social rights movements were born. Various countries saw the role of the state gain an increasing significance. Important social and other measures were introduced to reduce social differences and strengthen social security. The powerful and uncontained development of industry, science, and technology enabled overall progress. Medical sciences also advanced, as did modern understandings and new findings on the origins and prevention of diseases. The role and mission of occupational health and other fields

addressing the protection of workers and their health (such as technical safety, ergonomics, and psychology at work and social protection) broadened their reach. Besides maintaining and improving physical and psychological health and protecting workers from diseases and conditions caused by occupational exposure, the need to adapt work and workplaces to the needs of the individual began to be highlighted. The system of social welfare was expanded and perfected, which particularly refers to health, pension and disability insurances.

Between the two world wars, only five diseases were described as occupational diseases in Croatia, while after World War II, the first official list of such diseases contained 24 items. In 1948, this number rose to 44. The list of occupational diseases in force in Croatia until 1998 included 46 diseases (and groups of diseases). In terms of its approach and implementation, this list was considerably modern and progressive to begin with, but was still further upgraded. The list now has all the features of a mixed system, i.e. a system where diseases and full risk coverage are combined (2).

Institutional background

The Institute for Industrial Hygiene was founded in December of 1947 (today known as the Institute for Medical Research and Occupational Health) and has since held the leading role in research from the field of occupational health. It was organised within the Yugoslav Academy of Sciences and Arts (presently the Croatian Academy of Sciences and Arts) at the initiative of the president of the Academy, Dr Andrija Štampar, who underlined that the Academy needed to face new challenges in the improvement of economic

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and social conditions. He explained that neither science nor art can be an end in itself; on the contrary, they should serve the people and their needs, as well as new industrial developments. The idea to found the Institute was based on the premise that worker health care was not only a matter of human decency but also a precondition for the successful development and improvement of the economy. Dr Štampar insisted that success could only result from research and development. The main tasks of the newly-founded Institute were as follows:

- To research and study occupational physical and biotic conditions and hygiene problems in general, particularly in our industry,

- To provide competent bodies and all other interested institutions with the results of its scientific and research work so that they can make use of it,

- To disseminate knowledge on industrial hygiene

(3).

It is the author's belief that the Institute has lived up to these expectations. A key factor in this process was the journal *Archives of Industrial Hygiene and Toxicology*, which continues to be published in regular volumes and supplements with papers gathered from different scientific and professional meetings. The Institute began publishing the journal (under the name *Archives of Industrial Hygiene*) in 1950. The journal changed its name in 1956 to *Archives of Industrial Hygiene and Toxicology* and has since then been published quarterly.

Besides the Institute, an important role in education and research from the area of occupational health was given to the School of Public Health of the Zagreb School of Medicine with its Department for Environmental and Occupational Health. In 1949, the School of Public Health initiated postgraduate studies in occupational medicine. The courses regarding occupational health were integrated into the curricula of graduate courses in medicine. In Croatia, occupational medicine as a specific form of specialisation in medicine was introduced at the beginning of the 1960s. Since the 1950s, over one thousand medical doctors from Croatia and other parts of former Yugoslavia have undergone postgraduate training and were awarded specialist qualifications in occupational health, alongside 109 successful master's theses and 55 doctoral dissertations. The School has been selected as one of the teaching bases of the World Health Organization (WHO) and several international courses in occupational health have already been held there.

The earliest focus of research at the Institute for Medical Research and Occupational Health was placed on intoxication with heavy metals: lead, manganese, cadmium, and mercury. The investigations later included many other problems arising from industrial development and agricultural modernization. Some problems were anticipated, but most arose from practice. The studies included organic solvents and other organic chemicals, pneumoconioses and neuropathies, and bronchial asthma and bronchoconstrictive impairments. In addition to work-related diseases, studies were focused on the general morbidity, absenteeism, and disability of workers. The primary concern was to improve methods for the study of general morbidity among workers, particularly that caused by chronic degenerative diseases, in order to facilitate their early diagnoses and determine risk factors. Later, this concern extended to the assessment of disability. With regard to methodology, the Institute primarily had an epidemiological approach, performing clinical observations and in some cases experimental studies. Studies on work pathology were supported by relevant investigations in the field of biochemistry, physical chemistry, molecular biology, and experimental toxicology. Studies of psychophysiological and temporal conditions of work also had an important role in the Institute's research programmes. The initial areas studied were fatigue and rest, while subsequent research focused on shift work.

