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ORIGINAL ARTICLE

Main competences and skills to perform Essential Public Health Operations, offered by Schools of Public Health in four European countries: a short pilot report

Robert Otok · Anders Foldspang

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Abstract
Objectives To consider the stage of implementation of main competences and EPHO skills in selected schools of public health in four European countries—France, Poland, Portugal, and the UK.
Methods By use of visual analogue scales (VAS) ranging 1–5, the leads of three schools of public health (SPH) in each of the four countries, France, Poland, Portugal and the UK, reported the strength of intellectual and practical competences as well as skills to perform essential public health operations (EPHOs), offered by their education and training programmes.
Results The self-reports indicated substantial coverage of the multidimensional public health discipline. Each country representation had its overall characteristic profile, and there was found noteworthy within-country as well as between-country variation.
Conclusions The schools should meet the challenge of establishing collaborative networks, which will be important for public health strategy making and implementation, for shaping a coherent public health profession, and thus ultimately for population health. This pilot report should be followed up by more systematically penetrating and comprehensive analyses to identify met and unmet needs in public health education and training.

Keywords Public health · Public health education · Public health training · Public health competences, essential public health operations

Introduction

The World Health Organization's European Action Plan for Strengthening Public Health Capacities and Services (EAP) (World Health Organization 2012) underscores that 'investing in a multidisciplinary public health workforce is a prerequisite for a modern effective public health function. A sufficient and competent public health workforce constitutes the most important resource in delivering public health services.' (Point 67, p. 16). The EAP also stresses that 'given the complex challenges facing public health, a wide range of existing and new competences and expertise is called for, including social epidemiology, information systems, health promotion, environmental health, management and leadership, and collaborative working' (Point 68, p.16).

The Association of Schools of Public Health in the European Region (ASPHER) in 2006 started its programme for the development of intellectual and practical core competences for the comprehensive public health discipline (Foldspang 2007, 2008; Birt and Foldspang 2011a), with the subcategories of public health methods; population health and its social and economic

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R. Otok (✉)
Association of Schools of Public Health in the European Region, ASPHER, Brussels, Belgium
e-mail: robert.otok@aspher.org

R. Otok
Department of International Health, CAPHRI, Maastricht University, Maastricht, The Netherlands

A. Foldspang
Department of Public Health, Aarhus University, Bartholins Allé, 8000 Aarhus, Denmark
e-mail: anders.foldspang@gmail.com

determinants; population health and its material determinants; health policy, economics, organizational theory, leadership and management; health promotion: health education, health protection, disease prevention; ethics.

Subsequently, ASPHER's 2011 lists for professionals and for Master of Public Health (MPH) education (Birt and Foldspang 2011b, c) were in 2012 endorsed by WHO member states as basis for public health education in European countries (World Health Organization 2012), supporting the competences and, additionally, the education-based definition of the profession provided by the lists (Foldspang 2015; Bjegovic-Mikanovic et al. 2015).

Since then, ASPHER has constituted its European Public Health Reference Framework (EPHRF) with a Council responsible for the further development of lists of competences and their relationship to WHO's Essential Public Health Operations (EPHOs) (Martin-Moreno 2015), in the development of ASPHER's European Public Health Core Competences System, including its IT function (Foldspang et al. 2014).

Clear definitions of public health workforce categories are of course central to the development of a sufficient and competent public health workforce [WHO Europe's Essential Public Health Operation (EPHO) No. 7] (World Health Organization 2012; Foldspang 2015; Bjegovic-Mikanovic et al. 2015) and a prerequisite for public health strategies and their human resources policy as well as education and training programmes to be efficiently goal oriented:

1. Public health professionals.
2. Health professionals.
3. All others acting within and for public health.

Based on a census including those occupied in Swiss public health positions, Frank et al. (2013) found that, at a general level, respondents were well educated, so that 2/3 had at least a Bologna masters degree, but 69 % of respondents in the workforce actually had no specific public health degree, suggesting that current workers, at all levels, could benefit from further training in specific public health skills. They stressed that systematic and regular monitoring of the public health workforce is essential to increase our understanding of its needs and related strategies to training the workforce (Paccaud et al. 2013).

When in 2012 mapping the pattern of competences and EPHO skills offered by 80 ASPHER member schools through a total of 130 programmes, Bjegovic-Mikanovic et al. (2013) found the best teaching output for health promotion, followed by disease prevention and identification of health hazards in the community, while the least output was in emergency preparedness. They found considerable fragmentation of the institutional infrastructure; however, still with considerable harmonization of programme content and thinking. A 2011–2012 survey among European employers of public health workforce revealed significant lower current levels of EPHO performance as compared to employers' expectations (Vukovic et al. 2014). In balance with this, Bertoncello et al. in 2014 found Italian public health residents to perceive a need for more competences in health systems governance and thus for training plans tailored to the needs of the national and local health systems (Bertoncello et al. 2015).

