

Education and training among Italian Postgraduate medical Schools in Public Health: a comparative analysis

E. Garavelli¹, C. Marcantoni^{1,2}, C. Costantino^{1,3}, D. Tedesco^{1,4}, V. Burrari¹, G. Giraldi^{1,5}, E. D'Andrea^{1,5}

Key words: Public health teaching, medical residents, education and training, university
Parole chiave: Sanità pubblica, specializzandi, insegnamento e formazione, università

Abstract

Background: The postgraduate medical Schools in Public Health (locally known as School of Hygiene and Preventive Medicine) should ensure adequate scientific and technical knowledge and professional skills in preventive medicine, health promotion and healthcare planning as provided by Ministerial Decree 285/2005. The Italian Committee of Medical Residents in Hygiene, Preventive Medicine and Public Health of the Italian Society of Hygiene, Public Health and Preventive Medicine - S.It.I. (Consulta Nazionale dei medici in formazione specialistica S.It.I.) has always been engaged in monitoring activities on public health teaching, guaranteeing the homogeneity of educational proposals among all national Schools in Public Health. The purpose of this study is to provide a 'snapshot' of public health education and training in Italy and to identify the improvement actions needed for implementing an innovative and homogeneous public health training.

Methods: A cross-sectional study was carried out over a period of three months (March to May 2013). A self-administered questionnaire was e-mailed to local Committee's delegates of all 32 postgraduate medical Schools in Public Health in Italy. The questionnaire was structured in four sections: general information, University education and training, extra-University training, interdisciplinary activities. The majority of local Committee's delegates have agreed to be enrolled in the survey.

Results: A total of 28 questionnaires were returned (88% response rate). The number of residents in each Italian School in Public Health ranged from 7 to 31. The distribution of professors in relation to residents is not similar for each University Schools. The ratio professors/residents spanning from 0.2 to 2. About teaching, only 4 University Schools offered all courses requested by Ministerial Decree 285/2005. Most of them offered at least 75% of the requested courses, but there were Schools in which the courses were less than 50%. The vast majority of schools held more than 60% of the qualifying activities considered essential according to the Decree, while 2 Schools were below 50%. All Schools required an internship of 6-12 months in local health authority offices (ASL), mainly concerning the Department of Prevention activities. In all Schools a period of stay in a Hospital Medical Direction was scheduled, while professional activities at Residential care homes were very rarely included in training programmes. Many Schools allowed residents to attend companies with biological hazard or to follow similar activities in dedicated services of ASL. Finally, in the majority of Schools, a training period in various local (Service for Water Control), regional

¹ Italian Committee of Medical Residents in Hygiene, Preventive Medicine and Public Health

² Post-graduate School of Public Health, University of Brescia

³ Department of Science for Health Promotion and Mother of Child Care "G. D'Alessandro", University of Palermo

⁴ Department of Biomedical and Neuromotor Sciences, Alma Mater Studiorum University of Bologna

⁵ Department of Public Health and Infectious Diseases, Sapienza University of Rome

(Departments) or national (Ministry, National Institute of Health) health facilities was contemplated and, in some cases, also in other Universities or Research Institutes.

Conclusions: *Although the Ministerial Decree indicates the essential milestones of the public health education, flexibility is seen as an important element in order to optimize resources and contextualize the adequate education of residents. In any case, at least regarding public health courses, the majority of University education and extra-University training activities should be carried out by all Schools. In order to obtain shared knowledge and skills, the Ministerial Decree should be revised taking into account flexibility and changing as intrinsic characteristics of public health profession and learners should be involved in the reform to strengthening the role of public health teaching*

Introduction

In a recent editorial published on European Journal of Public Health, Martin McKee, Professor at the London School of Hygiene and Tropical Medicine, tries to solve the complicated essay of Public Health teaching. In educational terms, learning needs are identified by formative appraisal (achieving goals of the main disciplines of public health epidemiology, prevention, health services research, etc.), but the reality is that public health teaching is much more than this and he asks: “So, given this, what do we, who teach public health, want from young people taking on a career in public health training and research?” (1).

Public Health teaching is evidently complicated since public health practitioners work in a rapidly changing environment. Practitioners must be able to constantly update skills and recognize the rapid evolution of community health needs mainly related to social and economic trends. Therefore, it is anything but easy defining the educational needs of Public Health teaching. In 2005, the Italian Ministerial Decree 285, still in force, provided guidance to standardize goals and outline specific courses, in order to obtain a nationwide public health professional profile (2).

