

# Collaboration of occupational physicians with national health system and general practitioners in Italy

Benedetta PERSECHINO<sup>1\*</sup>, Luca FONTANA<sup>1</sup>, Giuliana BURESTI<sup>1</sup>,  
Bruna Maria RONDINONE<sup>1</sup>, Patrizia LAURANO<sup>1</sup>, Grazia FORTUNA<sup>1</sup>,  
Antonio VALENTI<sup>1</sup> and Sergio IAVICOLI<sup>1</sup>

<sup>1</sup>INAIL, Italian Workers' Compensation Authority, Department of Occupational and Environmental Medicine, Epidemiology and Hygiene, Italy

*Received June 18, 2016 and accepted September 30, 2016*

*Published online in J-STAGE October 12, 2016*

**Abstract:** A good cooperation between occupational physicians and other healthcare professionals is essential in order to achieve an overall improvement of workers/patients' well-being. Unfortunately, collaboration between occupational physicians and other physicians is often lacking or very poor. In this context, using a self-administered questionnaire, we investigated the cooperation of Italian occupational physicians with the National Health System (NHS) facilities and with the general practitioners in order to identify any potential critical issues that may hinder an effective and collaborative relationships between these professionals. The survey was conducted from October 2013 to January 2014. Nearly all of the interviewed occupational physicians have had contacts with colleagues of the Departments for Prevention and Occupational Health and Safety of the NHS. Regarding the relationship between occupational physicians and general practitioners findings showed that their cooperation is quite difficult and it would not seem a two-way collaboration. Cooperation between occupational physicians and NHS would benefit from the development of communication strategies and tools enhancing the support and assistance functions of the NHS facilities. The elaboration and subsequent application of operational guidelines and standardized procedures of communication would also improve collaboration between occupational physicians and general practitioners that is currently considered rather insufficient and incomplete.

**Key words:** Occupational medicine, Occupational medicine physician, General practitioners, National health system, Cooperation

## Introduction

The Occupational Physicians (OPs) play a key role within the Occupational Safety and Health (OSH) management systems to protect and improve the health of employees (EEs) in relation to their work and to ensure a continual

improvement of working environment and preventive and/or protective measures. In this regard, it should be noted that recently the International Labour Office estimated the global burden of occupational diseases (any disease contracted as a result of an exposure to hazards arising from a work activity), work-related diseases (diseases with multiple causal agents, where factors in the work environment may play a role, together with other risk factors, in the aetiology of such diseases) and occupational accidents (an occurrence arising out of, or in the course of, work which

---

\*To whom correspondence should be addressed.

E-mail: b.persechino@inail.it

©2017 National Institute of Occupational Safety and Health

results in a fatal or non-fatal injury) highlighting that over 2.3 million people die every year due to these causes (over 350,000 fatalities are provoked by occupational accidents, while about 2 million are caused by occupational and/or work-related diseases<sup>1</sup>). Mostly important, the majority of these deaths can be preventable through the application of comprehensive and thorough preventive actions and programs. In this context, the role and the functions of OPs are critical since, being focused on the evaluation (and subsequent elimination or reduction) of occupational risks, improvement of working conditions, assessment of functional ability against the requirements of the job, and early diagnosis of occupational diseases, they enable to achieve a good protection of workers' health and safety. Moreover, considering that the practice of Occupational Medicine (OM) is constantly changing, it should also take into account that OPs are increasingly asked to address issues such as health promotion, medical counseling, environmental and public health.

Nevertheless, one of the main tasks of OPs, carrying out health surveillance medical examinations, is to evaluate fitness for work, that is to assess the fitness of workers for specific tasks, ensuring a satisfactory fit between person and job and then (considering any health issues or disabilities) enabling workers to undertake the work they have been selected to perform safely and effectively. Sometimes, to achieve this aim the OP has the need to confront with other medical practitioners, for example to assess fitness for work of EEs suffering from particular pathological conditions or to perform specific clinical and/or diagnostic tests in order to define an occupational disease. This type of collaboration is essential to ensure that workers have the highest degree of health protection and to allow OPs to carry out their tasks in a thorough and satisfactory manner. At the same time in Italy, OPs may rely on the collaboration with the Department for Prevention and Occupational Health and Safety of the Local Public Health Authority (LPHA) belonging to the National Health System (NHS). These public facilities are the institutional partners of OPs and essentially perform control functions, having the duty to oversee the OP work in order to ensure the proper application of the legislative framework for occupational health and safety, and assistance activities, providing OPs advices and training on issues relating to health and safety at work.

On the other hand, a patient with an occupational disease or with a possibly work-related illness is already in a therapeutic relationship with other physicians or frequently seeks care initially from a family physician<sup>2</sup>, since the general practitioners (GPs) usually function as a gatekeeper

for specialists and other medical disciplines of the primary and secondary healthcare system<sup>3,4</sup>. Consequently, GPs and other specialists may play a key role in the field of OM by detecting possible links between patients' health problems and occupation<sup>5</sup>. For example, in this context, taking a complete, effective and comprehensive occupational history by GPs could contribute significantly in reducing the phenomenon of under-reporting of occupational diseases<sup>6,7</sup>. Another important issue related to OM in which GPs play a crucial role is the rehabilitation for work (vocational rehabilitation). Indeed, GPs exercise a remarkable influence during the treatment and recovery of patients with chronic illness or disability, providing them effective clinical management and sick notes that trigger or continue periods of absence from work<sup>8</sup>. In this regard, at the same time OPs, after a prolonged sick leave of workers, must re-evaluate their fitness for work in order to identify any difficulties (resulting from the disease suffered) that could occur when workers returns to work<sup>5</sup>. In Italy, as an example, after 60 days of continuous sickness absence from work, EEs have to undergo a medical examination, namely the "pre-return to work visit". Therefore, it is evident that a good cooperation between OPs and GPs would lead to a shortening of illness-related absenteeism from work, an improving of reintegration into the workplaces and finally to a preservation of employability<sup>9</sup>.

Moreover, considering that OPs and GPs have several overlapping work fields (prevention, rehabilitation, reintegration of workers into the workplaces, health promotion) and their areas of competence are quite complementary, an optimal and more comprehensive communication and collaboration among these professional figures would be desirable in order to obtain an overall improvement of workers/patients' well-being. In Italy, to the best of our knowledge, this relationship and the role of communication between OPs and other healthcare professionals in contributing to the effective management of the occupational health problems have not yet been explored. In this context, using a self-administered questionnaire, we investigated the perception that OPs have of the cooperation with GPs and NHS in order to identify the potential critical issues that may hinder the realization and the implementation of an effective collaborative relationship between these professionals. These data may be particularly useful to define, develop and implement collaborative practices and strategies.

## Subjects and Methods

In Italy in order to become an OP and practice this profession medical graduates must undergo a 5-year post-graduate training course. However, Decree Law no. 81/08 establishes that the OP profession can also be practiced by physicians who have specialized in forensic medicine or hygiene and preventive medicine (they must attend a 2<sup>nd</sup>-level university master course), by lecturers (with a proven period of teaching) in OM, preventive medicine for employees and psychotechnics, industrial toxicology or hygiene, occupational physiology and hygiene, and finally by physicians that at the time of entry into force of this law had already carried out the OP profession (authorization pursuant to article 55 of Decree Law no. 277). Most Italian OPs are freelance practitioners who work with employers and/or companies or with private occupational health centers. Alternately, an OP can be employed in the Department for Prevention and Occupational Health and Safety of the LPHA belonging to the NHS or works in public institutions and universities. Italian physicians who intend to carry out professional activity as OPs are legally obliged to register themselves in the national register of OPs of the Italian Ministry of Health. At the time the study was conducted, 9,856 OPs were enrolled in this register.

### *Sample selection*

The inclusion criteria for the selection of the study population were (i) possessing the legal requirements to perform the professional activity of OP in Italy and (ii) being listed in the aforementioned national register. From the final reference population, made up of 7,825 OPs, a sample of 4,704 OPs was randomly selected - using the Excel random sampling program (Microsoft Office, Microsoft Corporation, Redmond, Washington) - with a guarantee of the same geographical breakdown of the starting population. The sample size, representing more than 50% of the population, was also based on the number of persons possibly consulted and according to their availability. The survey was conducted in October 2013–January 2014. An electronic form (if an email address was available) or a mailed version of the questionnaire, a form for informed consent and a cover letter, which explained the purposes of the study, were sent to the subjects belonging to this sample. The physicians were offered the choice of completing an online or a hardcopy version of the questionnaire. In detail, as regards the compliance with the best ethical standards, it should be noted that in the cover letter we provided to OPs

an extensive and detailed description of the aims of this research, of its protocol study and methodology, whereas, using the form for informed consent, we have explained and ensured the OPs that their participation in the survey, the filling in the questionnaire and the subsequent data processing would have been completely in anonymous form. All non-respondents were sent one reminder letter approximately one month after the first invitation to encourage them to complete and return the questionnaire. 1,237 compiled questionnaires were returned to the Italian Workers' Compensation Authority (INAIL), Research Division, Occupational Medicine Department, where they were coded by the authors and the data were entered into an electronic file. Several organizations and institutions collaborated in raising awareness among OPs and consequently in fostering their participation in the national survey (see acknowledgements).

This study was supported by the Italian Ministry of Health (as part of the research project named “Development of models for a permanent system of detection of the perception of the risk to health and safety in the workplace by employees and figures of prevention”) and both the protocol study and the questionnaire were approved by the Institutional Review Board of the Italian Ministry of Health.

### *Questionnaire*

The questionnaire used in this OP survey was developed after conducting a careful review of the relevant studies regarding surveys of physicians in the OM specialty<sup>10–13</sup>, and the studies that investigated the cooperation between OPs and GPs or other physicians<sup>2, 5, 6, 9, 14–17</sup>, in order to define the main indicators of the investigation. Furthermore, the questionnaire was also designed taking into account the specific Italian regulatory framework for occupational health and safety. A preliminary version of the questionnaire was pilot-tested with 100 OPs for length, content, clarity and comprehensibility of each item, face validity and acceptance by the interviewees. Subsequently, the questionnaire was adapted in accordance with OPs' suggestions and observations.

Data gathered included personal and professional practice details (8 items), frequency and reasons for contact between OPs and facilities of the NHS (10 items) and cooperation between OPs and GPs (6 items). Moreover, we have subdivided the respondents into different groups, according to particular aspects of their professional activity (number of companies served as OP, total number of workers visited as OP and performing other medical activities

in addition to OP profession), to verify the possible presence of statistically significant differences. The responses included no personal identifiers such as name or date of birth and all information was kept confidential.

#### *Statistical data analysis*

Statistical analysis was performed using SPSS software version 22. For categorical and Likert scale variables, percentages and frequencies were calculated on the total sample and, at a greater level of detail, contingency tables were employed to display the frequency distribution of the variables in the subsets generated by socio-demographic variables, in order to highlight any peculiarities. For items on the scale of one to five (1=minimum score, 5=maximum score), the average scores were calculated in both the total sample and the subsets generated by socio-demographic variables. For the first group of items, to test the association between socio-demographic variables and answers provided, the Chi-squared Test ( $\chi^2$ ) was employed. For the second group, to compare the mean scores between subgroups, ANOVA was applied. Only significant results were reported. Values of  $p < 0.05$  were considered significant.

## **Results**

#### *Personal and professional practice information*

The overall response rate was 26.3%, moreover it should be noted that, for all the items of each section of the questionnaire, missing data were always under 5% which is deemed a physiological value. Individual demographics and professional details of the recruited OPs are shown in Table 1. Most of respondents were male (72.4%), aged between 55–64 years (40.6%), lived in northern Italy (44.6%) and specialized in OM (74.0%). Interestingly, only 36.2% of subjects stated that they worked exclusively as OP, whereas the most of participants are engaged also in other medical activities such as GP (17.5%). OPs carry out their professional activity primarily as freelance practitioners (81.2%), working for a large number ( $n \geq 50$ ) of companies (34.8%) and conducting health surveillance on a total number of workers (that is the number of workers visited in a year by OPs) that exceeds 1,500 (25.6%).

#### *Interaction between OPs and NHS facilities*

The findings of this survey (Table 2) showed that almost all of the interviewees (90.6%) had contact (at least once) with the Department for Prevention and Occupational Health and Safety of the LPHA, mainly on the occasion of inspections in companies where the participants were

appointed to perform the role of OPs (71.0%) and at workshops and/or training events organized by these public institutions (60.7%). In this context, the answers provided by the respondents indicate that the relationship between OPs and LPHA is rather adversarial. In fact, even if only in the 37.2% of the cases the OPs have requested assistance from these departments to solve problems related to health and safety at work, the majority of participants (18.2% strongly agree and 33.8% agree) believe that the assistance provided by the LPHA may increase the effectiveness of the activities carried out by OPs. Therefore, it is not surprising that also workshops and training events organized by the LPHA are considered very useful (18.0% strongly agree and 33.5% agree). However, at the same time, it is interesting to note that a large proportion of the sample did not believe that inspection and control activities performed by the Department for Prevention and Occupational Health and Safety of the LPHA are able to improve the health and safety conditions in workplaces (7.9% strongly disagree and 25.3% disagree).

Regarding the interactions of OPs with hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases or to assess fitness for work, the data are distributed uniformly and show a slight majority of affirmative answers (Table 2). OPs who in carrying out their professional activities needed to locate these structures have not had great difficulty both in finding and in contacting hospitals. This type of collaboration is retained very fruitful since respondents reported a remarkable effectiveness of NHS facilities in carrying out the clinical and/or diagnostic tests required by the OPs and in solving the specific problem (diagnosis of occupational disease or assessment of fitness for work) posed by OPs (mean score:  $3.26 \pm 1.12$  and  $3.27 \pm 1.15$ , respectively).

#### *Cooperation between OPs and GPs*

It is noteworthy that a vast majority of the surveyed OPs (81.2%) declared that in the last five years they have had contacts with GPs to have an exchange of information concerning the health conditions of workers (Table 2). With regard to this collaboration, OPs strongly believe that interaction with GPs is essential to obtain an adequate protection of workers' health (mean score:  $3.84 \pm 1.15$ ), especially for workers who have been exposed to carcinogens (mean score:  $3.79 \pm 1.23$ ) and to improve and fully realize the aims of health surveillance, having a complete overview of workers' health conditions. However, according to the opinion of participants, the relationship between OPs and GPs is quite difficult and it would not seem a two-way

**Table 1. Personal and professional practice details of the study population**

<b>Gender</b>	<b>%</b>
Male	72.4
Female	27.6
<b>Age</b>	<b>%</b>
<35 yr	2.7
35–44 yr	22.8
45–54 yr	23.6
55–64 yr	40.6
≥65 yr	10.3
<b>Geographical area of residence</b>	<b>%</b>
Northern Italy	44.6
Middle Italy	21.5
Southern Italy and Islands	33.9
<b>Legal requirements to perform OP profession</b>	<b>%</b>
Specialty in OM	74.0
Specialty in hygiene and preventive medicine	14.0
Authorization pursuant to article 55 of Decree Law no. 277	7.0
Specialty in forensics medicine	5.0
<b>Other medical activities in addition to OP profession*</b>	<b>% of responses (% of cases)</b>
General practitioner	16.4 (17.5)
Self-employed (medical branch)	10.9 (11.7)
Employed in public institutions	7.9 ( 8.5)
Hospital physicians (medical branch)	4.7 ( 5.0)
Employed in the Local Public Health Authority	4.0 ( 4.3)
Medical specialist outpatient	3.1 ( 3.3)
Self-employed (surgery branch)	1.2 ( 1.3)
Hospital physicians (surgery branch)	0.9 ( 1.0)
Other	17.2 (18.4)
None	33.7 (36.2)
<b>OP profession as...*</b>	<b>% of responses (% of cases)</b>
Self-employed	63.5 (81.2)
Collaborator of private occupational health center	14.0 (18.0)
Employee of a company	9.5 (12.1)
Employee of public occupational health center	8.6 (11.1)
Employee of private occupational health center	1.7 ( 2.2)
Collaborator of public occupational health center	1.6 ( 2.0)
Employee/collaborator of an external occupational health center	1.0 ( 1.3)
<b>N° of companies served as OP</b>	<b>%</b>
<10	30.6
10–25	19.1
26–50	15.5
>50	34.8
<b>Total number of workers seen as OP</b>	<b>%</b>
≤50	5.0
51–100	6.4
101–500	25.3
501–1,000	21.2
1,001–1,500	16.4
>1,500	25.6

\*Multiple choice item

cooperation since OPs believe that GPs are not interested in the reporting of OPs (mean score:  $3.03 \pm 1.30$ ). Moreover, one of the main reasons that complicate the possibility of establishing a productive collaboration between OPs

and GPs would lie in the fact that workers do not facilitate the exchange of information (mean score:  $2.91 \pm 1.34$ ).

**Table 2. Main characteristics regarding the relationship between Occupational Physicians (OPs) and the National Health System (NHS) and between OPs and general practitioners (GPs)**

<b>While performing your professional activity as OP have you had contacts with the Local Public Health Authority (Department for Prevention and Occupational Health and Safety) of the NHS?</b>	<b>%</b>
Yes	90.6
No	9.4
<b>For what reasons you came into contact with the Local Public Health Authority of the NHS? *</b>	<b>% of responses (% of cases)</b>
Inspections in companies where I worked as OP	24.3 (71.0)
Workshops and training events organized by the Local Public Health Authorities	20.8 (60.7)
Employee's appeal against the fitness for work judgment	16.6 (48.3)
Denounce of occupational disease	16.1 (47.0)
Request for assistance relating to OSH problems	12.8 (37.2)
Accidents at work in companies where I worked as OP	9.5 (27.7)
<b>The assistance provided by the Local Public Health Authority relating to OSH problems may increase the effectiveness of the activities carried out by OPs</b>	<b>%</b>
Strongly agree	18.2
Agree	33.8
Neither agree nor disagree	32.4
Disagree	10.9
Strongly disagree	4.7
<b>The workshops and training events organized by the Local Public Health Authorities may increase the effectiveness of the activities carried out by OPs</b>	<b>%</b>
Strongly agree	18.0
Agree	33.5
Neither agree nor disagree	32.0
Disagree	13.0
Strongly disagree	3.5
<b>The control and inspection activities of the Local Public Health Authorities may induce OPs to change some aspects of their profession</b>	<b>%</b>
Strongly agree	9.3
Agree	23.8
Neither agree nor disagree	43.9
Disagree	19.2
Strongly disagree	3.8
<b>The inspection activities of the Local Public Health Authorities is effective in improving health and safety at work</b>	<b>%</b>
Strongly agree	6.9
Agree	19.0
Neither agree nor disagree	40.8
Disagree	25.3
Strongly disagree	7.9
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases?</b>	<b>%</b>
Yes	55.0
No	45.0
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work?</b>	<b>%</b>
Yes	52.4
No	47.6
<b>Degree of complexity encountered by OPs in the interaction with the NHS structures related to... **</b>	<b>Mean score±SD</b>
Find a structure of the NHS that could help in diagnosing an occupational disease or assessing fitness for work	2.68±1.40
Contact a structure of the NHS that could help in diagnosing an occupational disease or assessing fitness for work	2.73±1.37
<b>Degree of effectiveness of the NHS facilities related to... ***</b>	<b>Mean score±SD</b>
Perform the clinical and/or diagnostic tests required by the OP	3.26±1.12
Usefulness in solving the specific problem (diagnosis of occupational disease or assessment of fitness for work) posed by OPs	3.27±1.15
<b>In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker?</b>	<b>%</b>
Yes	81.2
No	18.8
<b>Are you agree with the following sentences regarding the cooperation between OPs and GPs? ****</b>	<b>Mean score±SD</b>
Workers do not facilitate the exchange of information between OPs and GPs	2.91±1.34
GPs do not seem interested in cooperating with OPs	3.03±1.30
The exchange of information is not useful for the purpose of health surveillance	1.72±1.08
The collaboration with GPs is difficult but always important for the protection of workers' health	3.84±1.15
The collaboration with GPs is difficult but important for the protection of workers who have been exposed to carcinogens	3.79±1.23

\*Multiple choice item;

\*\* Mean score±SD. Scale variable from 1 = Very simple to 5 = Very complex;

\*\*\* Mean score±SD. Scale variable from 1 = Very ineffective to 5 = Very effective;

\*\*\*\* Mean score±SD. Scale variable from 1 = Strongly disagree to 5 = Strongly agree.

## Discussion

The practice of OM is continually evolving in response to technological advances, changes in workplaces and production processes, emergence of new occupational risks and diseases and modifications of legislation on work and health<sup>18, 19</sup>. Therefore, it is not surprising that in the past three decades the traditional view of OM, consisting in preventing, evaluating, and managing adverse health effects from work and environmental hazards, primarily focusing on the interactions between work and health, has dramatically changed<sup>10, 18</sup>. In this connection, recently the American College of Occupational and Environmental Medicine highlighted that a modern OP is a leading expert on mitigating the impact of health conditions on work, pointing out that his professional activity includes not only the assessment of fitness for work and/or the advice on appropriate work restrictions, but also the management of EEs absences, the evaluation of work capacity, the prevention of work disability and the implementation of EEs wellness programs<sup>20</sup>.

However, to fully realize this wide range of functions, OPs must be able to collaborate effectively with other medical specialists. For example, several studies showed that an optimal cooperation between OPs and other physicians is essential in improving the quality of work, decreasing the duration of sick leave, preventing permanent work disability and increasing the effectiveness of rehabilitation for work<sup>8, 17, 21–25</sup>. Findings of these studies demonstrated that a poor level of communication between medical specialists (GPs, rheumatologists, rehabilitation physicians, pulmonologists) and OPs is frequently associated with ineffective disability management and delays in return to work<sup>17, 21, 22</sup>, whereas the application of innovative tools (i.e. workplace-based return to work interventions or JobReha discharge letter), that are able to improve the collaboration between OPs and other physicians, can accelerate the reintegration process and reduce work disability duration and costs<sup>23–25</sup>. Unfortunately, several studies from different countries showed that communication between OPs and different physicians, especially GPs, is often lacking or very poor, at best suboptimal and sometimes it may become adversarial, even if it should be noted that data on this topic are sorely limited<sup>2, 5, 7, 9, 15, 17, 22, 26</sup>. Consequently, considering that to the best of our knowledge the interaction between OPs and other physicians has not yet been explored in Italy, we conducted a national survey of Italian OPs to explore this topic, identifying two main areas of interest that is the relationships of OPs with the NHS

facilities and with the GPs.

In quantitative terms, it is remarkable the data relative to the fact that nearly all of the interviewed OPs (Table 2) have had contacts with the colleagues of the Departments for Prevention and Occupational Health and Safety of LPHA. This finding would suggest the presence of a significant collaboration between these two professional profiles. However, the qualitative analysis of the frequencies and of the reasons that led the OPs to come into contact with the LPHA suggested that in most cases this cooperation is the result of a “forced” interaction that occurs as a consequence of the institutional activities carried out by these public facilities of the NHS (Table 2). This assumption is supported also by the results obtained subdividing the sample according to number of companies served as OP and the total number of workers visited as OP that showed statistical significant differences with an increased frequency of contacts in groups with a higher number of companies or workers (Table 3). Moreover, the hypothesis that this type of collaboration is not looked for and probably not desired by OPs is confirmed by the fact that in other studies the exchange of information was always established on request of OPs, while in our case the contact between OPs and physicians of the LPHA was mainly initiated from the latter<sup>9, 17</sup>. Nevertheless, Italian OPs (particularly those who work as OP in a large number of companies; Table 3) consider extremely important the assistance and the training offer provided by the Departments for Prevention and Occupational Health and Safety of LPHA and this result, although it is not unexpected, is quite surprising if we take into account that only 12.8% of OPs requested assistance to these structures for problems relating to health and safety aspects in workplaces (Table 2). These conflicting results could be explained by assuming that OPs would like to improve their cooperation with physicians of the LPHA but, at the same time, they are afraid of being penalized for possible mistakes committed in performing their professional activity. Therefore, to achieve a larger and more satisfactory level of communication that is centered only on the workers’ health protection and is not biased by other factors (i.e. fear of economic sanctions) it would be necessary to develop communication strategies and tools that can enhance and make more accessible and independent the support and assistance functions of the LPHA.

Differently, the interaction of OPs with other medical specialists to request advices in order to diagnose occupational diseases or assess the fitness for work can be considered an example of excellent communication (Table 2). In fact, although there are no standardized procedures through

**Table 3. Main findings with statistically significant differences according to number of companies served as Occupational Physician (OP) and to total number of workers visited in a year (amount of medical examinations) by OP**

	Number of companies served as OP				p value		
	<10	10–25	26–50	>50			
<b>While performing your professional activity as OP have you had contacts with the Local Public Health Authority (Department for Prevention and Occupational Health and Safety) of the NHS? (%)</b>							
Yes	83.3	92.4	94.5	98.6	<0.001		
No	16.7	7.6	5.5	1.4			
<b>The assistance provided by the Local Public Health Authority relating to OSH problems may increase the effectiveness of the activities carried out by OPs (%)</b>							
Strongly agree	14.9	21.1	18.5	21.7	0.03		
Agree	32.1	33.7	32.1	34.6			
Neither agree nor disagree	39.4	27.6	35.2	26.1			
Disagree	9.2	12.6	8.0	13.7			
Strongly disagree	4.4	5.0	6.2	3.8			
<b>The workshops and training events organized by the Local Public Health Authorities may increase the effectiveness of the activities carried out by OPs</b>							
Strongly agree	13.5	20.3	14.7	24.0	0.001		
Agree	29.2	36.0	35.6	33.9			
Neither agree nor disagree	39.9	24.9	32.5	27.3			
Disagree	12.9	17.3	12.9	11.5			
Strongly disagree	4.4	1.5	4.3	3.3			
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%)</b>							
Yes	46.9	61.9	56.1	60.8	0.001		
No	53.1	38.1	43.9	39.2			
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%)</b>							
Yes	41.6	56.5	62.3	57.4	<0.001		
No	58.4	43.5	37.7	42.6			
<b>Degree of complexity encountered by OPs in interaction with NHS structures related to... (Mean score±SD)</b>							
Find a structure of the NHS that could help in diagnosing an occupational disease or assessing fitness for work	2.35±1.38	2.62±1.41	2.64±1.34	2.89±1.39	0.001		
Contact a structure of the NHS that could help in diagnosing an occupational disease or assessing fitness for work	2.35±1.35	2.58±1.32	2.83±1.32	2.97±1.39	<0.001		
<b>Degree of effectiveness of the NHS facilities related to... (Mean score±SD)</b>							
Usefulness in solving the specific problem (diagnosis of occupational disease or assessment of fitness for work) posed by OPs	3.52±1.13	3.25±1.15	3.11±1.15	3.20±1.10	0.007		
<b>In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%)</b>							
Yes	74.4	82.1	86.1	88.3	<0.001		
No	25.6	17.9	13.9	11.7			
	Number of workers (amount of medical examinations)						p value
	≤ 50	51–100	101–500	501–1,000	1,001–1,500	>1,500	
<b>While performing your professional activity as OP have you had contacts with the Local Public Health Authority (Department for Prevention and Occupational Health and Safety) of the NHS? (%)</b>							
Yes	62.7	76.2	86.9	95.0	99.4	99.3	<0.001
No	37.3	23.8	13.1	5.0	0.6	0.7	
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%)</b>							
Yes	36.7	37.7	44.3	56.0	58.8	73.3	<0.001
No	63.3	62.3	55.7	44.0	41.3	26.7	
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%)</b>							
Yes	30.8	39.3	41.8	49.8	68.6	63.9	<0.001
No	69.2	60.7	58.2	50.2	31.4	36.1	
<b>In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%)</b>							
Yes	64.2	67.2	78.5	84.7	87.3	89.7	<0.001
No	35.8	32.8	21.5	15.3	12.7	10.3	



**Table 4. Main findings with statistically significant differences according to performing other medical activities in addition to Occupational Physician (OP) profession**

	Other medical activities in addition to OP profession					<i>p</i> value
	Hospital physicians (medical and surgical branch)	GPs	Self-employed (medical and surgical branch)	None	Employed in public institutions	
<b>While performing your professional activity as OP have you had contacts with the Local Public Health Authority (Department for Prevention and Occupational Health and Safety) of the NHS?</b>						
Yes	90.6	87.7	92.2	96.2	89.5	0.007
No	9.4	12.3	7.8	3.8	10.5	
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%)</b>						
Yes	54.1	56.9	49.0	63.9	47.3	0.002
No	45.9	43.1	51.0	36.1	52.7	
<b>Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%)</b>						
Yes	49.2	53.0	47.1	60.9	41.7	<0.001
No	50.8	47.0	52.9	39.1	58.3	
<b>In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%)</b>						
Yes	79.2	82.1	71.3	89.3	77.6	<0.001
No	20.8	17.9	28.7	10.7	22.4	
<b>Are you agree with the following sentences regarding the cooperation between OPs and GPs? (Mean score±SD)</b>						
Workers do not facilitate the exchange of information between OPs and GPs	3.08±1.28	2.69±1.41	3.21±1.35	2.93±1.35	2.83±1.34	0.02
GPs do not seem interested in cooperating with OPs	3.19±1.27	2.60±1.27	3.21±1.28	3.10±1.28	2.99±1.33	<0.001
The collaboration with GPs is difficult but always important for the protection of workers' health	3.75±1.17	3.56±1.21	3.89±1.15	3.87±1.15	4.08±1.05	0.001
The collaboration with GPs is difficult but important for the protection of workers who have been exposed to carcinogens	3.69±1.22	3.68±1.30	3.96±1.23	3.72±1.27	3.98±1.12	0.041

which OPs can consult other physicians to submit a specific diagnostic question, the findings of this study demonstrated that to find and contact a structure of the NHS is not particularly complicated, whereas their ability in solving a specific problem (diagnosis of occupational disease or assessment of fitness for work) is retained significantly effective by OPs. Previous studies pointed out that OM is not a well understood specialty<sup>2, 26)</sup> and consequently an optimization of the interface between OPs and medical specialists can be obtained by raising, in the second group, the understanding of the competencies, contents, functions and limitations of OP's<sup>5, 9, 17)</sup>. In this regard, it is our opinion that the development of standardized procedures and protocols and/or the elaboration of specific guidelines to request specialist referral, focusing on work-related aspects and issues, would be extremely useful to further increase communication between OPs and other medical specialists.

In the last five years preceding the carrying out of this study almost all of respondents (81.2%) contacted a GP to have an exchange of information concerning the health conditions of a worker. Furthermore, these percentages are significantly higher in the groups of OPs who work

in a large number of companies or visit a large number of workers (Table 3). These results proved that in Italy an important communication between OPs and GPs exists. However, the data provided by this survey does not allow us to evaluate the quality and value of this collaboration. For example, with the data currently in our possession, we are unable to verify if the information provided by the OPs have led GPs to perform additional diagnostic tests to evaluate the health conditions of a worker/patient. Similarly, we do not know if the communication from OPs was followed by a reply from GPs. Nevertheless, the findings obtained in this study are particularly interesting since, providing the perception that OPs have of their relationship with GPs, highlighted some important critical aspects. First, it is quite clear that Italian OPs (Table 2) consider communication between these professionals very important in order to ensure adequate protection of workers' health (particularly of those who have been exposed to carcinogens). The high intrinsic value that OPs ascribe to cooperation with GPs is further confirmed by the data relating to the fact that the exchange of information is considered useful to carry out a more effective and relevant health surveillance. However, despite these important results it should be emphasized

that OPs believe that the realization of this communication is very difficult in their daily practice.

The main barriers and obstacles that hinder the creation of a full and collaborative interaction between OPs and GPs were highlighted by previous studies from several countries<sup>5, 9, 15, 17</sup>). In this regard, it has been noted that very often GPs had a lack of information about the OP's position, competencies and activities<sup>5, 15, 17</sup>). Furthermore, considering that OPs are often paid by employers their role and impartiality is frequently perceived as biased in favour of their paymaster<sup>26</sup>). In fact, a fairly common finding that is underlined in these studies is related to the fact that GPs believe that OPs serve employers more than EEs<sup>5, 15, 17</sup>) and consequently this suspicion about the independence of OPs leads to a significant lack of trust that in turn makes the specialists reluctant to share information with OPs<sup>9, 26</sup>). This distrust is perceived as very important also by the Italian OPs who showed a contrasting opinion about the real interest that GPs have towards their communication (mean score:  $3.03 \pm 1.30$ , Table 2). Therefore, it is likely that also in Italy the communication difficulties between these professionals can be attributed to the same factors mentioned above, even if results of this survey would suggest that workers might represent a barrier to this cooperation since they could not facilitate the exchange of information between OPs and GPs.

According to the opinion of Beach and Watt<sup>26</sup>) GPs who also work as OPs may be able to facilitate the interaction and communication between these two professional profiles. This is an interesting point of view that we evaluated subdividing the study population in different groups according to the performance of other medical activities in addition to OP profession (Table 4). Our data seem to support the hypothesis advanced by Beach and Watt<sup>26</sup>) since statistical significant differences were observed in particular regarding the OPs' perception of their collaboration with GPs. In fact, OPs who work also as GPs did not agree in believing that GPs are not interested in cooperating with OPs thus demonstrating a significant willingness to cooperate and an important confidence in the possibility of establishing a profitable and productive relationship between OPs and GPs.

Obviously, further studies are needed in order to thoroughly investigate the interactions and relationships between OPs and other healthcare professionals, particularly taking into account also the different point of view of the latter. In this regard, it is noteworthy to underline that the present field study is a OP survey, since the questionnaire was not provided to other professionals (i.e. GPs

or medical specialists). The lack of data concerning the opinion that GPs and medical specialists (but also of the colleagues working in the Departments for Prevention and Occupational Health and Safety of LPHA) have about the collaboration with OPs represents the main limitation of the study. In fact, it prevents us to analyze and hypothesize in more detail, especially from a qualitative point of view, the main difficulties that hinder the realization of a full and satisfactory collaboration between these professionals. Nevertheless, considering the paucity of data regarding this issue and the fact that this is the first attempt to investigate this topic in the Italian context, we believe that our findings provided interesting information and may represent a good starting point to more thoroughly assess the complex and faceted issue of cooperation between OPs and other healthcare professionals and to drive the realization of further investigations. Finally, another possible limitation of the study is related to the chosen tool (self-administered questionnaire) to carry out the survey which it is possibly associated with a lower involvement of respondents or difficulties in understanding and filling in the questionnaire. However, in this regard, we tried to overcome these problems providing to OPs, along with the questionnaire, a cover letter that explained in detail the aims of the research and gave, at the same time, as many as possible information and instructions on the proper understanding and filling of the questionnaire itself.

## Conclusions

The findings of this survey suggest that in Italy there is an important communication between OPs and other physicians and demonstrate an OP's favourable attitude toward working together especially with other medical specialists and GPs. However, important distinctions must be made about the fact that the collaboration with the physicians of the Departments for Prevention and Occupational Health and Safety of LPHA belonging to the NHS would not seem to be spontaneous. This type of cooperation is a natural consequence of the tasks and duties that are carried out by the LPHA and then we could define it as an "institutional" collaboration that can certainly be improved by strengthening and enhancing the assistance and training functions of these public institutions. On the other hand, the interaction of OPs with other medical specialist and GPs could undoubtedly take advantage of the elaboration and application of operational guidelines and standardized procedures of communication that, overcoming the current barriers, would guarantee to establish interdisciplinary collabora-

tion for the ultimate benefit of workers/patients. Therefore, future studies should analyze in more detail the obstacles that prevent the realization of optimal cooperation between these professionals and find out the needs of all the actors involved in this process.

## Acknowledgements

The Authors would like to thank the FNOMCeO, SIMLII and the Italian Ministry of Health for their contribution in the definition of the study sample, Prof. M. Barbaro, Prof. M. Imbriani, Prof. G. Muzi, Prof. C. Romano, Prof. L. Soleo, and Dr. G. Taino for their contribution in the definition and administration of the questionnaire. Special thanks also go to the surveyed occupational physicians for their valuable collaboration that made possible the realization of this manuscript.

## Competing Interests

The authors have no conflict of interest to declare.

## Funding

This study was supported by the Italian Ministry of Health, Programma per la Ricerca Sanitaria 2008 – tutela della salute nei luoghi di lavoro, Grant: Development of models for a permanent system of detection of the perception of the risk to health and safety in the workplace by employees and figures of prevention. RFPS 2008 1139036

## References

- 1) International Labour Office (2014) Safety and Health at Work: A Vision for Sustainable Prevention. International Labour Office: XX World Congress on Safety and Health at Work, Frankfurt, Germany.
- 2) de Bono AM (1997) Communication between an occupational physician and other medical practitioners—an audit. *Occup Med (Lond)* **47**, 349–56.
- 3) Moßhammer D, Manske I, Grutschkowski P, Rieger MA (2011) The interface between general practice and occupational medicine. *Arbeitsmed Sozialmed Umweltmed* **46**, 301–7.
- 4) Moßhammer D, Natanzon I, Manske I, Grutschkowski P, Rieger MA (2012) Deficiencies and barriers of the cooperation between German general practitioners and occupational health physicians? A qualitative content analysis of focus groups. *Z Evid Fortbild Qual Gesundhwes* **106**, 639–48.
- 5) Verger P, Ménard C, Richard JB, Demortière G, Beck F (2014) Collaboration between general practitioners and occupational physicians: a comparison of the results of two national surveys in France. *J Occup Environ Med* **56**, 209–13.
- 6) Arnaud S, Cabut S, Viau A, Souville M, Verger P (2010) Different reporting patterns for occupational diseases among physicians: a study of French general practitioners, pulmonologists and rheumatologists. *Int Arch Occup Environ Health* **83**, 251–8.
- 7) Lax MB, Grant WD, Manetti FA, Klein R (1998) Recognizing occupational disease—taking an effective occupational history. *Am Fam Physician* **58**, 935–44.
- 8) Beaumont D (2003) Rehabilitation and retention in the workplace—the interaction between general practitioners and occupational health professionals: a consensus statement. *Occup Med (Lond)* **53**, 254–5.
- 9) Moßhammer D, Natanzon I, Manske I, Grutschkowski P, Rieger MA (2014) Cooperation between general practitioners and occupational health physicians in Germany: how can it be optimised? A qualitative study. *Int Arch Occup Environ Health* **87**, 137–46.
- 10) Baker BA, Dodd K, Greaves IA, Zheng CJ, Brosseau L, Guidotti T (2007) Occupational medicine physicians in the United States: demographics and core competencies. *J Occup Environ Med* **49**, 388–400.
- 11) Harber P, Rose S, Bontemps J, Saechao K, Liu Y, Elashoff D, Wu S (2010) Occupational medicine practice: one specialty or three? *J Occup Environ Med* **52**, 672–9.
- 12) Harber P, Rose S, Bontemps J, Saechao K, Liu Y, Elashoff D, Wu S (2010) Occupational medicine practice: activities and skills of a national sample. *J Occup Environ Med* **52**, 1147–53.
- 13) