

Promoting good and sustainable work in occupational health education

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Background	The world of work is facing severe challenges due to rapid technological change, globalization, climate change and, more recently, the Covid-19 pandemic. Occupational health professionals must deal with these challenges, but it is unclear how well they have been prepared for this task by their academic training programmes.
Aims	To explore content and learning objectives related to these challenges in the curricula of Occupational Medicine (OM) and Occupational Safety, Industrial Hygiene and Ergonomics (OSH), we conducted an online survey among academic leaders of these programmes in universities of several European countries. In addition, related programmes in Human Resource Management (HRM) training were included.
Methods	Selected study programmes were explored in terms of the main topics and learning objectives related to the challenges for promoting good and sustainable work in universities in Europe. The study programmes were identified through contacts with professional associations and a website search. Given the exploratory, non-representative study design, data analysis was limited to description.
Results	OM and OSH programmes addressed the above challenges to a very limited extent, except for their disciplinary approach to work-related diseases and injuries. In contrast, HRM programmes were dealing more extensively with globalization, climate change and digitisation.
Conclusions	Significant limitations of knowledge and competences in dealing with the key challenges of the modern world of work were identified. More relational, ethical and interdisciplinary learning is needed in these programmes, addressing core issues of today's world of work.
Key words:	Occupational medicine, health and safety, training and education, health promotion.

Introduction

Far-reaching changes of work and employment occurred during the past few decades in the context of economic globalization and diffusion of ground-breaking technological advances. Their impact on the health and well-being of working populations was – and continues to be – amplified by accelerated climate change and, more recently, by the spread of the Covid-19 pandemic. To respond to global challenges, the United Nations initiated their Sustainable Developmental Goals (SDGs) programme, which by now has been endorsed by 193 Member States [1]. In this programme, 17 more detailed goals were defined to direct national policy developments towards substantial improvements to be achieved by the year 2030. One such goal (No. 8) calls for promoting sustained, inclusive, and

sustainable economic growth, full and productive employment, and decent work for all [1].

Beyond national governments, stakeholders from all major institutions, organizations and associations are expected to contribute to the advancement of SDGs. Universities play an important role in this process, given their long-standing mission as main drivers of social progress and as agencies that shape the knowledge, attitudes and competences of future generations of leaders in economy and society [2, 3]. This also holds true for the goal of promoting decent work, as universities are responsible for the qualification of future occupational health professionals (occupational physicians and experts in occupational safety and health) who oversee monitoring health and safety conditions at work and of maintaining and strengthening healthy and sustainable work.

Key learning points

What is already known:

- Academic training programmes for occupational health professionals are expected to integrate new knowledge and to address new challenges.
- The UN Sustainable Developmental Goal of promoting globally decent work is an important challenge.

What this study adds:

- We explored to what extent this has been integrated into academic curricula for occupational health professionals in a number of European countries.
- Our findings indicate insufficient coverage of related knowledge and competences and a lack of interdisciplinary collaboration and exchange across universities.

What impact this may have on practice or policy:

- To empower occupational health professionals with expertise and problem-solving capacity, study programmes should develop courses and modules that address these challenges and to promote healthy working in the university learning and working environment.

We set out to explore how awareness and knowledge of SDG 8 is addressed in courses and modules of academic training programmes. For medical students and physicians, respective opportunities are given at two stages of their education. First, within the basic medical curriculum, some knowledge related to occupational and environmental medicine is transmitted through lectures and/or courses, and it is tested by examinations. Occupational physicians follow a series of lectures/courses/practical training dealing with relationships between working conditions and workers' health. Students of safety engineering, industrial hygiene, and ergonomics deal with a wide range of safety, health and environmental issues related to work. Courses are offered as part of Bachelor's, Master's, and part-time degree programmes at universities.

By comparing the occupational medicine (OM) and occupational safety and health (OSH) study programmes, we tried to answer the following questions: Firstly, based on a predefined set of core topics relevant to SDG 8, we asked how frequently each topic is covered in the courses and modules. Secondly, we asked about the main learning objectives and related competences. Thirdly we asked how the SDG 8 objective is implemented in the context of the university's own learning and working environment. The relevance of the latter question is illustrated by the fact that strengthening good and sustainable work requires efforts to implement knowledge and skills into practical action wherever possible. Ideally, improved learning and working environments of universities can serve as models of good practice in the context of SDG 8-related policies.