Almost ten years after the Decree, The Italian Committee of Medical Residents in

Hygiene, Preventive Medicine and Public Health of the Italian Society of Hygiene, Public Health and Preventive Medicine (S.It.I.), always involved in monitoring and evaluating educational needs, sets up a working group to assess how ministerial guidelines have been implemented and what is the quality of training provided in Italian University Schools of Public Health (3, 4). The purpose of this comparative analysis is to yield a ‘snapshot’ of the Public Health teaching in Italy and identify the improvement actions for implementing an innovative and homogeneous public health training programme.

Materials and methods

A cross-sectional study was conducted from March to May 2013. A self-administered questionnaire was e-mailed to Committee’s local delegates of all Italian postgraduate medical Schools in Public Health. The research project was granted by the Italian Society of Hygiene, Public Health and Preventive Medicine (S.It.I.), and involved all delegates who were required to respond not only on the basis of their own experience but summarizing all schools activities. The scope of the survey was to collect information about all education and training paths offered by each School. The questionnaire was sent to

32 Schools (Ancona, Bari, Bologna, Brescia, Cagliari, Catania, Catanzaro, Chieti, Ferrara, Florence, Genoa, L'Aquila, Messina, Milan State University, Milan Bicocca University, Modena and Reggio Emilia, Naples Federico II, Naples II University, Padua, Palermo, Parma, Pavia, Perugia, Pisa, Rome Sapienza University, Rome Catholic University, Rome Tor Vergata University, Sassari, Siena, Turin, Udine, Verona). In attempt to increase the response rate a second questionnaire was mailed one month later, anticipated by a telephone call.

The self-administered assessment tool, consisting of 38 questions, was organized into four sections: general information, University education and training, extra-University training (national and international activities), interdisciplinary activities.

General information

General data elicited from delegates regarding years of study, name and city of their previous universities, number of medical residents and number of public health teachers in their Schools.

University education and training

University education and training was assessed with 13 questions. The questions included information on availability of specific courses (i.e. statistics and epidemiology, psychology and sociology, health economics and law, history of medicine, genetics, microbiology and infectious diseases, clinical pathology and medical technologies applied to living and working conditions) and professional activities (i.e. epidemiological surveys and/or analysis of current health statistics, analysis of health services organization, health promotion and/or health education, vaccination campaigns, environmental monitoring plans, adequacy of health and hygiene of production procedures and/or performance of services, community health programmes, health technology assessment) offered by Universities during

the postgraduate course in public health, as expected by the 285/2005 Ministerial Decree.

Extra-University training

Extra-University training was assessed with 16 questions and evaluated the presence of optional activities at national or international level, not clearly stated in the decree. This section asked to list the structures in which professional activities were performed (Hospital Medical Direction, Prevention Department, District, Residential care homes etc.) and to indicate time and frequency of the internship. Sources of information about international internship and programme abroad were also collected.

Interdisciplinary activities

This part was constituted by four questions and investigated the presence of projects and/or activities involving medical residents in public health, who attend different years of course, in multidisciplinary working groups. The delegates were asked whether they performed programmes with other specialists (MDs in other disciplines or specialists in other sciences) through partnerships with national or local institutions. Moreover, according to the Ministerial Decree, public health residents should share experiences and practical activities with residents in legal medicine and occupational medicine, generally during the first three years of the curriculum.

Data analysis

The descriptive analysis was carried out by calculating absolute and relative frequencies for qualitative variables, mean and standard deviation (SD) for quantitative variables. An identification code (from s1 to s28) has been assigned to each school in order to respect privacy. All data were analyzed using the Statistical Package for the Social Science (SPSS) for Windows, version 21.0.

Results

Responses from 28 Public Health Schools were assessed (Ancona, Bari, Bologna, Brescia, Cagliari, Catanzaro, Ferrara, Genoa, L'Aquila, Messina, Milan State, Milan Bicocca, Modena and Reggio Emilia, Naples Federico II, Padua, Palermo, Parma, Pavia, Perugia, Pisa, Rome Sapienza University, Rome Catholic University, Rome Tor Vergata University, Sassari, Siena, Turin, Udine, Verona). The overall prevalence of participation rate was 88%.

