

MOTIVATIONAL ASPECTS AND LEVEL OF SATISFACTION OF ITALIAN JUNIOR DOCTORS WITH REGARD TO KNOWLEDGE AND SKILLS ACQUIRED ATTENDING SPECIFIC GENERAL PRACTICE TRAINING COURSES. A NATIONAL WEB SURVEY.

Walter Mazzucco¹, Claudia Marotta^{1,a}, Chiara de Waure³, Gianluca Marini^{4,b}, David Fasoletti^{5,b,c,d}, Antonia Colicchio^{6,b}, Davide Luppi^{7,b}, Fabio Pignatti^{14,a}, Giorgio Sessa^{5,a}, Andrea Silenzi^{3,a}, Giuseppe Puccio¹, Paolo Parente^{3,a}, Claudio Costantino^{1,a} and the Italian General Practice and Primary Health Care Working Group*.

1. Department of Science for Health Promotion and Mother to Child Care "G. D'Alessandro", University of Palermo, Italy
 2. Institute of Public Health, Section of Hygiene, Catholic University of Sacred Heart, Rome, Italy
 3. Out-of-hours Service, Local Health Unit of Marche, Macerata, Italy
 4. Primary Care Service, Local Health Unit of Trento, Ledro, Italy
 5. Primary Care Service and Out-of-hours service, Local Health Unit of Rome 2, Rome, Italy
 6. Primary Care Service, Local Health Unit of Modena, Italy
 7. Primary Care Department, Local Health Unit of Reggio Emilia, Reggio Emilia, Italy
 8. Out-of-hours Service, Local Health Unit of Palermo, Palermo, Italy
 9. Teaching Hospital "P. Giaccone", Palermo, Italy
- a. Italian Junior Doctors Association
 - b. Movimento Giotto
 - c. Vasco Da Gama Movement
 - d. European research network for out-of-hours primary health care (EurOOHnet)

* The Italian General Practice and Primary Health Care Working Group:

Paola Bonetti (Primary Care Service, Local Health Unit of Rome 2, Rome, Italy), Stella Gangi (Out-of-hours Service, Local Health Unit of Enna, Enna, Italia), Emanuele Maffongelli (Out-of-hours Service, Local Health Unit of Viterbo, Viterbo, Italia), Primary Care Service, Local Health Unit of Rome 2, Rome, Italy), Rosalba Nania (Health Emergency Service, Local Health Unit of Messina, Messina, Italia), Stefania Russo (Primary Care Service, Local Health Unit of Rome 2, Rome, Italy).

ARTICLE INFO*Article history:**Received 08 April 2017**Revised 13 May 2017**Accepted 22 May 2017***Keywords:**

Medical general practice, post-graduate medical education, Primary Health Care, healthcare workforce planning, Public Health.

ABSTRACT

The demographic and epidemiological transitions resulted in a pressing need to reformulate the health workforce demand and to revise pre- and post-graduate training to prepare the medical profiles to meet the new health needs focused on chronic diseases. The Italian Junior Doctors Association and the Giotto Movement carried out a web survey to identify the motivational aspects and the level of satisfaction of Italian junior doctors regarding knowledge and skills acquired after attending the General Practitioners' specific training (GP-ST). Three-hundred-forty-seven General Practitioners (GPs), 302 trainees and 45 newly qualified trainees answered a web questionnaire. Significant differences (p-value= 0.018) were documented between the two groups regarding the level of satisfaction on the GP-ST. The analysis by geographic macro-areas of the answers given by the 302 trainees showed a heterogeneous level of overall satisfaction (p-value= 0.005). In conclusion, the evidence provided by this cross-sectional study support the proposal to evolve the GP-ST regional courses into general practice and primary care specialization schools.

© EuroMediterranean Biomedical Journal 2017

1. Introduction

As a result of the improvement of the socio-economic and health conditions, as well as of the continuous technological innovation and research in health care in high income countries, there has been a progressive increase both in life expectancy and population aging (demographic transition), which has contributed to the primacy of chronic and disabling diseases over acute diseases (epidemiological transition)^{1,2}. Consequently, the need to evolve health systems from a hospital-centred model - designed for acute cases - to a model based on a full integration between hospitals and Primary Health Care (PHC), allowing a person-centred global approach and a multidimensional response to the health needs (psychological, social, family, employment, etc.), has arisen^{3,4,5,6}. Similarly, the shift in the organization of care and health services has resulted in the pressing need to reformulate the health workforce demand⁷ and to revisit pre- and post-graduate training to have medical profiles, both generalists (GPs) and specialists, prepared to meet the new health needs and thus focus on the treatment and rehabilitation of multi-chronicity and co-morbidity^{8,9,10}.

Within the European Union (EU), the post-graduate medical education is regulated by Directives concerning the free movement of doctors across different countries and the mutual recognition of diplomas, certificates and other qualifications^{11,12}.

In Italy, as a transposition of the content of the EU directives, the legislation¹³ offers two different paths of post-graduate medical education: a) residency programs, provided by university specialization medical schools (USMSs), issuing a title necessary to access the roles of the National Health Service (NHS) and; b) general practitioners' specific training (GP-ST) courses provided by regions issuing a specific diploma necessary to practice as GP within NHS.

Teaching regulations and educational objectives related to each type of USMS are encoded on a national basis and have been recently updated¹⁴, however, the definition of educational programmes, teaching methods, and the organization of GP-ST courses have been devolved to the different regions¹⁵, contributing to the current heterogeneity both in training contents and organizational models of the regional courses.

Moreover, while in the USMSs a training quality monitoring system has been implemented¹⁶, the GP-ST courses, to date, do not have a core curriculum defined on a national basis, neither do they have a training assessment system^{17,18}. In addition, the lack of adequate financial rewards

makes the GP-ST courses less appealing as compared to university residency programs¹⁹.

In Italy, over the last years, in order to improve the quality of courses^{20,21,22} and to share a "core curriculum" on a national level, there has been an ongoing debate about the opportunity to evolve the GP-ST courses into USMSs, integrated by the contribution of trained GPs and the support of the regional health services, organized and managed by universities, following the international experiences: in fact, the current GP-ST regional courses represent an "anomaly" in the EU context being disconnected from university²³. On this basis, the Italian Junior Doctors Association (S.I.G.M.) and the Giotto Movement carried out a web national survey to detect the vocational aspects and the level of satisfaction of the Italian junior doctors with regard to knowledge and skills acquired attending the GP-ST regional courses.

2. Methods

A structured questionnaire was designed to collect the following data: a) general information; b) motivational and vocational aspects, level of satisfaction and critical issues dealing with the condition of the GP trainees (13 questions); c) level of satisfaction about the GPs core competences, acquired attending the GP-ST courses (12 questions), as defined by the European Academy of Teachers in General Practice (EURACT) Agenda, network within the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA) European Region²⁴ and extracted from the questionnaire assessed by the Vasco de Gama Movement^{25,26}; d) level of satisfaction and the critical issues with regard to the organisation of GP-ST courses (18 questions).