Based on the notion of decent, sustainable work, we included a third study programme, human resource management (HRM). This academic training programme prepares students for leadership roles, with special emphasis on the management of employees' working conditions and relationships, their productivity and well-being.

It is likely that the curricula of business and management schools offer courses and modules that deal with the concerns expressed in SDG 8 [4]. Therefore, a comparison of how the three types of study programmes address the development goal of promoting decent work is particularly instructive.

Methods

This online survey was designed by the authors as part of the working programme of a task group of experts in the field of occupational health and safety. The task group, established under the Global Coalition for Occupational Safety and Health coordinated by the International Labour Organization, is examining the role of higher education and professional training at university in promoting occupational health and safety worldwide [5] (for working group members, see supplementary materials). The task group's work is free of conflicts of interest and is not financed by external funds. Given its limited resources, the current study is restricted to an exploratory inquiry with a limited, non-representative sample of universities, and with a regional focus on Europe.

The online survey comprises 21 questions, most of which contain predefined answer categories and a few of which are to be answered with free text. In accordance with data protection regulations, organisational and personnel-related data on the study programme were kept to a minimum. The responses to the first question on core content related to SDG 8 were analysed by presenting four topics that are considered particularly important in the context of promoting decent work and for which respondents had to indicate whether and to what extent they are covered in the courses or modules of their study programme. These are the four topics [6]: (A) adverse effects of globalized economic growth on climate and environment, (B) increase of socioeconomic disparities between global 'north' and 'south' and within

countries, (C) growth of digitisation, automation, and artificial intelligence and their impact on work and employment, (D) global burden of work-related disease, its causes and consequences.

Secondly, respondents were asked to rate the importance of the five main learning objectives in dealing with SDG 8-related content. Importance was rated on a 4-point Likert scale (from 'very important' to 'not important'). The five learning objectives are (1) offering solid knowledge, (2) stimulating critical thinking, (3) strengthening ethical values, (4) improving socio-emotional competence, (5) improving technical skills. To tackle our third study aim, respondents were asked to answer this question with free text: 'In addition to training programmes, does your institution engage in other ways to implement good work and employment, such as improving learning and working conditions at your institution?' Finally, the survey included questions on teaching format, study organization and on the main changes due to Covid-19. The survey looked at the regular teaching situation before March 2020, i.e. before the pandemic-related cancellation of direct teaching.

The target group was academic leaders responsible for the study programmes. They were identified through contacts with professional associations at national or European level, through their databases, and through a systematic website search (see supplementary material for the list of associations). As the degree of academic institutionalisation of the three study programmes differs widely across Europe, countries and universities with more advanced academic development were overrepresented in the sample. Moreover, with the task group's limited resources, we prioritised the two study programmes of OM and OSH to include as many European countries as possible, while HRM programmes were searched in four countries only (United Kingdom, Germany, Austria, and Switzerland). As a result, 90 universities participated in this online survey, with an overall number of 114 study programmes (57 OSH, 37 OM, and 20 HRM). In total, 29 European countries are represented with one or more study programmes in the survey.

While almost all professional associations supported our inquiry, data protection regulations did not allow them to release the names of their members (including the academic coordinators and teachers, our target group). Therefore, the association's councils distributed the online survey to these members without releasing further information. This procedure prevented a quantification of the number of people contacted and a corresponding calculation of the response rate. Our procedure of answering the survey was in line with the European Union's General Data Protection Regulation. As the Institute for Work and Health of the German Social Accident Insurance conducted the online survey, task group members had no access to incoming data, thus were not able to identify the names of responding

persons. The answered questionnaires were numbered according to their entry date and anonymised, providing information on the respondent's country, study programme, and name of university. The survey was conducted between the May and July 2021. The institute in charge sent out a first reminder after 2 to 3 weeks, followed by a final reminder.

