

Occupational Health Crossing Borders—Part 1: Concept, Teaching Methods, and User Evaluation of the First International Summer School in Munich, Germany

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Background Occupational health and safety (OHS) is relevant for occupational health professionals (OHP) throughout the world. However, training opportunities are often limited and exchange between OHP from industrialized and developing countries is sparse. We aimed to contribute to the international exchange of OHP through a 2-week summer school program.

Methods Twenty-three OHP from 11 countries participated. Teaching methods included interactive lectures, participants' presentations, case-based e-learning, enterprise visits, and hands-on sessions. After completion, participants evaluated the course.

Results OHS systems of 18 different countries were presented using the same set of clinical cases as a starting point. Opportunities and challenges in the different OHS systems were considered. On median, participants rated the course as excellent and totally agreed that it will help them in their daily work.

Conclusions An international summer school teaching basic aspects of different OHS systems is a useful tool for training and exchange at the global level. *Am. J. Ind. Med.* 52:774–781, 2009. © 2009 Wiley-Liss, Inc.

KEY WORDS: occupational health; occupational accidents; developing countries; developed countries; teaching; international educational exchange

INTRODUCTION

A healthy and productive workforce is considered the most important prerequisite for a sustainable development

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[Summits of the Americas Secretariat, 2005]. Annually, 2 million workers worldwide die due to occupational accidents and diseases caused by work [World Health Organization, 2005, http://www.who.int/occupational_health/publications/occupationalhealthbrochure.pdf; Hämäläinen et al., 2006]. Overall, 8% of the global burden of mortality is attributable to occupational accidents and exposures. The economic costs of occupational diseases and injuries accounts for more than 4% of the world's gross domestic product (GDP) [World Health Organization, 1994, http://www.who.int/occupational_health/publications/occupationalhealthbrochure.pdf, 2005,].

Given that the so-called “developing countries” comprise 70% of the world's workforce, and that often worse conditions and higher risk profiles at the workplace exist in these countries, it translates that these countries are affected even more. In low- and middle-income countries, up to 10–20% of the GDP is lost due to occupational diseases and injuries [Mikton, 1994]. This impact is often not clear to local decision makers who still consider OH an unaffordable luxury [Nuwayhid, 2004]. Furthermore, in societies where general social security infrastructure is underdeveloped, OH in large enterprises frequently extends to include curative care, emergency treatment, and first aid as well as maternal and child care. These additional pressures result in inadequate focus on preventive aspects.

Due to the low priority OHS enjoys, occupational medicine (OM) has not been implemented in the undergraduate medical curriculum, not only in many low- and middle-income countries but also some industrialized countries. For example, in Chile, OM has only recently been implemented in the medical curriculum of the Universidad de Chile in Santiago de Chile. At the postgraduate level, a similar situation exists for occupational health and safety (OHS). To take another example in Brazil, the postgraduate training in OHS is currently being restructured and in the south region the course offered at the Federal University of Paraná is the only existing opportunity for the states of Paraná and Santa Catarina with a population of 16 million.

As a result, many experts in the field of OHS in developing countries have been trained abroad either in full-time programs or short-term alternatives [Cook et al., 1999; Delclos et al., 1999; Froines and Barile, 1999; Markowitz and Merino, 1999; Petropoulos et al., 1999]. Besides the costs, the time involved and the language barriers, the specialists do not always return to their parent countries after their training; this in turn has a negative impact on the economic development [Knaue, 2002]. Others have started local initiatives which may be more accessible to the students and consequently guarantee focused OHS learning which can be implemented in the context of their current jobs [Wagner et al., 2005]. However, availability of instructors or travel costs for instructors from industrialized countries may prove to be additional obstacles. Furthermore, the cultural diversity

and international exchange between students from different cultures is lost. Other options include international distance training like the one provided by the University of Illinois [Forst, 2004] or the Universidad de Chile (www.medichi.cl). These online courses focus on occupational and environmental health education through reading materials, discussion groups, and assignments.

Our e-learning tool—NetWoRM—has similarities to these programs and aims to contribute to the training of local experts; a case-based e-learning approach is used as an add-on to traditional training [Kolb et al., 2007] and focuses on the practical aspects of OM. However, on-site training and exchange between students and research has been proven to be an important asset of e-learning [Ruiz et al., 2006; Choules, 2007].

We therefore aimed to develop a 2-week summer course with the principal objective to train physicians, nurses, and other healthcare professionals currently working or currently in training in OH in low- and middle-income countries on the most important aspects of OH in the global context. The course focuses on practical occupational health aspects rather than research methods for occupational health. The course provides an arena for participants and lecturers to enhance their ability to work in an international context, their perspectives to be broadened and for international collaboration to be developed. Thus, OH professionals from countries at different stages of development would be exposed to related global, social, economical, and political aspects associated with OH as pointed out by Nuwayhid [2004].