The survey target group was represented by junior doctors who attended the three-years GP-ST course between 2010 and 2012 (I year 2012-2015, II year 2011-2014 and III year 2010-2013), excluding those in supernumerary²⁷, as well as qualified GPs who obtained the diploma within the 5 years before the survey.

The questionnaire, including a survey presentation letter, was uploaded on Google Forms²⁸ and published on the website *www.giovanemedico.it*, and then administered between June and December 2012, both via a newsletter to all the registered users, followed by three reminders sent every two months, and thematic social media^{29, 30, 31, 32}.

In order to preserve the applicants anonymity and to ensure univocity of the participation to the web survey, the fiscal code and a valid e-mail address were required. Furthermore, for every input, the source terminal was verified through the detection of its Internet access Protocol³³, to distinguish and solve any potential duplication of the questionnaire answers form, which could have been generated by mistake, or to identify any filled-in forms revealing a potential attempt to influence or alter the validity of the survey.

Mean, standard deviation, median and interquartile range for continuous variables and frequency for categorical variables were calculated as descriptive statistics.

The Chi-squared test and the Fisher's exact test were used to carry out a comparison between answers given by the GP trainees and by qualified GPs. The analysis was further limited to the GP trainees, according to the small number of complete answers provided by qualified GPs, and the sample was stratified using the following macro areas: North-West, North-East, Centre, South, Islands.

Data obtained from the answers to the questionnaire were imported on Excel 5.0. The dataset was analysed by using the RStudio 0.98945 version and R. 3.1.0 version (2014) statistics software. The statistical significance was fixed at <0.05.

3. Results

Overall, 347 respondents, with an average age of 30,8 (median 30 years, SD=4,3; IQR= 28), n. 212 women (61.1%), answered the questionnaire. Three hundred and two out of 347 respondents (87.0%) representing 12.4% (302/2433) of the overall number of GP trainees during the study period, declared to attend a GP-ST regional courses while participating in the survey. The remaining 45 respondents (13.0%) were qualified GPs who obtained the diploma within the 5 years before the survey.

On average, the respondents accessed the GP-ST regional courses 2 years after graduation.

For 135 respondents (38.9%) the GP-ST course has been the first choice after graduation, while the remaining 212 (61.1%) have chosen the medical specialization school.

The reasons the participants addressed for attending GP-ST courses are listed by order of preference as follows: relational aspects between physician and patient (professional relationship; patient-focused approach) (n. 285/347 respondents); holistic approach (global approach to the patient; challenging high impact jobs; not satisfying educational or professional experience in other healthcare settings) (n. 261/347 respondents); organizational and economic aspects (independent work organization; good salary) (n. 161/347 respondents); private and personal reasons (compatibility with motherhood and family life; presence of a GP in the family) (n. 161/347 respondents); second choice (no good chance to access specialization courses) (n. 145/347 respondents); job perspectives (n. 80/347 respondents).

Results of the comparison between the answers given by GP trainees (n. 302) and GPs qualified (n. 45) with regard to the level of satisfaction and

the issues concerning the organizational model of teaching and the educational aims of the GP-ST courses, as well as the opinion on GP trainees' condition, are shown in Table 1.

QUESTIONS	ANSWER'S CATEGORY	GP TRAINEES	QUALIFIED GPs	p-value
		n. (%)	n. (%)	
A. (Q 1.8) Do you think that hospital training is important to qualify the General Practitioner?	VERY IMPORTANT	134 (44.4%)	24 (53.3%)	n.s.
	IMPORTANT	95 (31.5%)	15 (33.3%)	
	NOT IMPORTANT	10 (3.3%)	0 (0.0%)	
	LITTLE IMPORTANT	63 (20.9%)	6 (13.3%)	
B. (Q 1.9) Do you consider rotations in the different hospital departments important for the specific training in General Practice?	VERY IMPORTANT	111 (36.8%)	22 (48.9%)	n.s.
	IMPORTANT	120 (39.7%)	15 (33.3%)	
	NOT IMPORTANT	24 (15.6%)	2 (4.4%)	
	LITTLE IMPORTANT	47 (7.9%)	6 (13.3%)	
C. (Q 1.10) How important do you consider education in health management principles within the specific training in General Practice?	VERY IMPORTANT	94 (31.10%)	20 (44.4%)	n.s.
	IMPORTANT	120 (39.7%)	13 (28.9%)	
	NOT IMPORTANT	14 (24.5%)	4 (8.9%)	
	LITTLE IMPORTANT	74 (4.6%)	8 (24.5%)	
D. (Q 1.11) How important do you consider the education in and practice of the evidence-based medicine within the specific training in General Practice?	VERY IMPORTANT	144 (47.7%)	23 (51.1%)	n.s.
	IMPORTANT	130 (43.0%)	26 (35.6%)	
	NOT IMPORTANT	4 (7.9%)	2 (4.4%)	
	LITTLE IMPORTANT	24 (1.3%)	4 (8.9%)	
E. (Q 1.12) How important do you consider the methodology of the research or participation in research activities within the specific training in General Practice?	VERY IMPORTANT	129 (42.7%)	16 (35.6%)	n.s.
	IMPORTANT	111 (36.8%)	16 (35.6%)	
	NOT IMPORTANT	12 (16.6%)	2 (4.4%)	
	LITTLE IMPORTANT	50 (4.0%)	11 (24.4%)	
F. (Q 3.2) How would you judge the formal teaching activities (lectures, seminars, etc.) of the specific training in general practice as a whole?	VERY GOOD	4 (1.3%)	2 (4.4%)	0.03
	GOOD	72 (23.8%)	10 (22.2%)	
	SUFFICIENT	101 (33.4%)	6 (13.4%)	
	MEDIOCRE	70 (23.2%)	16 (35.7%)	
	INSUFFICIENT	55 (18.3%)	11 (24.3%)	
G. (Q 3.9) How would you rate your experience in the specific training course in general practice	VERY GOOD	7 (2.3%)	4 (8.8%)	0.018
	GOOD	88 (29.1%)	12 (26.7%)	

as a whole?	SUFFICIENT	110 (36.4%)	8 (17.8%)
	MEDIOCRE	76 (25.2%)	17 (37.8%)
	INSUFFICIENT	21 (7.0%)	4 (8.9%)
H. (Q 3.17) How do you judge the general practitioners professional unions role within the specific training in general practice?	USEFUL AND APPROPRIATE	35 (11.6%)	10 (22.2%)
	BALANCED	62 (20.5%)	12 (26.7%)
	INTRUSIVE	61 (20.1%)	4 (8.9%)
	INDIFFERENT	144 (47.7%)	19 (42.2%)
I. (Q 3.18) How do you rate the current condition of the GP trainee during the specific GP training course?	OPTIMAL	0 (0.0%)	0 (0.0%)
	GOOD	8 (2.6%)	0 (0.0%)
	IMPROVABLE	40 (13.3%)	14 (31.1%)
	CONSIDERABLY IMPROVABLE	144 (47.7%)	14 (31.1%)
	UNFAIR	110 (36.4%)	17 (37.8%)

Table 1 - Level of satisfaction and issues concerning the organizational model of teaching and the educational aims of the GP-STs, and opinion of the GP trainees' condition, among the 347 respondents. Comparison between GP trainees (n. 302) and GPs qualified (n. 45).

The overall respondents opinion about lectures and seminars (Q 3.2) significantly differed between GP trainees and qualified GPs (p-value=0.03): the judgment was considered *sufficient* by 33.4% of GP trainees and 13.4% of qualified GPs, while it was defined as *poor* by 23.2% of GP trainees and 35.7% of qualified GPs.

Significant differences (p-value= 0.018) were also documented between the two groups with regard to the general satisfaction of the training experience: 36.4% of GP trainees considered it *sufficient*, while 37,8% of qualified GPs defined it as "poor" (Q 3.9). Also, a statistically significant difference was reported in the answers given by the GP trainees and qualified GPs (p-value = 0.008) with regard to GP trainees' condition (Q 3.18), considered *markedly improvable* and *unfair* by the 47.7% and the 36.4% of the GP trainees, as well as, the 31.3% and 37.8% of qualified GPs, respectively.

No statistical significant differences were detected between the two considered groups about (**Table 1**) daily working load (Q 1.4), importance of hospital training (Q 1.8), importance of rotations in the different hospital departments (Q 1.9), health management training (Q 1.10), evidence-based medicine practice (Q 1.11), learning about the research methodology and involvement in research activities (Q 1.12).

The level of satisfaction on the skills acquired during the GP-ST is reported in **Table 2**. Significant differences between GP trainees and qualified GPs were reported for many core competencies and, particularly, with regard to a) person-centred approach (Q 2.4): 46.6% of GP trainees were *satisfied* of training versus 53.3% of qualified GPs (p-value= 0,03), b) problem-solving (Q 2.6): 32.5 % of the GP trainees declared themselves *satisfied* versus 22.2 %of qualified GPs (p-value= 0.016); c) community orientation (Q 2.10): 17.9% of GP trainees were *unsatisfied* versus 33.3% of the qualified GPs (p-value= 0,04); holistic approach (Q 2.12): 36.1 % of GP trainees defined themselves *satisfied* versus 48.9 % of qualified GPs (p-value= 0.04).

COMPETENCE	QUESTIONS	ANSWER'S CATEGORY	GP TRAINEES n (%)	QUALIFIED GPs n (%)	p-value
Primary Care management	A. (Q 2.2) How satisfied are you with the level of skills acquired in the field of primary care management?	SATISFIED	97	18 (40.0%)	n.s.
		INDIFFERENT	141 (46.7%)	14 (31.1%)	
		NOT SATISFIED	41 (13.6%)	9 (20.0%)	
		SKILLS NOT GIVEN	23 (7.6%)	4 (8.9%)	
Person-centred approach	B. (Q 2.4) Regarding how specific competencies on the person-centred approach are being addressed during the GP-ST, I am:	SATISFIED	140 (46.4%)	24 (53.3%)	0.03
		INDIFFERENT	104 (34.4%)	10 (22.3%)	
		NOT SATISFIED	39 (12.9%)	11 (24.4%)	
		SKILLS NOT GIVEN	19 (6.3%)	0 (0.0%)	
Problem Solving	C. (Q 2.6) Regarding how specific competencies on problem solving are being addressed during the GP-ST, I am:	SATISFIED	98 (32.5%)	10 (22.2%)	0.016
		INDIFFERENT	127 (42.1%)	20 (44.4%)	
		NOT SATISFIED	52 (17.2%)	15 (33.4%)	
		SKILLS NOT GIVEN	25 (8.2%)	0 (0.0%)	
Global approach to patients	D. (Q 2.8) Regarding how specific competencies on global approach to patients are being addressed during the GP-ST, I am:	SATISFIED	120 (39.7%)	18 (40.0%)	n.s.
		INDIFFERENT	124 (41.1%)	20 (44.4%)	
		NOT SATISFIED	42 (13.9%)	7 (15.6%)	
		SKILLS NOT GIVEN	16 (5.3%)	0 (0.0%)	
Community orientation	E. (Q 2.10) How satisfied are you with the level of skills acquired in the field of community orientation?	SATISFIED	68 (22.5%)	12 (26.7%)	0.04
		INDIFFERENT	144 (47.7%)	16 (35.6%)	
		NOT SATISFIED	54 (17.9%)	15 (33.3%)	
		SKILLS NOT GIVEN	36 (11.9%)	2 (4.4%)	
Holistic approach to patients	F. (Q 2.12) Regarding how specific competencies on holistic approach to patients are being addressed during the GP-ST, I am:	SATISFIED	109 (36.1%)	22 (48.9%)	0.04
		INDIFFERENT	120 (39.7%)	8 (17.8%)	
		NOT SATISFIED	50 (16.6%)	11 (24.4%)	
		SKILLS NOT GIVEN	23 (7.6%)	4 (8.9%)	

Table 2 - Level of satisfaction on the core competencies acquired attending the specific GP – ST courses, among the 347 respondents. Comparison between GP trainees (n. 302) and qualified GPs (n. 45).

Statistically, significant differences were not reported between the two groups on the satisfaction of the skills of primary healthcare management (Q 2.2) and patient holistic approach (Q 2.8) acquired during the training. The analysis was further restricted to the 302 GP trainees respondents (mean age: 30,8, SD= 4.3, IQR= 28), 61.2% females. Among them, 40.4% attended the first year of GP training, 29,8% the second year and 30.1% the third one, while 14.9% already had an university diploma in a

specialized medical field.

Within the respondents 40.1% (n. 121) defined the topics covered during the seminar within the GP- ST as sometimes useful, 10.3% (n. 31) rarely useful, 13.9% (n. 42) almost never useful, 26.8% (n. 81) often useful and 8.9% (n. 27) really often useful.

With regard to their professional improvement, 204 respondents (67.5%) considered the training at the GP ambulatory more important, followed by trainings in internal medicine ward (n. 42, 13.9%), emergency department (n. 34, 11.3%) and primary, ambulatory health care (n. 22, 7.3%).

257 out of 302 respondents (85.1%) stated that the institution of a Regional Observatory on the quality of the education provided by the GP-ST courses could be almost useful (n.152, 50.3%) and very useful (n. 105, 34.8%) (data not shown).

Almost all participants to the survey (91.7%) declared to be in favour of the evolution of the regional GP-ST course in an USMS characterized by an integrated educational network between university, hospitals and primary healthcare services (data not shown). Fifty-one % of respondents (n. 154) stated to have a clear idea (also before starting the GP-ST) about their future job opportunities having a GP qualification, while 24.8% of sample (n. 75) overstated these opportunities and the remaining ones had not a clear idea yet (11.3%) nor understated these job potentialities (12.9%) (data not shown).

The 34.5% of respondents (n. 104) referred to attend GP-ST in Central Italy, 17.5% in Southern Italy (n. 53), 13.9% (n. 42) in Sicily and Sardinia (the major islands), 10.9% (n. 33) in Northern Italy.

Table 3 presents the results of satisfaction level and critical issues dealing with the GP – STs organizational model of teaching and on the condition of the GP trainees, by geographic macro-areas, surveyed among the 302 GP trainees during the survey period.

A statistically significant difference (p-value < 0,001) was documented in the overall sample opinion with regard to GP-ST lectures, lessons and seminars given in the different geographic areas. In particular, the respondents' opinion was rated good by 39.4% of Northern – East trainees, 38.1% of Sicilian and Sardinian GP trainees, 22.1% of GP trainees of Centre Italy, 18.6% of Southern and 13.2 % trainees attending courses in the North – Western regions (Q 3.2). Conversely, the opinion about frontal classes has been evaluated as inadequate by 24.0% of the GP trainees from Centre Italy, 21.2 % from Northern East, 17.0% from Northern West, 16.7 % from Islands and by 10.0% of trainees attending courses in regions of Southern Italy.

Significant differences (p-value= <0,001) were also documented by geographic areas with regard to the value given to the topics of the GP-ST seminar (Q 3.3): topics were judged *sometimes* useful by 45.2% of respondents from Islands, 43.4% of respondents from Central Italy, 42.9% of trainees from Southern Italy, 35.8% from North-west and by 24.2% of the trainees attending courses in the regions of the North-east. Also, were considered *often* useful by 39.4% of North-Eastern GP trainees, 37.7% of North-Western ones, 25.0% of GP trainees attending courses in the regions on central Italy, 21.4% of GP trainees from the South, and 16.7% of insular GP trainees.

Differences at the limit of the statistic significance (p-value= 0,05) were reported with regard to the motivational approach of the GP-ST teachers (Q 3.8): it was considered *sufficient* by 24.3% of trainees from Southern Italy, 22.6% of respondents from Northeast, 21.2 % of the ones from North-west, 18.3% of trainees from Central Italy and 16.8% of

respondents attending the courses in the Islands. However, the motivational approach was considered *inadequate* by 37.7% of trainees from the North-east, 33.3% of the ones from the Islands, 17.1% of the respondents from the South, 16.3% of the trainees from the Centre and by 9.1% of trainees attending the courses in the regions of the North-west.

QUESTION	ANSWER'S CATEGORY	MACRO-AREA					p-value
		NORTH-WEST n (%)	NORTH-EAST n (%)	CENTRE n (%)	SOUTH n (%)	ISLANDS n (%)	
A. (Q 3.2) How would you judge the formal teaching activities (lectures, seminars, etc.) of the specific training in general practice as a whole?	VERY GOOD	4 (3.8%)	3 (0.0%)	14 (0.0%)	12 (2.9%)	8 (0.0%)	<0.001
	GOOD	14 (13.2%)	15 (39.4%)	38 (22.1%)	20 (18.6%)	9 (38.1%)	
	SUFFICIENT	12 (58.5%)	7 (24.2%)	19 (31.7%)	17 (27.1%)	7 (23.8%)	
	MEDIOCRE	20 (7.5%)	3 (15.2%)	17 (22.2%)	12 (41.4%)	3 (21.4%)	
	INSUFFICIENT	3 (17.0%)	5 (21.2%)	16 (24.0%)	9 (10.0%)	5 (16.7%)	
B. (Q 3.3) Concerning your experience, do you think that seminar courses geared toward specific training in general practice address relevant issues for a future General Practitioner?	VERY OFTEN	6 (11.3%)	6 (8.2%)	3 (2.8%)	3 (4.3%)	9 (21.4%)	<0.001
	OFTEN	20 (37.7%)	13 (39.4%)	26 (25.0%)	15 (21.4%)	7 (16.7%)	
	SOMETIMES	19 (35.8%)	8 (24.2%)	45 (43.4%)	30 (42.9%)	19 (45.2%)	
	RARELY	2 (3.9%)	0 (0.0%)	16 (15.4%)	8 (11.4%)	5 (11.9%)	
	ALMOST NEVER	6 (11.3%)	6 (8.2%)	14 (13.4%)	14 (20.0%)	2 (4.8%)	
C. (Q 3.6) What do you think can be done to improve the training during the specific training course in general practice?	GIVE MORE AND GRADUAL AUTONOMY IN LEARNER	24 (45.3%)	20 (60.6%)	43 (41.3%)	30 (42.9%)	22 (52.4%)	n.s.
	MORE FORMAL EDUCATIONAL	2 (3.8%)	1 (3.0%)	7 (6.7%)	6 (8.6%)	0 (0.0%)	
	IMPROVE THE RELATIONSHIP WITH THE TUTOR	7 (13.2%)	2 (6.1%)	5 (4.8%)	4 (5.7%)	3 (7.1%)	
	MORE PRACTICE	20 (37.7%)	10 (30.3%)	45 (43.4%)	26 (37.1%)	17 (40.5%)	
	END TRAINING EXAMINATION	0 (0.0%)	0 (0.0%)	4 (3.8%)	4 (5.7%)	0 (0.0%)	
D. (Q 3.7) How would you rate the educational capacity of teachers of the specific training course in general practice?	ADEQUATE	30 (56.6%)	21 (63.6%)	56 (53.8%)	35 (50.0%)	25 (59.5%)	n.s.
	MEDIOCRE	19 (35.9%)	7 (21.2%)	30 (28.9%)	28 (40.0%)	15 (35.7%)	
	INAPPROPRIATE	4 (7.5%)	5 (15.2%)	18 (17.3%)	7 (10.0%)	2 (4.8%)	
E. (Q 3.8) How would you rate the motivation level of the tutors of the specific training course in general practice?	HIGH	4 (7.5%)	3 (9.1%)	14 (13.5%)	12 (17.1%)	8 (19.0%)	0.05
	GOOD	14 (26.4%)	15 (45.5%)	38 (36.5%)	20 (28.6%)	9 (21.4%)	
	SUFFICIENT	12 (22.6%)	7 (21.2%)	19 (18.3%)	17 (24.3%)	7 (16.8%)	
	MEDIOCRE	20 (37.7%)	3 (9.1%)	17 (16.3%)	12 (17.1%)	3 (33.3%)	
	POOR	3 (5.8%)	5 (15.1%)	16 (15.4%)	9 (12.9%)	5 (9.5%)	
F. (Q 3.9) How would you rate your entire experience in the specific training course in general practice?	VERY GOOD	0 (0.0%)	0 (0.0%)	1 (1.0%)	1 (1.4%)	5 (11.9%)	0.005
	SATISFACTORY	17 (32.1%)	16 (48.5%)	27 (26.0%)	20 (28.6%)	8 (19.0%)	
	SUFFICIENT	22 (41.5%)	7 (21.2%)	45 (43.3%)	23 (32.9%)	13 (31.0%)	
	MEDIOCRE	12 (22.6%)	7 (21.2%)	23 (22.1%)	22 (31.4%)	12 (28.6%)	
	UNSATISFACTORY	2 (3.8%)	3 (9.1%)	8 (7.7%)	4 (5.7%)	4 (9.5%)	

Table 3 - Satisfaction level and critical issues dealing with the GP – STs organizational model of teaching and on the condition of the GP trainees, surveyed among the 302 GP trainees during the survey period. Comparison between geographical macro-areas.