The survey project was approved by the Ethics Committee of the Heinrich-Heine-University Düsseldorf, Germany [No. 2021-1438].

The analysis of the data was done in two steps: a descriptive analysis of quantitative data, using SPSS software. And free text was subjected to qualitative data analysis, using analytical categories with respective categorisation of answers.

Results

Respondents were academic leaders teaching courses or modules of study programmes that address the topic of promoting decent work. About 70 percent of teachers are senior faculty members, mostly university professors. There were more HRM and OM programmes than OSH programmes. Teaching occurs as part of an accredited study programme accomplished by a master's degree or a state examination (or certificate). For more than 80 percent of the 114 study programmes, access is restricted to students with registration within their faculty. This suggests a lack of opportunities for developing inter-faculty or inter-university exchange. Before the outbreak of the Covid-19 pandemic, most courses and modules were given by lectures. Most of these lectures were delivered face-to-face, including regular discussion with students. Online lectures were rising even before the lockdown, and will be more common in the future. Student-led group work is also becoming more prevalent in all three types of study programmes; most prominently in HRM teaching.

To answer the *first question*, respondents were asked to indicate to what extent the four topics that were defined as highly relevant in the context of SDG 8 are addressed within their study programme. In all programmes, at least one of these topics was covered. Yet, the preference of a topic, as indicated by the relative frequency of its inclusion into the content of a module, differs markedly between the programmes. As indicated in [Table 1](#), work-related health is mentioned most frequently in OSH and OM programmes, indicating a preference for dealing with a challenge closely related to one's professional training. Topics with greater distance to this focus are given less attention, specifically the challenges of raising social inequalities in OSH and of digitisation/new work in OM. Conversely, these latter topics are prominent in HRM programmes, at the expense of health at work. Although the challenges of climate change and economic globalization get most attention in the general

Table 1. Relative frequency of addressing core topics related to SDG 8 within modules of the three study programmes ($N = 114$)

Topic		OM ^a N(%)	OSH ^b N(%)	HRM ^c N(%)
A	Globalisation/ climate	8(23)	12 (21)	5 (24)
B	Social inequality	9(23)	9 (16)	6 (32)
C	Digitisation, new work	6(15)	13 (22)	5 (25)
D	Work-related diseases	14(39)	23 (41)	4 (19)
Total		37 (100)	57 (100)	20 (100)

^aOccupational Medicine.^bOccupational Safety and Health.^cHuman Resource Management.**Table 2.** Frequency of rating each one of the five learning objectives as ‘very important’ (frequency of rank 1, compared with the frequency of remaining ranks^a).

Learning objective	OM ^b , N(%)	OSH ^c , N(%)	HRM ^d , N(%)
Knowledge	25 (69)	25 (54)	10 (50)
Critical/ systems thinking	18 (50)	30 (64)	13 (65)
Ethical values	13 (36)	18 (39)	9 (47)
Social-emotional skills	8 (25)	8 (22)	2 (13)
Technical skills	8 (22)	16 (36)	2 (10)
Total	72 (100)	97 (100)	36 (100)

^aOccupational Medicine.^bOccupational Safety and Health.^cHuman Resource Management.^dDue to selectively missing answers, the total number of frequencies varies slightly between the different learning objectives.

population, this trend is not observed within the study programmes, where the topic ranks third in HRM and OSH, and second, together with social inequalities, in OM teaching.

The *second question* addressed the importance assigned to five main learning objectives, when dealing with the SDG 8-related content. Importance was rated on a 4-point Likert scale (from ‘very important’ to ‘not important’). **Table 2** gives the frequency with which each objective was rated as ‘very important’. In all three study programmes ‘offering solid knowledge’ and ‘stimulating critical/systems-oriented thinking’ received highest ratings. The two skills-related objectives were considered less central in the OSH and OM programmes, and they received particularly low ratings in HRM programmes.