The first part of this series of papers aims to describe the course structure, the teaching concept, the participants as well as the evaluation results. The second part describes the content of the course by comparing OHS in the 18 countries presented during the course (Radon et al., in press).

METHODS

Participants

After funding for 20 scholarships was approved in December 2007 by the German Academic Exchange Service, the summer school program was distributed to potential participants by various online resources and partner universities.

Due to the requirements of the funding program only students/alumni who either had studied at one of the partner universities of the Ludwig-Maximilians-University in Munich or undertook parts of their studies in German could be considered eligible. In addition, scholarship holders had to be selected based on a first come first served basis, if they (a) had a minimum knowledge of written English (based on self-rated level of English) and (b) were either postgraduate students in OH or had some professional involvement in OH

in their home country. Students were prioritized over professionals in established positions in the university or healthcare infrastructure. We aimed to cover participation from as many regions as possible.

Overall, 47 health professionals indicated their interest in the summer school program. Of them, 34 (72%) met at least some of the application criteria for the scholarship and applied for funding. Twenty of them took part in the summer school (42%). In addition to these scholarship holders, three participants were sponsored by their companies. Two of them attended only parts of the course.

Lecturers

Lecturers were invited to contribute to the program based on their experience with an international audience, their involvement in teaching at the national and international level, and in order to facilitate broad coverage of industrialized and developing countries. Eight presenters from Germany and seven international lecturers contributed to the lectures. In addition, seven tutors (undergraduate and postgraduate students) assisted the program. One lecturer contributed via videoconference due to time constraints.

Location

The summer school took place over the last 2 weeks of May 2008 at the training center of the Bavarian Farmers' Association in Herrsching, a village in the outskirts of Munich. The training center offered board and lodging as well as seminar rooms and a computer lab with Internet access.

Learning Objectives

At the end of the 90-hr course participants should be able to:

- Differentiate advantages and disadvantages of different OHS systems across the world.
- Effectively retrieve existing information on a given problem in OHS.
- Review and critically appraise potential health risks at the workplace.
- Synthesize evidence-based information for improving OHS practices.
- Identify gaps in the OHS system and to work towards improving OHS in poor/disadvantaged populations.
- Identify stakeholders influencing OH research, policy, and practice.
- Analyze economical aspects of OHS.

In addition to this structured program, several participants spontaneously presented videos depicting typical

workplaces in their home countries during the group discussions in the evenings and a variety of social events were offered with a view to provide informal interaction between participants.

Upon successful completion of the full course, participants received a certificate of attendance by the Ludwig-Maximilians-University. Some of the participants may use this certificate for credits at their home universities while others may use it to obtain their necessary continuing medical education (CME) credits.

Evaluation

At the end of the course, participants were asked to evaluate the course on an evaluation form developed specifically to reflect the needs of the course (see www.networm-online.eu). Results are given as Box–Whisker plots and absolute frequencies.

RESULTS

Participants

The majority of the participating 23 health professionals were physicians (Table I). Most of the participants came from Latin America; nine of them were from Chile. The age distribution and the involvement in OH indicate that the majority of participants already had some practical experience in OH. The three participants not directly involved in OH came from countries where OHS and specialists in the area of OM are almost nonexistent. Six of the participants had never been to Europe prior to the summer school.

Academic Program

The academic program and the amount and type of teaching on each topic are shown in Table II. The detailed program is available at our website (www.networm-online.eu).

Structure of the lectures on different occupational health systems

To enable participants to compare the different OHS systems from a practical point of view, each presenter received information about four OHS teaching cases and was asked to explain the general management approach to such cases in the context of their national OH systems. Presenters were given the choice to either develop their presentation based on the four case studies, to discuss the cases with the participants after their presentation, or to prepare a hand-out for the students about the cases. The cases covered were: (1) occupational accident in the construction industry, (2) malignant pleural mesothelioma in an asbestos worker,

TABLE I. Descriptive Data of the 23 Summer School Participants

	N
Gender	
Male/female	9/14
Age (years)	
21–30	2
31–40	7
41–50	10
>50	4
Profession	
Physicians	19
Nurses	3
Other	1
Region	
Latin America (Brazil, Chile, Colombia, Guatemala)	14
Africa (Egypt, Madagascar, Nigeria, Tanzania)	4
Asia (Bangladesh, China, India)	3
Europe (Germany)	2
Number of visits to Europe before the Summer School ^a	
Never	6
Once	3
Twice	3
More than twice	9
Involvement in OH in the home country	
In training for OH (not yet working)	2
Full time	13
Part time	5
Not at all	3

^aN = 21 Non-Europeans only.