General information

Currently, in Italy, the official legal duration of postgraduate medical School in Public Health is five years. According to responders, a huge variability in the total number of medical residents enrolled in a 5-year period course was detected, ranging from a minimum of 7 (s24) to a maximum of 31 (s28) students. The difference is associated with the size of each School according to which the Ministries of Education and Health distribute the contracts every year. Also the number of public health teachers varied greatly, ranging between 2 (s20) and 23 (s15). Therefore the teachers/students ratio resulted in very wide range, varying from 0.2 (s28, s1, s23, s21) to 2 (s11) (Table 1).

University education and training

Four postgraduate Schools (s25, s24, s12, s4) offered all eight courses required by the 285/2005 Ministerial Decree. Some courses were available in almost all Schools: statistics (27), microbiology (26) and health economics (26). Teachings such as psychology, genetics, pathology, physics were ensured in some Schools, while the course of history of medicine was performed only by eight Schools. Overall, the majority of Schools ensured more than 75% of courses, although in two cases (s20, s23) less than half of courses were carried out (Fig. 1).

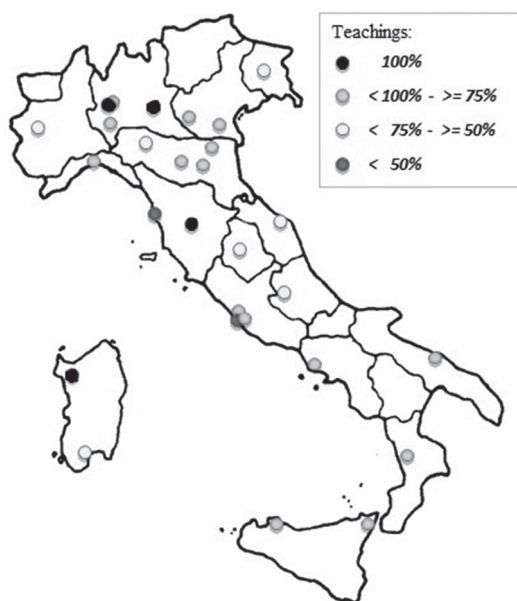


Fig. 1 - Proportion of public health teachings (according to 285/2005 Ministerial Decree) offered by each Italian School of Public Health in 2013.

Regards to professional activities, only nine Schools claimed to carry out all the professional exercises expected by Ministerial Decree (s22, s3, s28, s16, s21, s14, s6, s4). Most Schools ensured more than 60% of professional activities, and only in two cases (s18 and s19) the 50% was not reached. Among the professional activities, Health Technology Assessment experiences were less likely to be provided by Schools (s22, s3, s28, s16, s21, s14, s6, s4, s26, s20).

Other professional activities were carried out in the majority of Schools (Fig. 2).

Extra-University training

In most Schools, the professional extra-University training programmes started at the beginning or during the 3rd year of course, lasting approximately 6-12 months. Some Schools required a "shift-system" to facilitate the multidisciplinary nature of professional training, and all residents

Table 1 - Main differences in public health training programmes among Italian Schools of Public Health in 2013

Schools of Public Health	N° residents	N° teachers	University education and training		Other extra-University training		
			Teachings (%)	Professional activities (%)	Local health authority (ASL)	Hospital	Other institutions
s1	18	4	62.5	60.0	Yes	Yes	Yes
s2	13	6	75.0	60.0	Yes	Yes	No
s3	26	8	87.5	100.0	Yes	Yes	Yes
s4	17	10	100.0	100.0	Yes	Yes	Yes
s5	9	7	62.5	80.0	Yes	Yes	Yes
s6	16	6	75.0	100.0	Yes	Yes	Yes
s7	11	3	87.5	60.0	Yes	Yes	No
s8	9	5	75.0	80.0	Yes	Yes	Yes
s9	19		62.5	80.0	Yes	Yes	No
s10	14	10	87.5	60.0	Yes	Yes	Yes
s11	27		87.5	80.0	Yes	Yes	Yes
s12	10	20	100.0	80.0	Yes	Yes	Yes
s13	16	7	75.0	60.0	Yes	Yes	Yes
s14	25	5	87.5	100.0	Yes	Yes	Yes
s15	24	15	75.0	60.0	Yes	Yes	Yes
s16	29	23	87.5	100.0	Yes	Yes	Yes
s17	19	6	62.5	80.0	Yes	Yes	Yes
s18	11	2	75.0	20.0	Yes	Yes	Yes
s19	11	7	50.0	40.0	Yes	Yes	No
s20	23	6	37.5	80.0	Yes	Yes	No
s21	30	17	37.5	80.0	Yes	Yes	Yes
s22	23	5	75.0	100.0	Yes	Yes	Yes
s23	20	4	87.5	100.0	Yes	Yes	Yes
s24	12	8	100	80.0	Yes	Yes	Yes
s25	7	7	100	80.0	Yes	Yes	Yes
s26	24	6	50.0	100.0	Yes	Yes	Yes
s27	16	5	62.5	80.0	Yes	Yes	No
s28	31	5	87.5	100.0	Yes	Yes	Yes

worked alternately in different types of public health services for a limited period of time.