Focussing on the education and training of public health professionals, the present short pilot report accordingly considers the stage of implementation of main competences and EPHO skills offered by selected schools of public health in four European countries—France, Poland, Portugal, and the UK—and discusses cross-country variation and the availability of means to meet the challenge of covering the comprehensive discipline, including the tool of networking between the schools.

Methods

In each of the four countries, France, Poland, Portugal, and the UK, three schools of public health, each of them a member of ASPHER, were conveniently selected and consented to participate. Based on the classifications of the European, WHO endorsed lists (Birt and Foldspang 2011b, c), the school leads filled in a questionnaire on the theoretical and practical competences and the EPHO skills (Martin-Moreno 2015) offered by their schools. To deliver an overall view, competences and EPHOs were represented by their respective chapters and not by sub-chapters or individual competences. EPHO 7 activities—development of the public health workforce—were not included, as the focus was on the programmes offered to public health students, and knowledge and skills for, e.g., communication are included among health promotion competences and is covered by EPHO 9, communication. The strength of competences and EPHO skills offered in the programmes were rated 1–5 by the school leads, by use of visual analogue Likert scales (VAS). In the present context, the schools are considered individual cases and were not sampled systematically or at random. Consequently, only parsimonious statistical description and comparison has been performed in the present context, which presents itself as a collection of national case studies rather than statistical samples.

Results

Based on the self-reports of competences offered, the three French schools, considered together, cover the full spectrum relatively well, with competences in environmental

science being the weakest (Table 1; Fig. 1). As concerns EPHOs (Table 2; Fig. 1), self-reports appear more moderate with the greatest emphasis on EPHO 1 (surveillance), EPHO 4 (health promotion) and EPHO 10 (research). There is considerable overlap, so that the schools, all in all, would be able to complement one another in covering the comprehensive public health curriculum at a high level of quality.

With one exception, the Polish schools reported relatively moderate emphasis on competences within socio-economic determinants of population health, but, taken together, the combined programmes would be comprehensive (Table 1; Fig. 2). The same applies to their presentation of EPHOs, where EPHO 2 monitoring, however, appears to be a comparatively weak field (Table 2; Fig. 2).

The three Portuguese schools themselves reported more moderate provision of competency components, with relatively strong weight on methods and ethics (Table 1; Fig. 3). The same applies to the EPHOs, where the picture seems rather heterogeneous and thus suggests a potential to develop programmes based on mutual collaboration between the schools (Table 2; Fig. 3).

Table 1 Sums of self-reported scores and percentages of maximum possible scores of provision of competences (knowledge and skills) offered by three selected schools of public health in each of the four European countries—France, Poland, Portugal and the UK, 2014

Competences chapter	France Score sum (%)	Poland Score sum (%)	Portugal Score sum (%)	United Kingdom Score sum (%)	All 4 countries Score sum (%)
Methods	11.00	11.50	11.25	13.75	47.50
	73	77	75	*92*	79
Population health and its socio-economic determinants	12.00	12.50	10.25	15.00	49.75
	80	83	68	*100*	*83*
Population health and its material environmental determinants	09.00	13.75	09.50	10.00	42.25
	60	*92*	63	67	70
Health policy, economics, organisational theory, management	15.00	12.75	07.75	14.00	49.50
	100	85	52	93	*83*
Health promotion, health education, health protection, disease prevention	11.00	13.25	10.00	13.00	47.25
	73	*88*	67	87	79
Ethics	11.00	10.00	12.00	13.00	46.00
	73	67	80	*87*	77

Italics indicate the highest scores within competences chapters, when countries are compared

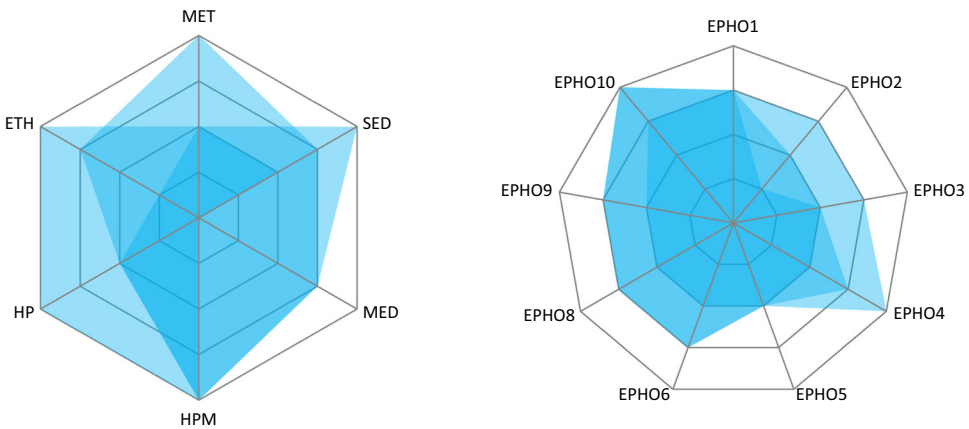

Fig. 1 Strength of competences and Essential Public Health Operation (EPHO) skills offered at three selected schools of public health in France, 2014. Competences: *MET* methods, *SED* population health and its socio-economic determinants, *MED* population health and its material environmental determinants, *HPM* health policy, economics, organisational theory and management, *HP* health promotion, health education, health protection, disease prevention, *ETH* Ethics. Essential Public Health Operations (EPHOs): *EPHO 1* surveillance, *EPHO 2* monitoring, *EPHO 3* health protection, *EPHO 4* health promotion, *EPHO 5* disease prevention, *EPHO 6* governance, *EPHO 8* organisation and financing, *EPHO 9* communication, *EPHO 10* research

Table 2 Sums of self-reported scores and percentages of maximum possible scores of provision of Essential Public Health Operations (EPHOs) skills offered by three selected schools of public health in each of the four European countries—France, Poland, Portugal and UK, 2014

EPHO chapter	France Score sum (%)	Poland Score sum (%)	Portugal Score sum (%)	United Kingdom Score sum (%)	All 4 countries Score sum (%)
EPHO1 surveillance	12.00	10.00	09.00	15.00	46.00
	80	67	60	*100*	77
EPHO2 monitoring	09.00	09.00	08.00	11.00	37.00
	60	60	53	*73*	62
EPHO3 health protection	10.00	14.00	10.00	10.00	44.00
	67	*93*	67	67	73
EPHO4 health promotion	12.00	14.00	10.00	15.00	51.00
	80	93	67	*100*	*85*
EPHO5 disease prevention	09.00	13.00	13.00	11.00	46.00
	60	*87*	*87*	73	77
EPHO6 governance	11.00	12.00	10.00	13.00	46.00
	73	80	67	*87*	77
EPHO8 organisation and financing	11.00	13.00	07.00	08.00	39.00
	73	*87*	47	53	65
EPHO9 communication	11.00	12.00	08.00	10.00	41.00
	73	*80*	53	67	70
EPHO10 research	14.00	11.00	10.00	15.00	50.00
	93	73	67	*100*	*83*

Italics indicate the highest scores within EPHO chapters, when countries are compared

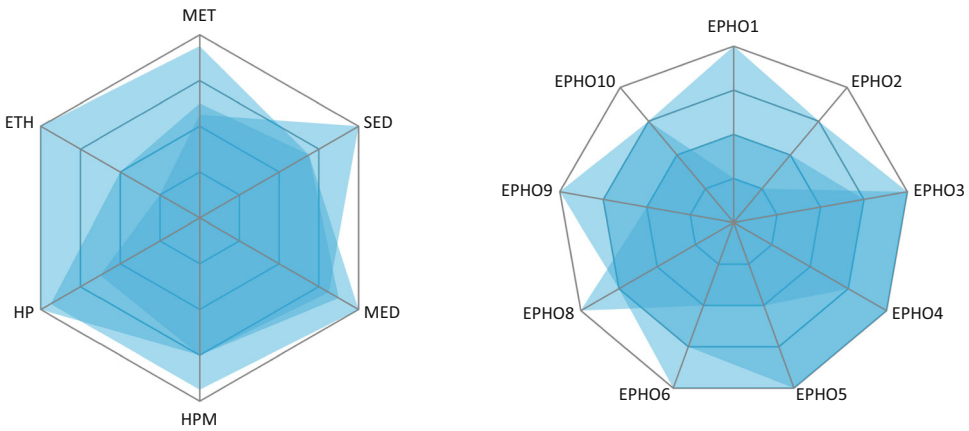

Fig. 2 Strength of competences and Essential Public Health Operation (EPHO) skills offered at three selected schools of public health in Poland, 2014. Competences: *MET* methods, *SED* population health and its socio-economic determinants, *MED* population health and its material environmental determinants, *HPM* health policy, economics, organisational theory and management, *HP* health promotion, health education, health protection, disease prevention, *ETH* Ethics. Essential Public Health Operations (EPHOs): *EPHO 1* surveillance, *EPHO 2* monitoring, *EPHO 3* health protection, *EPHO 4* health promotion, *EPHO 5* disease prevention, *EPHO 6* governance, *EPHO 8* organisation and financing, *EPHO 9* communication, *EPHO 10* research