(3) occupational asthma in a self-employed hairdresser, and (4) dysphonia in a primary school teacher (www.network-online.eu).

Small group projects

In addition to the cases presented during the lectures, participants were asked to build up their own case on an occupational accident in the construction industry within the context of their region during the so-called “regional small group project” session.

Furthermore, within the “international small group project” participants were asked to set-up a Wikipedia page about different topics related to occupational safety and health. Each group consisted of four to five participants from different countries. The aim of this exercise was to enable the participants to work together on an international base, thus replicating the constraints, considerations, and compromises faced by an international company when it wishes to expand and function globally. The following topics were covered and can be found at www.wikipedia.org:

- Basic Occupational Health Service (English and Spanish).
- Workers’ compensation.
- Workplace health surveillance.
- German Statutory Accident insurance.

Evaluation

Twenty of the 21 full-time participants attended the final evaluation session and filled-in the forms. Twelve of the forms were completed in Spanish, eight in English. With respect to the overall conditions of the summer school, 18 participants rated the mix of cultures as “enriching”; however, eight also rated it as “challenging.” All the participants indicated that they would recommend the course to colleagues in their home country. The duration of the summer school was considered “adequate”; one quarter of participants even felt that it was “too short.” Only three of the participants stated that they would have been able to cover the tuition fee (1,000 Euro) and fee for full-board and lodging (1,200 Euro for 13 days) without the scholarship. A price of up to 500 Euro for the program and up to 500 Euro for full-board and lodging was considered adequate by the majority of the participants.

The overall quality of the summer school was rated very high with a median of 15 on a scale from 1 (poor) to 15 (excellent) (25th percentile 13; 75th percentile 15). The scientific and social program met the expectations of most of the participants. The majority of participants felt well prepared for the summer school (median 5 out of 6) with a broad range (2–6). Participants felt that the group contributed to their learning process and that they had sufficient opportunities to exchange ideas (Fig. 1).

Participants were pleased with the content of the lectures, the knowledge of the presenters, and the method of teaching (Fig. 2). Most pointed out that the lectures would help them in their daily work and that they enjoyed the opportunity to ask many questions. This opportunity however caused problems with time management on occasions, which is reflected in the slightly lower score for time management. Some also indicated that the amount of lectures was not appropriate. However, it was not commented whether the proportion of lecture sessions were too high or too low. Small group sessions, presentations of the other participants, the enterprise visits, and the social program were rated equally high. The case-based e-learning obtained the highest scores (data not shown). Many of the participants had never used case-based e-learning before and appreciated this new form of learning.

DISCUSSION

The summer school was an interesting, challenging, and rewarding experience for the participants, the lecturers, and

TABLE II. Academic Program of the Summer School and Time Devoted to Each Topic

Topic	Format	Amount (hr)
Old and new challenges in OH across Europe with special focus on Finland, France, Germany, Holland, UK, and Russia	Interactive lectures; case-based learning; readings	30
OHS in Africa, Asia, and South America	Participants' presentations	20
International project: Wikipedia	Small group session	6
Regional project: Workplace accident	Small group session	6
OHS in German enterprises and university hospitals	Enterprise visits	8
"What we need for a successful basic OHS curriculum is . . ."	Concept mapping	5
Private and statutory OHS systems	Interactive lecture	3
OHS in the USA	Interactive lecture	2
Trans-enterprise OHS for medium enterprises	Interactive lecture	2
The WHO collaborating centers in OH	Interactive lecture; readings	2
Control banding	Hands-on session	2
Evidence-based medicine in OHS	Interactive lecture; readings	2
Economical aspects of OHS	Interactive lecture; readings	2
Total		90

OH, Occupational health; OHS, Occupational health and safety.

the organizing team. In addition to providing the opportunity to exchange diverse professional perspectives, it also contributed to personal development and intercultural understanding amongst the participants. Overall, an international summer school teaching basic aspects of different OHS systems was shown to be a useful tool for training and exchange at the global level. However, specific areas with

room for improvement were identifiable and some challenges had to be faced.