On occasion of the 50th anniversary of the Institute, a paper related to the research performed at the Institute was published (4). The paper was based on 124 selected publications of the Institute's members and also discussed anticipated problems in the future. An additional review based on 46 papers of the Institute's members related to psychophysiological and temporal conditions of work was also published in that same year (5).

As far as other resources are concerned, distinguished institutions in the field include the Croatian Institute for Health Protection and Safety at Work. There are also a number of private industrial hygiene laboratories, all of which have to be certified by the regulatory authorities.

Important events and activities

Several meetings and congresses have marked the development of occupational health in Croatia. In 1963, the Croatian Medical Association founded its Occupational Medicine Section, which became the Croatian Association of Occupational Medicine after

Croatia gained independence. In 1978, the Occupational Medicine Section, which was then a part of the Yugoslav Association of Occupational Medicine, organised the 19th International Congress on Occupational Health in Dubrovnik in cooperation with the Institute for Medical Research and Occupational Health, whose role in this event was vital. The Croatian Association of Occupational Medicine then organised the 1st Croatian Congress of Occupational Health in Opatija in 1995, the 2nd Congress in Zadar in 1998, and then 3 subsequent congresses (Brijuni 2002, Dubrovnik 2007, Hvar 2011).

At its meeting in 1996, the World Health Organization (WHO) adopted the Declaration on Occupational Health for All (6). Along with this Declaration, which was essentially drawn up at the Second Meeting of the WHO Collaborating Centres in Beijing on 11-14 October 1994, the WHO also adopted the Global Strategy on Occupational Health for All: The Way to Health at Work (7). In 1996, the International Commission on Occupational Health (ICOH) developed the Code of Ethics for Occupational Health Professionals (8).

The Declaration on Occupational Health for All highlighted problems related to injuries at work alongside the fact that modern development in terms of work, working environment and work organisation, the introduction of new technologies, new chemical compounds and materials, as well as the growing mechanisation and industrialisation in developing countries can bring about new epidemics of professional and work-related diseases. In addition, the Declaration points toward the need of providing professional advice and assistance at different levels, including the workplace. The necessity of cooperation between occupational medicine and other participants in the process of protection (such as the safety at work service, environmental health, primary and specialised health care and social welfare) was also underscored. According to the Declaration, occupational medicine, if it aims to be efficient, should perform the following functions:

- supervise work environments,
- provide initiatives on how to identify noxious substances at work and advise on how to control their levels,
- supervise the health status of present and future workers,
- monitor the health of vulnerable worker groups,
- organise first aid and emergency services at the workplace,

- raise awareness and improve worker health,
- provide medical care for work-related diseases.

In Croatia, treating workers for general diseases is left to their selected general practitioner (family physician), which does not exclude cooperation with occupational health services when necessary (e.g., when assessing one's physical fitness for a certain job position).

According to the Health Manpower Register from 1995, run by the Croatian National Institute of Public Health, 381 occupational health specialists were engaged in practical work. At the present, only 185 specialists work in occupational health services. The Healthcare Act, which was adopted in the meantime, defined occupational health as a purely preventative activity at the level of primary health care. Before the implementation of this Act and since 1974, health care for employees at the primary health level was organised with focus on the workplace, but with the possibility to use the services of a general practitioner at his or her "place of residence", as well.

A part of the already mentioned WHO document "Global Strategy on Occupational Health for All" refers to the strengthening of scientific research (Objective 9) stressing that scientific research is relevant for the development of occupational health, as well as for planning, education and training, risk identification, and practical activities. It states that each country should have its own national research programme in the field of occupational health in order to ensure the efficiency of transfer of scientific results and practice from international to local levels. The largest number of industrially developed countries have entrusted these roles and tasks national institutes of occupational health or specific units (departments) within universities. The oldest occupational health institutes in developed countries were first organised some 80 or 90 years ago, whereas most developing countries do not have such centres, despite the fact that their needs may be more evident and demanding than in developed countries.