The three UK schools present with fair coverage of competences chapters (Table 1; Fig. 4) but report relatively weak coverage of EPHOs 3 (health protection), 8 (organisation and financing) and 9 (communication) (Table 2; Fig. 4).

When comparing the self-reports of competences offered by schools of public health in the four countries, substantial variation was found (Table 1). Thus, summarising across countries, the highest competency scores for methods, for population health and its social and economic determinants, and for ethics were reported by the three UK schools. The highest scores for population health and its material environmental determinants and for health promotion were reported by the Polish schools, whereas the

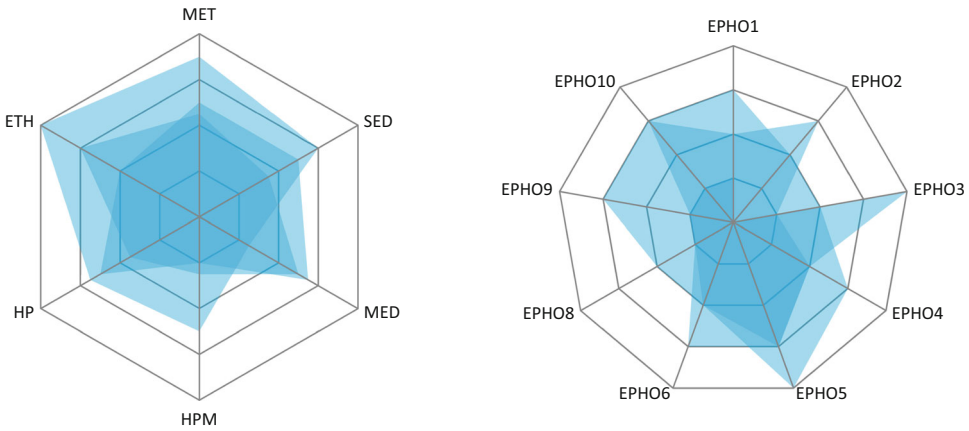

Fig. 3 Strength of competences and Essential Public Health Operation (EPHO) skills offered at three selected schools of public health in Portugal, 2014. Competences: *MET* methods, *SED* population health and its socio-economic determinants, *MED* population health and its material environmental determinants, *HPM* health policy, economics, organisational theory and management, *HP* health promotion, health education, health protection, disease prevention, *ETH* Ethics. Essential Public Health Operations (EPHOs): *EPHO 1* surveillance, *EPHO 2* monitoring, *EPHO 3* health protection, *EPHO 4* health promotion, *EPHO 5* disease prevention, *EPHO 6* governance, *EPHO 8* organisation and financing, *EPHO 9* communication, *EPHO 10* research

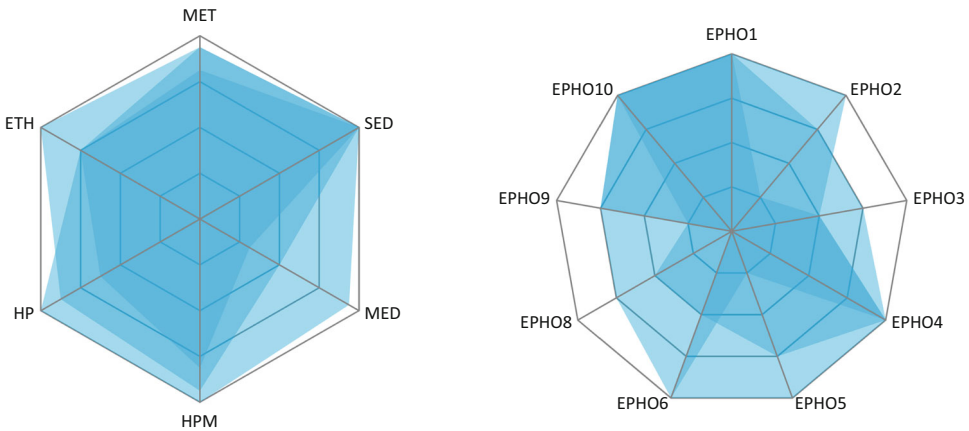

Fig. 4 Strength of competences and Essential Public Health Operation (EPHO) skills offered at three selected schools of public health in the United Kingdom, 2014. Competences: *MET* methods, *SED* population health and its socio-economic determinants, *MED* population health and its material environmental determinants, *HPM* health policy, economics, organisational theory and management, *HP* health promotion, health education, health protection, disease prevention, *ETH* Ethics. Essential Public Health Operations (EPHOs): *EPHO 1* surveillance, *EPHO 2* monitoring, *EPHO 3* health protection, *EPHO 4* health promotion, *EPHO 5* disease prevention, *EPHO 6* governance, *EPHO 8* organisation and financing, *EPHO 9* communication, *EPHO 10* research

highest scores for health policy, economics, organisational theory and management were reported by the French schools.

National characteristics were relatively marked, and the Portuguese schools reported scores close to 50 % as concerns competences in health policy, economics, organizational theory and management (Table 1). The competences concerning material environmental determinants we reported to be the weakest competences chapter among the French schools and the UK schools, whereas ethics was the competences chapter scored lowest among the Polish schools.

Concerning EPHOs (Table 2), the highest scores for surveillance (EPHO 1), monitoring (EPHO 2), health promotion (EPHO 4), governance (EPHO 6) and research (EPHO 10) were reported by the UK schools. The highest scores for health protection (EPHO 3), disease prevention (EPHO 5), organization and financing (EPHO 8) and communication (EPHO 9) were reported by the Polish schools, with the Portuguese schools reporting equally high scores for disease prevention (EPHO 5).

The French schools scored relatively low on monitoring (EPHO 2) and disease prevention (EPHO 5) and the Polish schools on monitoring (EPHO 2) (Table 2). The

Portuguese schools reported low scores on surveillance (EPHO 1), monitoring (EPHO 2), organisation and financing (EPHO 8), and communication (EPHO 9). Finally, the UK schools reported low scores as concerns organisation and financing (EPHO8).

Discussion

The present study is based on individual self-reports and not on an objective, validated standard observation procedure. Thus, it is a valid statement that the reports indicate how public health school leads will answer in front of questions on their programmes' content and yield in terms of competences and skills for EPHOs. To what extent this would correspond to, e.g., an external, independent and penetrating expert assessment remains less clear. First, school leads are not independent. Second, lacking competences within a certain field eo ipso pose a challenge of merely understanding the question and, furthermore, operationalization by quantification can be expected to vary based on à priori insight. Thus, the precise face values should be considered with substantial scepticism. On the other hand, we believe that the data collected basically are informative when comprehended as expressing individual cases, which then may be compared on a very rough and nearby dichotomous scale: low scores actually are lower than high scores.

Without estimating generalizability, the patterns shown here, of self-reported competences (knowledge and skills) and EPHO skills offered by the schools of public health of the four countries, present with national characteristics. Such characteristics will depend on various traditions in the public health environment, e.g., the balance between health professionals, not least physicians, and people with other backgrounds among planners and leaders of schools of public health, teachers, and students. Also the comprehensiveness and internal cohesion of the public health service delivery system as such, where a uniform system exists, and of the multitude of individual public health services offered, will play important roles for the development and implementation of sufficient practical and scientific expertise in the required fields.

On one hand, these cross-country variations can be said to indicate the challenges for the individual school of public health of today to cover the entire public health discipline in its full comprehensiveness. On the other hand, coverage obviously could be close to complete at a national level in France, Poland and the UK (Figs. 1, 2, 4), whereas the Portuguese reports indicate relatively weak social science involvement (Fig. 3).

At a cross-country level the comprehensiveness of high-quality public health curricula could be paved by the possibility of developing national, regional and European centres of excellence in public health education, training and continuing professional development schemes. This, in turn, would support the shaping of the public health profession also at a European level. Mobility schemes for staff as well as students will be central components of such development, which will include the potential of optimization of intellectual resource consumption and can lead to rationalization of efforts also in, e.g., collaboration in fund-raising.

Conclusion

Self-reports from selected schools of public health in France, Poland, Portugal and the UK, in general, indicated substantial coverage of the multidimensional public health discipline as offered in their educational and training programmes. There was shown noteworthy within-country as well as between country variation, indicating a potential as well as a need to develop national as well as international collaborative networks between schools. Meeting this challenge will be important for public health strategy making and implementation, for shaping a public health profession and thus ultimately for population health. This pilot case report should be followed up by more penetrating and systematically comprehensive analyses to identify needs in public health education and training.

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Compliance with ethical standards

Conflict of interest There are no conflicts of interest.

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