Participants

In contrast to many other short-term regional programs taught in the local languages, our course took place in Europe

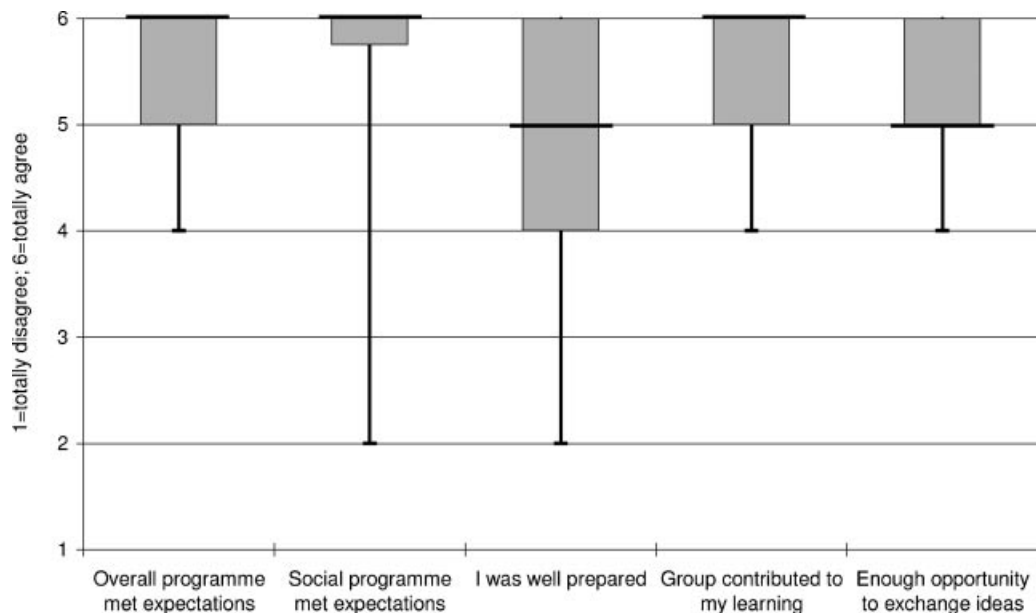


FIGURE 1. Box-Whisker plot of the evaluation results: overall conditions of the summer school on a scale from 1 (totally disagree) to 6 (totally agree) (n = 20) (—, median).

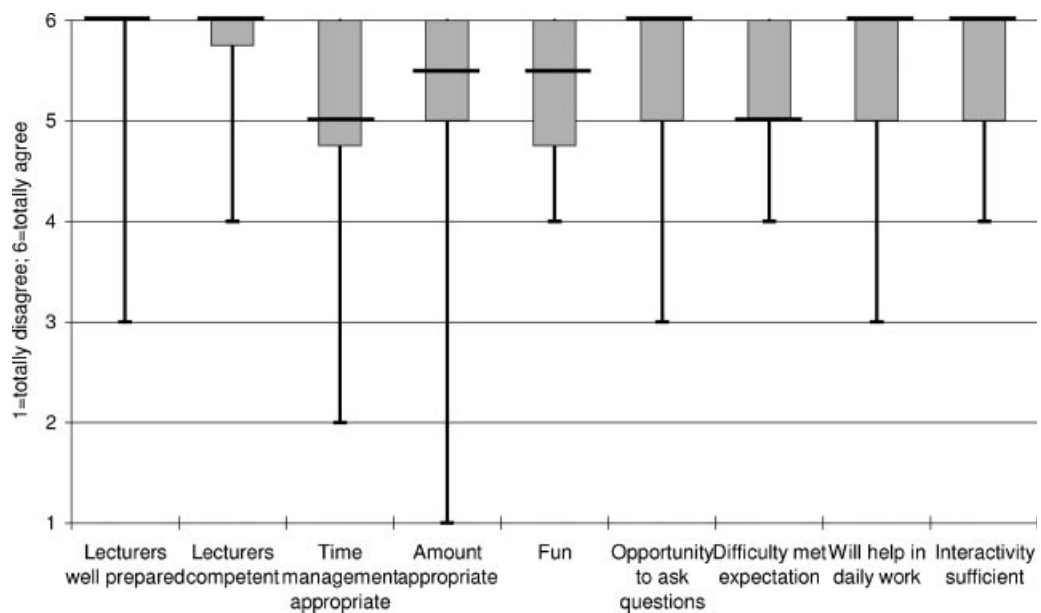


FIGURE 2. Box-and-whisker plot of the evaluation results: quality of the lectures on a scale from 1 (totally disagree) to 6 (totally agree) (n = 20) (—, median).