Future trends in occupational health

When it comes to future needs, which includes research, it is uncertain what problems we will face. Developed countries have already gone through the third and now face the fourth era of technological revolution, in which the backbones of economy are computers, electronic microprocessors, robots, and telematics. Economies are exhibiting a strong tendency to restructure. The attitude towards work has radically

changed, whereas the already significantly globalised economy has entered a new dimension marked by photonics, artificial intelligence, lasers, cellular radios, and biochips. Nanotechnology is also in the process of immense growth, as is genetic engineering.

Given the fact that, in order to “survive”, each society has no choice but to keep up the pace with modern technological development and solutions can no longer be found in outdated technology, we can conclude that occupational health is already faced with very specific circumstances. On the one hand, the existing technology will have to gradually improve, while on the other, we are increasingly being confronted with processes far outside the reach of this editorial (9). In this context, we must anticipate future scientific problems and consider the existing and predicted developments in occupational and related diseases. This includes various forms of medical examinations and procedures. Electromagnetic diagnostics is yet to be perfected and enhanced, which has already been elaborated during a recently organised scientific meeting (10). Furthermore, far more knowledge needs to be obtained on the mechanisms of vibrations, as they affect the entire body. The effects of atmospheric pressure changes are also gaining importance because of the underwater exploitation of oil and gas. Technological advancements and more efficient safety procedures have considerably reduced the risks of poisoning, but the problem of the prolonged exposure to subtoxic concentrations of different (and particularly newly-discovered) chemical compounds still remains. Another interesting issue is “total exposure”, which implies the combined exposure related to work and working conditions and the environment in which people live (11, 12). We can expect to see the effects of combined exposure attract even greater attention. The progress made in immunology is already widely applicable in the field of occupational health, especially in the early diagnostics of skin and lung diseases caused by chemical compounds, which was the topic of another scientific meeting (13). Early diagnostics entails gathering data on the intake, distribution, metabolism, tissue accumulation, inactivation, and elimination of metabolites that are currently either used or produced. Future research will also involve the improvement of biomonitoring methods and the expansion of this approach to a greater number of compounds, which will allow for a better assessment of exposure and metabolism load as well as the earlier detection of the preclinical effects of various chemical exposures.

Fibrinogens and other effects of particle exposures have already been well-examined. Under the present conditions of work, this type of research will continue to be of great interest. This particularly refers to the monitoring of mesothelioma caused by exposure to asbestos, even though it has been banned for some time now. Asbestos was the topic of another scientific meeting (14). Where genetic modification and bioengineering are concerned, we must not disregard the dangers of infections for which there is still no established treatment. With respect to the use of bioengineering methods in the development of animal feed, but also irrespective of this, it is highly likely that the number of bio-allergens will increase. A particularly significant area refers to a group of noxious effects known as psychosocial effects. These imply group relationships and social structures, especially at the workplace. Specific problems such as monotony, stressful situations associated with technology, responsibility for maintaining very expensive working machinery, and safety at work must all be given particular attention. It is also worthwhile mentioning the problem of “sedentary” work and the health implications that stem from the lack of physical activity.

With regard to recent trends in the sphere of work that we face now and will continue to face in the upcoming period, it is important to point out the trend of increasingly aging populations and the problem of unemployment, the latter being of stronger significance at the present. Enormous difficulties persist not only in youth employment but also in the employment of middle-aged people and the elderly, who tend to lose their jobs due to economic restructuring and fierce market competition. Finally, the problem of adjustment (training) to new demands and types of work that appear in the labour market must also be considered.

As stressed by Kasutaka Kogi, President of the International Commission on Occupational Health (15), the protection and promotion of health among workers in times of rapid changes should focus on solution-oriented approaches for managing complex risks in increasingly diversifying work situations. Kogi pointed out that special effort has to be made to develop systematic procedures for basic occupational health services at small enterprises, and agricultural and informal work places. For example, one Croatian industry that requires further development and modernisation is the wood industry. In 2004, a two-day symposium was held to discuss ergonomics-related diseases, particularly those connected with the wood

industry (16). Development of wood industry starting from exploration of wood, production of furniture, and other final products with corresponding modernization and innovations is expected in the forthcoming period (17).

CONCLUSION

Occupational health should strive to keep up the pace with these changes and devise programmes to adequately respond. In improving the level of health protection for all workers, we will also have to strengthen the bridge between research and practice.

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