All Schools provided an internship at local health authorities offices and services (ASL) or equivalent institutions.

In the vast majority of cases the national internships were performed in the Departments of Prevention, mainly in vaccination services. Some Schools guaranteed collaborations with institutions involved in quality and accreditation in

health care services in Primary Healthcare Departments. Many Schools allowed residents to attend agencies for control and prevention of occupational risks or participate in prevention and health protection activities in dedicated services of ASL. Furthermore, all Schools provided internships in local hospitals and the public health residents were involved mainly in medical management and supervision activities at Hospital Directions. Residential care homes were very rarely included in training programmes since only

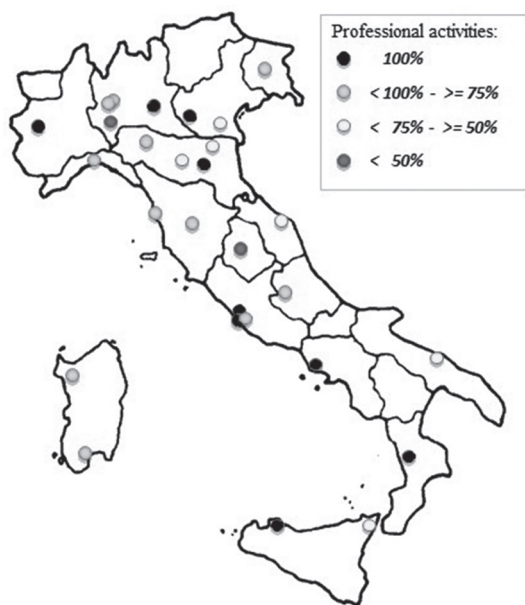


Fig. 2 - Proportion of public health professional activities (according to 285/2005 Ministerial Decree) offered by each Italian School of Public Health in 2013.

ten Schools provided this optional path and the mean internship duration was less than 6 months.

Many schools proposed training programmes related to specific research projects. The institutions included in the education programmes can be local (water control agencies), regional (Departments of Health) or national (Ministry of Health, National Institute of Health). In some Schools it is possible to collaborate with other universities and/or public research institutes.

Almost all Schools allowed to spend the last year in an extra-University institutions (principally ASL), developing the degree thesis.

At international level, several Schools granted to own public health residents a variable period (up to 18 months) abroad in different heterogeneous institutions. The most common collaborations were based on multidisciplinary projects in

international research institutions or European Universities. Many Schools with international partnerships were supported by organizations such as Doctors with Africa – Cuamm and Euronet (European network of trainees in Public Health). Regarding training duration and frequency, no shared regulations were stated by all Schools and discrepancies were found even throughout the same School for residents at different years of course.

Interdisciplinary activities

This area of activities was not so developed and the multidisciplinary experiences reported by delegates were limited individual cases. Also the intersectoral training programme provided by the Ministry was not widely implemented in Schools, and the cooperation between public health, legal medicine and occupational medicine residents was very poor.

Discussion and conclusions

This study wants to describe the general framework of public health education and training in Italy, investigating health training programmes and the level of acknowledgment of the Ministerial directives.

The high response rate confirms the strategic importance of evaluating the public health learning needs comparing educational paths of all national Schools of Public Health also avoiding geographical discriminations. However, the difference between Schools in the number of enrolled students and teachers leads to a large heterogeneity in the training programmes design. This must be taken into account when interpreting the results.

Although the Ministerial act indicates the essential milestones of the public health education, flexibility is seen as an important element in order to optimize resources and contextualize the adequate education of residents. Regards to University

education and training, few Schools claimed to complete teachings and professional activities listed by Ministerial Decree. However, most of Schools guaranteed more than half of expected lessons and professional experiences. Some specific courses as history of medicine, clinical pathology, medical genetics and clinical psychology are conducted in a small percentage of Schools, probably due to a misunderstanding about the potentiality of teachings listed above or an ascertainment of ineffectiveness and uselessness of teachings for public health professionals. In any case, at least of public health courses, the majority of University education and training activities should be carried out in all national Schools.