with participants and course instructors from diverse cultural backgrounds [Cook et al., 1999; Froines and Barile, 1999; Petropoulos et al., 1999; Wagner et al., 2005; Elgstrand and Ryan, 2007; McGill University Summer School Program, http://en.wikipedia.org/wiki/McGill_University_Faculty_of_Medicine; SALTRA Program, <http://www.saltra.info>]. One of the obstacles that, however, did not seem to diminish the enthusiasm of the participants was the language barrier. Although everyone was highly motivated to learn and understand, some of the participants lacked confidence to speak English or experienced difficulties in following the teaching sessions. Therefore, parts of the presentations had to be translated from English to Spanish by the organizer/other participants from Spanish-speaking countries. Likewise, questions from the participants had to be translated from Spanish to English. This sometimes resulted in prolongation of lectures and hampered the workflow. For the next summer school, we therefore implemented a language test done orally via “Skype” in order to select the participants based on their level of English.

A major obstacle was the stipulation that only those who came from one of the partner universities of our university and those who had already undertaken a proportion of their medical education in Germany were eligible for the scholarships. This issue was considered unfair by many who were interested in the program and was therefore brought to the attention of the funding agency. In the future, it will be possible to make scholarships available to all physicians and nurses involved in OH in low- and middle-income countries.

The age distribution of participants suggests that mainly health professionals with some years of experience took part

in the course. This also underlines the fact that in countries in transition, postgraduate training is often undertaken a couple of years after undergraduate training as education is expensive.

Only two OH professionals from Germany participated in parts of the course. Both of them were working for an international company. This low number of national participants might be due to time constraints or financial reasons. Another relevant aspect might be that global issues of OHS are still not considered to be of major relevance by many OH professionals in industrialized countries. We have recently completed an online survey with German OH professionals assessing the topics considered relevant for CME in OHS. Of the 347 respondents, only 25% considered aspects of globalization a relevant topic for CME (own unpublished data).

In the international projects some gender issues came up. Some of the participants opined that gender-specific groups might diminish such problems. However, participants need to learn to work with these differences and find solutions.

Quality of the Program

Overall, the program was highly appreciated. While a number of summer schools and courses on OH exist in many countries, they mainly cover scientific aspects and research methods [Philipp and Kjellstrom, 1994; Froines and Barile, 1999; Markowitz and Merino, 1999; Forst, 2004]. In contrast, the program presented here covered the basic aspects of OH in order to assist the participants in their daily work as OHS professionals. In particular, the case studies implemented in each of the lectures were considered helpful by the

participants and lecturers. However, we only evaluated user satisfaction. In the long term, knowledge, attitude, and change in practice should also be evaluated. We therefore plan to survey the participants in the years to come using online questionnaires.

In the years to come, one might consider reducing the number of lecturers and to focus more on specific topics. In addition, as suggested by some participants, more hands-on sessions will be included. For example, the training in skin prick testing provided during the visit of the outpatient clinic motivated some participants to implement this method in their daily practice. All presenters were highly motivated and passed their enthusiasm to the participants and this aspect contributed hugely to the overall success of the program.

Costs of the Program

The interest in the program was high although it was only announced a couple of months before the start of the summer school. However, scholarships were available for only 20 out of the 47 applicants. Only one of the participants from developing countries could participate without a scholarship; his company covered the costs for the course. All other applicants declined participation upon being informed that they would not receive a scholarship, the overall expenses for attending the program being the major reason for this. This problem is not an easy one to solve in the coming years, as the costs incurred were only utilized to offset the expenditure on food and lodging and the course was run on a nonprofit basis. We will continue to explore various possibilities in the future, but the fact that costs in Europe are relatively high compared to costs for living in developing countries has to be considered in this context.

The alternative, which is to do a course similar to this in one of the participating countries, would increase the travel costs for instructors and many of them might not be able to contribute due to their time constraints. In addition, international participation is likely to be reduced. This in turn might not contribute to the learning objectives of the course, which specifically emphasizes cultural understanding and international exchange. Exercises like the enterprise visits in European enterprises and the visit at the outpatient clinic with the hands-on session were highly appraised by the participants. The setting of the course in a different cultural environment may also be regarded important for the success of the course. Six of the 21 participants had never been to Europe before; it may thus be essential and advantageous to get to know the region in order to understand the differences and similarities between Europe and the home region.

Further sources of funding will be approached in future to enable provision of more scholarships. In addition, costs might be shared between the participants so that proportion of own contribution would be slightly higher per participant, freeing resources for more scholarships to be provided.

CONCLUSIONS

The international summer school resulted in the exchange of different cultures. Participants, lecturers as well as the organizing team learned to work in an international context. This added a new perspective in their thinking. Therefore, the overall aim to contribute to the improvement of workers' health across the world will hopefully be realized in fuller measure in the long run.

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