With the *third question*, respondents mentioned transfer activities of SDG 8-related content into practical measures within and beyond the university’s learning and working environment. Three out of four universities were engaged in such activities. Again, some variation is observed according to types of study programmes as percentages are high in OSH (83 percent) and in OM (72 percent) programmes, but relatively low in HRM programmes (59 percent). To categorise the types of practical measures, four types became obvious. Most often, these activities concern the collaboration with, supervision of, and advice to occupational health or safety services within the university and beyond. The links

between relevant professional services are particularly strong in OM and OSH programmes. A second activity relates to the development and provision of health-promoting training courses, including e-learning programmes, offered to students and employees within the university, or to broader target groups (e.g., prevention of stress and burnout, strengthening of resilience). Thirdly, lectures and consultations are offered to companies and organisations to raise awareness of the benefits of healthy work and the importance of a strong workplace culture. Some universities additionally provide screening tools to monitor and promote employee health. Finally, in a few cases, leaders of study programmes act as coordinators of a whole university strategy of implementing the UN SDGs in everyday working and teaching environments. Taken together, there is some evidence of fruitful spill-over from teaching to practice.

Discussion

We explored to what extent the United Nations sustainable development goal of promoting decent work globally has been implemented in curricula of academic training programmes in occupational health and safety. Results indicate that some aspects have been included in almost all study programmes, but their comprehensive, interdisciplinary analysis was rarely observed. Future occupational health professionals are faced with the challenges

of climate change, economic globalization, new work including digitization, and rising socioeconomic disparity to a limited extent only, whereas the problems of work-related health are treated rather extensively. Study programmes still largely focus on a main discipline, with restricted participation of students from other faculties or universities. Lecturing by senior faculty members is the dominant teaching style, while student-led group work or experiential learning, approaches that are far more advanced in HRM, are less prevalent. Concerning learning objectives, transmission of solid knowledge and stimulation of critical thinking are considered more important than strengthening ethical values or improving socio-emotional or technical skills. A spill-over from teaching to practice was observed, in training programmes for OM and safety and health.

It is difficult to compare these results, given the lack of empirical work on the integration of SDGs into higher education curricula, and specifically those of future occupational health professionals. This is in sharp contrast to the importance attributed to higher education institutions in promoting these goals [3, 7]. For instance, efforts of implementing SDGs into study programmes and work environments of universities were supported by UNESCO, with the publication of guidelines on education for SDGs [8]. Furthermore, an instructive, well-elaborated compendium of implementation approaches including a guide to integrate 'education for the SDGs' within higher education institutions was developed by the Sustainable Development Solutions Network [9, 10]. In addition, the International Association of Universities has created a productive cluster of initiatives in which educational activities related to each development goal are monitored and coordinated by a specific university [2, 11]. In case of SDG 8, the University of Gothenburg has taken special responsibility and has already developed a network of satellite universities for collaboration [12]. The most progressive approach so far was advanced by a blueprint for responsible management education, globally directed towards schools of business and management [3]. These recent advances support the notion that addressing SDGs will be of increasing relevance for academic teaching. Our exploratory study can contribute to an in-depth inquiry of how well professional groups are prepared by academic training to tackle global developmental challenges.

Despite this merit, our study suffers from several limitations. Firstly, this is a selective, non-representative survey biased by differential access to the target group of academic leaders of the selected study programmes. Countries with well-developed curricula and disciplines with established national or international professional associations are over-represented. Moreover, as we focus exclusively on European countries, our results cannot be fully generalized. Secondly, given the constraints of a short online survey, the value of this research is limited by

the small number of questions and the limited space to provide extensive content-related information. Thirdly, the data reflect an established learning and teaching context before the Covid-19 outbreak. Although we asked respondents to briefly describe major changes under way it is unclear to what extent academic teaching can be continued along the lines described in this study [13]. Qualitative answers indicated a concern about the negative consequences of this epidemic crisis on teaching. This information is in line with recent findings from an online survey among academic staff and students from universities in 41 countries, where students were particularly vulnerable to impaired teaching and social isolation [14]. Enquiring the challenge of providing high quality teaching under these aggravated conditions and exploring the aims of this study in OM and OSH academic training programmes in rapidly developing countries define two future aims of our task group's work.

In conclusion, although based on a biased sample, our preliminary findings suggest the need to increase promoting decent work in a global perspective into teaching, research and practice at universities.

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Competing interests

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