The GP-ST educational experience (Q 3.9) has been defined as *satisfying* by 48.5% of GP trainees from the North-east, 32.1% of the ones from the North-west, 28.6% of the respondents from the South, 26.0% of the trainees from Central Italy and 19% of the ones attending the courses in the Islands (p-value= 0.05).

Lastly, Figure 1 summarizes the survey results of the overall opinion surveyed with regard to competence and skill level acquired attending the GP- ST courses in order to meet the National Health Plan requirements: the level of training ensured was considered *adequate* by 57.6% of GP trainees from North-eastern Italy, 45.2% of respondents from Sicily and Sardinia, 43.3% of the ones from the Northwest, 38.6% of trainees from Southern regions and by 35.6% of physicians attending courses in regions of Central Italy. Anyway, the differences documented among the respondents were not statistically significant.

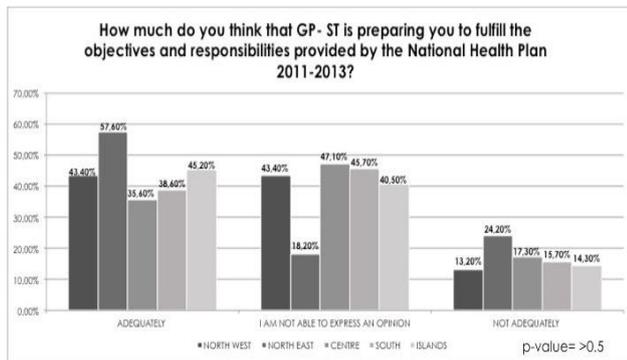


Figure 1 - Summary graph of the opinion surveyed in the 302 GPs trainees about competences and skills level acquired attending GP- ST courses in order to meet the National Health Plan 2011-2013 requirements (Q 3.1). Comparison between geographical macro-areas.

4. Discussion

To authors' knowledge, according to both the consistent number of participants taking part in the survey and to the multidimensional contents explored, the present work itself can be considered the main source of information on motivations, vocations and satisfaction level of the Italian GP trainees with regard to the GP-ST, since the start up of the courses^{13,15}. In particular, the survey has highlighted how the peculiar aspects of the General Practice, such as the relationship between patients and the global and holistic approaches, as well as the possibility to be autonomous in the organization of work, apart from the hospital setting, represented the main reasons for making the GP career choice, confirming the results of a preliminary explorative study³⁴. Our cross-sectional survey documented in the respondents a remarkable vocation for GP and PHC, similarly to a previous survey conducted in other European countries³⁵. However, a consistent number of medical doctors taking part in the survey declared that the specific GP- ST was an alternative choice to university post-lauream medical schools. Also, in line with similar studies carried out in other European countries^{36, 37, 38}, general practice was confirmed to be a discipline mainly appealing to female medical doctors, probably due to its compatibility with family life management. All of the previous evidences should be considered in the programming of health workforce needs, according to the estimated shortage of GP profiles and the excessive number of specialists (of all the clinical and surgery sectors) documented in Italy as compared to the other European countries: the number of GPs in 2015 was equal to 0.88 per 1000 resident inhabitants as compared to

1.54/1000 in France, 2.20/1000 in Portugal and 1.65/1000 in Germany³⁹. Adoption of inadequate planning policies in the field of human health resources in Italy are further supported by the proportion of positions assigned to GP-ST on the overall number of grants and training contracts dedicated to the medical postgraduate training in the same year: 14% in Italy against 45% in France, 31% in Portugal, 30% in the United Kingdom and 28% in Spain⁴⁰. As to the lack of GPs, this raises concerns about the health demands⁴¹ of the general population, a re-balance between primary care and hospital-specialized medical profiles is strongly suggested in the Italian workforce within healthcare planning.

The differences documented between the surveyed trainees and qualified GPs with regard to the level of overall satisfaction with the GP-ST courses could be explained both by a partial improvement occurred over time in the training standards — although large areas of improvement still remains, according to the judgment of the trainees — and by the qualified GPs' opinions free from the physiological influence due to course attendance at the moment of the questionnaires' administration.

The analysis restricted to the GP trainees highlighted some important critical points with regard to the seminars documenting a need for more appropriate topics to be selected. Conversely, the practical training attended at the GPs ambulatory resulted in the most formative part of the courses, according to the respondent's opinions, highlighting the importance of training in the field for future "family doctors".

Of particular interest is the result of the consistent opinion documented by the respondents in support of the institution of a network of regional Observatories dealing with the quality of the education provided by the GP-ST courses, supervised by a national Observatory following the experience of the USMSs' accreditation system^{14, 16}.

Furthermore, the importance to learn topics such as health management, evidence-based medicine and research methodology widely expressed by GP trainees and qualified GPs — as previously documented in other European countries⁴² — suggests the need to guarantee the presence of this content within the GP – ST core curriculum, at the same time supporting the added value to integrate the professional experiences acquired in the primary care setting with the know-how acquired within universities. Not by chance, Beasley and al. highlighted that in order to remodel the health system in line with the ever-changing demands of health, it is necessary to implement research and university education in the field of primary care⁴³. This is of relevance both for developing Countries and for economically advanced ones, including Italy, France and Japan, which express high health needs in terms of chronic and chronic-degenerative diseases, showing at the same time an inadequate or absent academic training in GP and PHC.

The survey has highlighted some critical issues with regard to the core competences acquired attending the GP – ST courses and in particular on problem-solving and community orientation, whereas the level of satisfaction resulted in a demand to strengthen the PHC and global approach to the patient, both for the trainees and the qualified GPs. These findings confirm what was already documented in 2011 by a pilot study⁴⁴ conducted in Italy on a sample of physicians attending the GP – ST regional courses with the aim to survey the satisfaction level on PHC and general community medicine skills, as defined by EURACT/WONKA^{25,26}, in order to practice as a GP having the basic cultural tools to face the new challenges of prevention and personalized medicine and integrated health care⁴⁵.

Again, any effort to define an integrated, educational training network including by universities, regional health systems and PHC has to be promoted to give rise to a necessary osmosis between different health

professionals.

Further, the great consensus expressed by the participants in support of the evolution of the regional trainee status into medical contract holder, as for residents attending USMSs, can be explained by the widest, dissatisfied opinion of the GP trainees' working conditions surveyed in the interviewed sample.

Moreover, the answers of the participants stratified by the macro-aggregated geographical areas have highlighted some critical issues for the GP- ST courses of southern regions and the islands, as well as central and north-western regions of the Country with regard to frontal lessons, lectures and, in particular, to the importance of the topics discussed in the seminars. Also, some critical points have been documented through the answers given by the respondents attending the GP- ST courses of the southern regions and islands concerning the tutors' level of motivation. On the contrary, an overall, mostly satisfied opinion was reported for the GP trainees attending the regional course of the north-eastern and north-western regions. Lastly, except for the positive findings related to the north-eastern macro-area, the larger part of respondents from the other geographic macro-areas declared to be "adequately prepared to meet the objectives and responsibilities expected by the National Health Plan 2011-2013" with a frequency ranging from 35.6% to 45.2%, documenting both an unbalance between the skills acquired by attending the regional courses and the core competences required to practice as qualified GPs and a heterogeneous framework within the different macro-areas.

The main limits of this survey are due to the cross-sectional study design and to the use of the web to recruit the study sample and to administer the questionnaire. Therefore, a potential selection bias due to different skills and attitude towards web access and usage should be considered. Conversely, the web use to recruit the GP trainees, whose professional training activities are widespread and carried out in the different health districts and hospitals within each region, could be considered the most appropriate strategy, as documented by other surveys conducted in Europe ^{35, 36, 37}.

Another limitation of this survey may be due to the different percentage of GP trainees recruited in the different macro-areas, making authors conservative in the interpretation of results obtained by the study sample and in the statistical inference to the reference population.

Nonetheless, according to the survey findings, the proposal for the adoption in Italy of a specialty training integrated school in General Practice and Primary Care has to be taken into account. On that note, as the sustainability of the Italian public National Health Service is based on the evolution and development of PHC, the implementation of GP skills is linked to a reorganization of the GP educational and training system so as to provide more adequate core competences across the Country. In addition, the "General Practice and Primary Care" departments ^{19,22} can be identified as the structural and functional places where University know-how to organize teaching activities and promote research can meet experiences and competences of the general practitioners, in the global view of taking care of complex patients, affected by co-morbidities and multiple chronicities, and their families through a network of integrated social and primary health services, including hospitals when appropriate, able to guarantee continuity of care and coordinated interventions ⁴⁶.

Moreover, the evolution of the regional courses towards USMSs has the potential to overcome the current limitation for GP trainees to spend part of their training abroad, differently from post-lauream university medical schools already providing a response to the need for international elective experiences expressed by resident doctors ⁴⁷.

On the other hand, the GP training to work in multidisciplinary teams,

which is possible through an integrated academic contribution, represents the way to guarantee the "health for all" in a system and network approach allowing an easy access of patients to PHC ⁴⁸. In the same vein, an innovative GP training could represent the precondition to face the challenges of the public health services, above all supporting the adherence to vaccination protocols ^{49, 50, 51, 52} as well as the prevention of non-transmittable diseases ^{53, 54, 55, 56}. Any implication related to implementation of genomic technology in public health, in the current effort to define shared national and European policies ^{57,58}, starting from the training of general practitioners ^{59, 60} and specialized medical doctors ⁶¹, must also be taken into consideration.

In conclusion, our survey has revealed strengths and weakness of the current organization of GP – ST courses in Italy. We believe that proven evidence may represent a starting point to set up appropriate action to improve the postgraduate GP-ST. This perspective of the evolution of the GP-ST courses in USMSs may represent an essential starting point from which to boost the culture of primary care and community medicine in Italy, taking into account the peculiarities of the general practice, and in line with the policies stated by the World Health Organization in "Transforming and scaling up health professionals' education and training" report ⁸ and by WONCA Europe in the "Global standards document for postgraduates Family Medicine" ⁶².

References

1. De Flora S, Quaglia A, Bencicelli C, Vercelli M. The epidemiological revolution of the 20th century. *FASEB J*. 2005 Jun;19(8):892-7.
2. Annesi Pessina E, Bellentani M, Bernabei R, Cicchetti A, Crea F, De Belvis AG, Enrichens F, Fini M, Geraci S, Lauro R, Lazzari A, Longhi S, Lupidi S, Mazzucco W, Moirano F, Parente P, Ricciardi W, Rosina A, Ruocco G, Sabetta T, Salmaso S, Santoro A, Scaccabarozzi M, Scambia G, Silenzi A, Solipaca A, Ugazio AG. Country Report Italia 2013. Le sfide decisionali per la salute e l'assistenza sanitaria in Italia. Altis 2013.
3. Nolte E and McKee M. *Caring for people with chronic conditions: a health system perspective*. McGraw-Hill Education (UK), 2008.
4. Expert Panel on effective ways of investing in Health (EXPH) of the European Commission DG Health & Consumers. Definition of a frame of reference in relation to primary care with a special emphasis on financing systems and referral systems, 2014. Available from: http://ec.europa.eu/health/expert_panel/sites/expertpanel/files/004_definitionprimarycare_en.pdf. (Last accessed: 15/05/2017).
5. WHO. International Conference on Primary Health Care (WHO). Declaration of Alma-Ata. Alma-Ata, USSR, 6-12 September 1978.
6. Engel GL. The need for a new medical model. A challenge for biomedicine. *Science* 196:129-136, 1977.
7. Joint Action on Health Workforce Planning and Forecasting. Funded from the European Union in the framework of the Public Health Programme. Available from: <http://healthworkforce.eu>. (Last accessed: 15/05/2017).
8. WHO. WHO Guidelines 2013. Transforming and scaling up health professional education and training. Available from: http://apps.who.int/iris/bitstream/10665/93635/1/9789241506502_eng.pdf. (Last accessed: 15/05/2017).

9. Heyrman J, editor. The EURACT Educational Agenda of general practice/family medicine; 2005. Available from: <http://www.euract.eu/official-documents/finish/3-official-documents/93-euract-educational-agenda>. (Last accessed: 15/05/2017).
10. Klemenč-Ketiš Z, Kersnik J. The role of the European Academy of Teachers in General Practice and Family Medicine in family medicine education in Europe--the experience of the University of Maribor. *Acta Med Acad.* 2012;41(1):80-7.
11. MIUR. Direttiva 93/16/CEE in materia di libera circolazione dei medici e di reciproco riconoscimento dei loro diplomi, certificati ed altri titoli e Direttive 97/50/CE, 98/21/CE, 98/63/CE e 99/46/CE, che modificano la Direttiva 93/16/CEE. Available from: http://www.miur.it/0006Menu_C/0012Docume/0098Normat/2069Att uaz_cf2.htm. (Last accessed: 15/05/2017).
12. Cuccuru L, Forte V, Marini G, Mereu A, Panajia A, Pecora N, Volpe G. Gruppo Medicina Generale Rete Italiana Insegnamento Salute Globale (RIISG). Il percorso di formazione specifica in medicina generale in Italia. Available from: <http://www.saluteinternazionale.info/2016/02/il-percorso-di-formazione-specifica-in-medicina-generale-in-italia/>. (Last accessed: 15/05/2017).
13. Gazzetta Ufficiale. Decreto Legislativo 17 agosto 1999, n. 368 "Attuazione della direttiva 93/16/CEE in materia di libera circolazione dei medici e di reciproco riconoscimento dei loro diplomi, certificati ed altri titoli e delle direttive 97/50/CE, 98/21/CE, 98/63/CE e 99/46/CE che modificano la direttiva 93/16/CEE". (GU n.250 del 23-10-1999 - Suppl. Ordinario n. 187). Available from: <http://www.camera.it/parlam/leggi/deleghe/99368dl.htm>. (Last accessed: 15/05/2017).
14. MIUR. Decreto Interministeriale del 4 febbraio 2015 n.68 "Riordino scuole di specializzazione di area sanitaria", pubblicato nella Gazzetta Ufficiale n. 126 del 3 giugno 2015. Available from: <http://attiministeriali.miur.it/anno-2015/febbraio/di-04022015.aspx>. (Last accessed: 15/05/2017).
15. Ministero della Salute. Decreto del Ministro della Salute del 7 marzo 2006. Principi fondamentali per la disciplina unitaria in materia di formazione specifica in medicina generale. Artt. 13 e 15. Available from: http://www.gazzettaufficiale.it/eli/id/2015/03/04/15A01519/sg;jsessionid=PiZP2P0rYxdYHzbKEeiRA__ntc-as1-guri2a. (Last accessed: 15/05/2017).
16. MIUR. Decreto MIUR del 29 marzo 2006 "Definizione degli standard e dei requisiti minimi delle scuole di specializzazione", pubblicato in Gazzetta Ufficiale N. 105 del 8 Maggio 2006. Available from: http://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtt o/originario;jsessionid=prItlNG224t+HLc-oK4Y8w__ntc-as2-guri2a?atto.dataPubblicazioneGazzetta=2006-05-08&atto.codiceRedazionale=06A04303&elenco30giorni=false. (Last accessed: 15/05/2017).
17. Magnano R. Alla Stato Regioni il core curriculum del Medici di Medicina Generale, sanità24.ilsol24ore.com, 2013. Available from: <http://www.sanita24.ilsol24ore.com/art/lavoro-e-professione/2013-11-07/alla-stato-regioni-core-120609.php?uuiid=AbMCJc0I>. (Last accessed: 15/05/2017).
18. Marini G, Mereu A. La qualità della formazione in Medicina Generale in Italia. Accademia Italiana Cure Primarie, 2016. Available from: <http://wonca.altervista.org/la-qualita-della-formazione-in-medicina-generale-in-italia/> (Last accessed: 15/05/2017).
19. FIMMG Formazione. Problematiche del percorso formativo in Medicina Generale. Dossier, 2013. Available from: http://fimmgformazione.org/wp-content/uploads/2013/10/Dossier_FIMMG_Formazione_2013.pdf. (Last accessed: il 15/05/2017).
20. Maciocco. G. Come si diventa medici di famiglia. Saluteinternazionale.info, 2015. Available from: <http://www.saluteinternazionale.info/2015/07/come-si-diventa-medici-di-famiglia/>. (Last accessed: 15/05/2017).
21. Becchi MA. L'Università nella formazione delle Cure Primarie e della Medicina Generale. Saluteinternazionale.info, 2015. Available from: <http://www.saluteinternazionale.info/2015/07/formazione-cure-primarie-e-medicina-generale>. (Last accessed: 15/05/2017).
22. Di Lisio A, Bonetti P, Russo S. La "primavera" dei giovani medici di medicina generale. *Giovani Medici – Periodico di informazione dei giovani medici e dei professionisti della sanità.* Anno 2, numero 2, pag. 7. Nov-dic 2012. Edito a cura dell'Associazione Italiana Giovani Medici (SIGM).
23. Maciocco G, Passerini GL, Stefanini A. La medicina generale in Europa, in Geddes M. Rapporto sulla salute in Europa. EDIESSE, 1995. Pp. 137-174.
24. European Academy of Teachers in General Practice (EURACT). Educational Agenda, 2015. Available from: <http://www.euract.eu/official-documents/finish/3-official-documents/93-euract-educational-agenda>. (Last accessed: 20/03/2017).
25. Blauth E, Colicchio A, Fasoletti D, Laux G, Periti I, Peters-Klimm F, Sklarova K. Satisfaction with Vocational Training in GP/FM in Europe - Vasco da Gama Movement workshop In Proceedings of the 14th WONCA Europe Conference: 04-07 September 2008; Istanbul, 2008.
26. Blauth E, Watson J, Laux G, Peters-Klimm F, Vasco da Gama Movement (VDGM). Survey on vocational training in GP/FM in seven European countries In Proceedings of the 16th WONCA Europe Conference: 06-09 October 2010; Malaga, 2010.
27. Legge n. 401 del 29/12/2000 "Norme sull'organizzazione e sul personale del settore sanitario." Available from: <http://www.camera.it/parlam/leggi/004011.htm>. (Last accessed: 20/03/2017).
28. Segretariato Italiano Giovani Medici (S.I.G.M.). Questionario per la rilevazione del grado di motivazione e soddisfazione in tema di formazione specifica in Medicina Generale. Available from: http://www.giovanemedico.it/index.php?option=com_content&view=article&id=594:questionario-giovani-medici-di-medicina-generale&catid=2:lavorocat&Itemid=6. (Last accessed: 20/03/2017).
29. Segretariato Italiano Giovani Medici (S.I.G.M.). Presentazione survey per la rilevazione del grado di motivazione e soddisfazione in tema di formazione specifica in Medicina Generale. Available from: http://www.giovanemedico.it/index.php?option=com_content&view=article&id=594:questionario-giovani-medici-di-medicina-generale&catid=2:lavorocat&Itemid=6. (Last accessed: 20/03/2017).

- generale&catid=2:lavorocat&Itemid=6. (Last accessed: 15/05/2017).
30. Segretariato Italiano Giovani Medici (S.I.G.M.). Official Facebook page. Available from: https://www.facebook.com/ASSOCIAZIONE.ITALIANA.GIOVANI.MEDICI/?hc_ref=PAGES_TIMELINE. (Last accessed: 15/05/2017).
 31. Segretariato Italiano Medicina Generale (S.I.Me.G.). Official Facebook page. Available from: <https://www.facebook.com/medicinagenerale/?fref=ts>. (Last accessed: 15/05/2017).
 32. Segretariato Italiano Giovani Medici (S.I.G.M.). Twitter account. Available from: <https://twitter.com/giovanimedici>. (Last accessed: 20/03/2017).
 33. Internet Protocol access. Available from: https://it.wikipedia.org/wiki/Indirizzo_IP. (Last accessed: 20/03/2017).
 34. Mazzucco W, Marotta C, de Waure C, Marini G, Fasoletti D, Colicchio A, Luppi D, Bonetti P, Gangi S, Maffongelli E, Nania R, Pignatti F, Sessa G, Russo S, Silenzi A, Puccio G, Parente P, Costantino C. Rilevazione nazionale in tema di formazione specifica di medicina generale in Italia. *Medicina e Chirurgia*, 72: 3322-3335, 2017.
 35. Roos M, Watson J, Steinhäuser J, Blauth E, Wensing M, Peters-Klimm F. Motivation and job satisfaction in General Practice – results of the Vasco da Gama (VdGM) survey among Trainees and Newly-Qualified-GPs in seven European countries. Oral presentation at: WONCA Europe conference; 08-11 September 2011; Warsaw, PL.
 36. Roos M, Watson J, Wensing M, Peters-Klimm F. Motivation for career choice and job satisfaction of GP trainees and newly qualified GPs across Europe: a seven countries cross-sectional survey. *Educ Prim Care*. 2014 Jul;25(4):202-10.
 37. Watson J, Humphrey A, Peters-Klimm F, Hamilton W (2011) Motivation and satisfaction in GP training: a UK cross-sectional survey *The British journal of general practice: the journal of the Royal College of General Practitioners* 61:e645-649.
 38. Roos M, Blauth E, Steinhäuser J, Ledig T, Joos S, Peters-Klimm F: [Vocational training in general practice in Germany: a nation-wide survey among trainees] *Z EvidFortbildQualGesundhwes* 2011, 105: 81-88.
 39. Eusostat 2015. Statistics Explained. Elaborazione dati. Available from: <http://ec.europa.eu/eurostat/statistics-explained/>. (Last accessed: 15/05/2017).
 40. Mazzucco W, Marotta C, Silenzi A, Albanese PG. Traiettorie di precariato medico. *Giovani generazioni e lavoro in Sanità*. A cura di Marco Rotondi. Collana Risorse Umane, Sanità, Servizi Sociali, Salute (RUSAN) - EMI, 2016.
 41. OECD Publishing. Health at a Glance 2015. Available from: http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/health-at-a-glance-2015_health_glance-2015-en#page84. (Last accessed: 15/05/2017).
 42. Steinhäuser J, Roos M, Maagaard R, Vychytil P, Joos S, Blauth E, Peters-Klimm F. Educational needs in General Practice Vocational Training – results of the Vasco da Gama (VdGM) survey among trainees in seven European countries Oral presentation at: WONCA Europe conference; 08-11 September 2011; Warsaw, PL.
 43. Beasley JW, Starfield B, van Weel C, Rosser WW, Haq CL. Global health and primary care research. *J Am Board Fam Med*. 2007 Nov-Dec;20(6):518-26.
 44. Fasoletti D, Lygidakis C, Colicchio A, Periti I, Aluttis F. Formazione: quanto soddisfa il corso di MG? Presentazione dei dati di uno studio pilota MD. *Medicina eDoctor* 2011, 9: 12-14.
 45. Vuori H. Health for all. Primary health care and general practitioners. *Journal of the Royal College of General Practitioner*, 1986;36:398-402.
 46. Howie GR, Hannay DR, St evenson SK. The Mackenzie report: General practice in the medical schools of the United Kingdom - 1986. *BMJ* 1986; 292:1567-71.
 47. Costantino C, Maringhini G, Albeggiani V, Monte C, Lo Cascio N, Mazzucco W. Perceived need for an international elective experience among Italian medical residents. *EuroMediterranean Biomedical Journal* 2013, 8(3):10-15.
 48. Montegut AJ. To achieve "health for all" we must shift the world's paradigm to "primary care access for all". *J Am Board Fam Med*. 2007 Nov-Dec;20(6):514-7.
 49. Costantino C, Amodio E, Calamusa G, Vitale F, Mazzucco W. Could university training and a proactive attitude of coworkers be associated with influenza vaccination compliance? A multicentre survey among Italian medical residents. *BMC Medical Education* (2016) 16:38.
 50. Costantino C, Mazzucco W, Azzolini E, Baldini C, Bergomi M, Biafiore AD, Bianco M, Borsari L, Cacciari P, Cadeddu C, Camia P, Carluccio E, Conti A, De Waure C, Di Gregori V, Fabiani L, Fallico R, Filisetti B, Flacco ME, Franco E, Furnari R, Galis V, Gallea MR, Gallone MF, Gallone S, Gelatti U, Gilardi F, Giuliani AR, Grillo OC, Lanati N, Mascaretti S, Mattei A, Micò R, Morciano L, Nante N, Napoli G, Nobile C, Palladino R, Parisi S, Passaro M, Pelissero G, Quarto M, Ricciardi W, Romano G, Rustico E, Saponari A, Schioppa FS, Signorelli C, Siliquini R, Trabacchi V, Triassi M, Varetta A, Ziglio A, Zoccali A, Vitale F, Amodio E. Influenza vaccination coverage among medical residents: an Italian multicentre survey. *HumVaccin Immunother*. 2014 Mar 6;10(5).
 51. Tramuto F, Mazzucco W, Maida CM, Affronti A, Affronti M, Montalto G, Vitale F. Serological pattern of Hepatitis B, C, and HIV infections among immigrants in Sicily: epidemiological aspects and implication on public health. *J Community Health*. 2012 Jun;37(3):547-53.
 52. Costantino C, Amodio E, Vitale F, Maida C, Maringhini G, Ascianto R, Tramuto F, Calamusa G. Attitudes, behaviours and perceptions of Italia general practitioner trainees towards influenza vaccination in Western Sicily (Italy). *Ital J Public Health* 2012; 9:33-9.
 53. Cerame G, Meli V, Vitale F, Firenze A, Viviano E, Mazzucco W, Romano N. A study to evaluate the lifestyle of medical students in Palermo (Italy). *Ig Sanita Pubbl*. 2008 Jul-Aug;64(4):473-88.
 54. Francavilla G, Abrignani MG, Braschi A, Sciacca R, Francavilla VC, Caracciolo MM, Renda N, Riccio C, Scaglione A, Braschi G. Physical exercise and sport activities in patients with and without coronary heart disease. *Monaldi archives for chest disease* 2007; 68(2):87-95.
 55. Erdol S, Mazzucco W, Boccia S. Cost effectiveness analysis on childhood obesity primary prevention programmes: a systematic review. *Epidemiology, Biostatistics and Public Health* 11.3 (2014).

56. deWaure C, Di Nardo F, Mazzucco W, Nedovic D, Ricciardi W. The management of multiple sclerosis by reference centers in Italy: health demands and needs in Campania region. *Neurol Sci.* 2016 Feb;37(2):315-22.
57. Simone B, Mazzucco W, Gualano MR, Agodi A, Coviello D, DagnaBricarelli F, Dallapiccola B, Di Maria E, Federici A, Genuardi M, Varesco L, Ricciardi W, Boccia S. The policy of public health genomics in Italy. *Health Policy.* 2013 May;110(2-3):214-9.
58. Mazzucco W, Pastorino R, Lagerberg T, Colotto M, d'Andrea E, Marotta C, Marzuillo C, Villari P, Federici A, Ricciardi W, Boccia S. Current state of genomic policies in healthcare among European Union member states: results of a survey of chief medical officers. *Eur J Public Health.* 2016 Sep 29.
59. Mazzucco W, Ricciardi W, Boccia S. Addressing the gap between genetics knowledge and clinical practice: a pilot study to implement genetics education among physicians in Italy. *Italian Journal of Public Health.* 2012 vol 9 n.4.
60. Michelazzo MB, Pastorino R, Mazzucco W, Boccia S. Distance learning training in genetics and genomics testing for Italian health professionals: results of a pre and post-test evaluation. *Epidemiology, Biostatistics and Public Health.* 2015 Vol 12, No 12.
61. Ianuale C, Leoncini E, Mazzucco W, Marzuillo C, Villari P, Ricciardi W, Boccia S. Public Health Genomics education in post-graduate schools of hygiene and preventive medicine: a cross-sectional survey. *BMC Med Educ* 2014 Oct 10;14:213.
62. Wonca Europe, 2013. Wonca Global Standards for Postgraduate Family Medicine Education. Available from: <http://www.woncaeurope.org/content/wonca-global-standards-postgraduate-family-medicine-education>. (Last accessed: 20/03/2017).