The point concerning the extra-University activities takes into account the training programmes at local health authorities offices and services (ASL), hospitals and other local institutions. Fortunately all schools provided to create this kind of optional professional paths but in different ways and on the basis of several variables. In fact, selection of health structures for training programmes depends on the local availability, the individual choice of the residents, the planned period of internship. With regard to ASL and Hospital Directions, the average duration of training is about 6-12 months and almost every student may request to extend the period in order to carry out projects, programmes or degree thesis. Other health institutions, as residential care homes or agencies for control and prevention of occupational risks, are rarely included in training programmes. This can be related to poor demands by residents attending a training experience in these types of structures and differences between Regions. Finally, in many schools trainees can attend other institutions than those required by the decree such as water control agencies, regional Departments of Health, Ministry of Health and National Institute of Health. These opportunities should be included as

optional pathways for all Schools.

A variegated situation can be found about the international professional activities. The international activities are mostly individual initiatives of residents who got contacts of specific international institutions independently. Conventions for international optional paths are rarely stipulated and infrequently Schools offer a range of choices to their own students. In some Schools trainees do not receive international opportunities, and it is unclear if this is due to School organization or lack of residents' demands.

Finally, the intersectoral training programme, provided by the Decree, is not implemented in many Schools. Except to some isolated realities of residents attending agencies for control and prevention of occupational risks, the cooperation between public health, legal medicine and occupational medicine residents appears to be a failure. Under this aspect, going deeper into the reasons is important, aiming to find how to help the integration of these medical disciplines into educational path of public health professionals.

Limitations of our study are principally related to the types of collected data. We use only quantitative data to photograph education and training of Italian Schools, omitting qualitative data. Further studies are necessary in order to conclude casual associations and qualitative data can provide conceivable reasons for discrepancies.

The present study is the first one carried out at national level and the Italian Committee of Medical Residents in Hygiene, Preventive Medicine and Public Health of the S.It.I. is the only organization to assess and monitor public health learning needs. At European level, other associations, as the Association of Schools of Public Health in the European Region (ASPHER) and the European Network of Medical Residents in Public Health (EuroNet MRPH), are involved in monitoring learning needs by

improving education and training of public health professionals for both practice and research (5, 6). According to European studies (7-9), the key of homogeneous education is sharing public health core competencies worldwide as the collective learning across the Schools of Public Health. In order to obtain shared knowledge and skills, Ministerial Decree should be revised taking into account flexibility and changing as intrinsic characteristics of public health profession. Furthermore, learners should be involved in the reform to strengthening the role of public health teaching. Any system of performance review should be focused on motivating learners through unbiased, objective feedback in both directions between teachers and students. Successful performance review should be a cyclical activity, which takes a joint problem-solving approach, reviewing personal, career and organizational goals.

Riassunto

Analisi comparativa dei percorsi formativi offerti dalle Scuole di specializzazione di Igiene e Medicina Preventiva in Italia

Background: Il percorso formativo dello specialista in Igiene e Medicina Preventiva dovrebbe garantire adeguate conoscenze tecnico-scientifiche e professionali nei campi della medicina preventiva, della promozione della salute e della programmazione dei servizi sanitari secondo quanto indicato anche dal DM 285/2005. La Consulta degli Specializzandi, da sempre coinvolta in attività di monitoraggio della formazione a livello nazionale, si prefigge l'obiettivo di valutare l'omogeneità delle proposte formative tra le diverse sedi italiane, non solo per segnalare le criticità, ma anche per evidenziarne le opportunità.

Metodi: Lo studio, di tipo *cross-sectional*, è stato condotto mediante la somministrazione di un questionario semi-strutturato inviato per la compilazione ai rappresentanti delle 32 le Scuole di Igiene e Medicina Preventiva italiane. Lo strumento di valutazione è costituito da quattro sezioni: informazioni generali, attività formativa universitaria, attività formativa extra-universitaria, attività formativa intersettoriale. L'indagine è stata svolta nel periodo tra marzo e maggio 2013 ed è stata prodotta

un'analisi descrittiva dei dati ottenuti.

Risultati: Il questionario è stato compilato da 28 Scuole su 32 (tasso di risposta 88%), distribuite su tutto il territorio nazionale. Il numero di medici in formazione varia tra 7 e 31 e il rapporto tra docenti del settore scientifico-disciplinare di interesse e i discenti è compreso tra 0,2 e 2.

Per quanto riguarda la didattica, solo in 4 Scuole si effettuano tutti i corsi previsti dal DM. La maggior parte delle sedi svolge almeno il 75% dei corsi previsti, ma esistono sedi in cui il numero di corsi è inferiore al 50%. La maggior parte delle Scuole svolge più del 60% delle attività professionalizzanti essenziali secondo il decreto, ma 2 Scuole non arrivano al 50%. Tutte le Scuole prevedono un tirocinio di 6-12 mesi in ASL, affiancando principalmente attività del Dipartimento di Prevenzione.

Ovunque è previsto un periodo in Direzione Medica Ospedaliera, mentre le Strutture Riabilitative rientrano raramente nella rete formativa. Nella maggioranza delle Scuole è possibile frequentare aziende con rischio biologico oppure seguire simili attività nei Servizi dedicati della ASL. Molte Scuole, infine, consentono di frequentare diverse strutture territoriali (Agenzia di Controllo delle Acque), regionali (Assessorati) o nazionali (Ministero, Istituto Superiore di Sanità); in alcuni casi si tratta di Università gemellate e Istituti di Ricerca.

Conclusioni: Nonostante il DM 285/2005 indichi quali siano le fondamenta della sanità pubblica, la flessibilità nella scelta formativa è vista come requisito essenziale per ottimizzare le risorse e contestualizzare l'adeguata formazione del medico in formazione specialistica in Igiene e Medicina Preventiva. La maggior parte delle Scuole di Specializzazione italiane dovrebbe però prevedere lo svolgimento della quasi totalità delle attività formative previste, al fine di non creare disuguaglianze formative tra gli specializzandi. Infine, considerato che la sanità pubblica è una disciplina in continuo divenire, il DM del 2005 andrebbe rivisitato tenendo in considerazione la flessibilità della formazione ed i continui cambiamenti dei bisogni di salute essenziali della popolazione. Inoltre, nel processo di rivisitazione dei bisogni formativi dei medici in formazione specialistica, dovrebbero essere coinvolti anche i discenti al fine di rafforzare il potere e l'efficacia dell'insegnamento.

References

1. McKee M. Seven goals for public health training in the 21st century. *Eur J Public Health* 2013; **23**(2): 186-7.
2. DM 1 agosto 2005. Riassetto Scuole di Specializzazione di Area Sanitaria. GURI n. 285 del

- 5 novembre 2005 (Suppl Ord n. 176, allegato Ordinamenti didattici Scuole di Specializzazione di Area Sanitaria). Available from: <http://attiministeriali.miur.it/anno-2005/agosto/dm-01082005.aspx> . Last accessed on September 2014
3. Costantino C, Maringhini G, Albeggiani V, Monte C, Lo Cascio N, Mazzucco W. Perceived need for an international elective experience among Italian medical residents. *Euromed Biomed J* 2013; **8**(3): 10-5.
 4. Giraldi G, Rinaldi A, D'Andrea E, Lucchetti P, Messano GA, d'Alessandro E. Correlation between legal protection of the environment and health. *Ig Sanita Pubbl* 2012; **68**(2): 367-73.
 5. Otok R, Levin I, Sitko S, Flahault A. European Accreditation of Public Health Education. *Public Health Rev* 2011; **33**: 30-8.
 6. European Network of Medical Residents in Public Health (EuroNet MRPH) Available from: http://euronetmrph.org/?page_id=18 . Last accessed on September 2014
 7. Bjegovic-Mikanovic V, Jovic-Vranes A, Czabanowska K, Otok R. Education for public health in Europe and its global outreach. *Glob Health Action* 2014; **13**(7): 23570.
 8. Badalik L1, Paniaková M, Farkasová D, Kubjatková A. New trends of postgraduate education in public health in Slovakia (the first experiences of the school of public health in Bratislava). *J R Soc Health* 1993; **113**(5): 250-1.
 9. Diem G1, Dorner TE. [Public health education in Austria. An overview. [Article in German] *Wien Med Wochenschr* 2014; **164**(7-8): 131-40.

Corresponding author: Dott. Elvira D'Andrea, Departmento of Public Health and Infectious Diseases, Sapienza University of Rome, P.le Aldo Moro 5, 00185 Rome, Italy
e-mail: elvira.dandrea@gmail.com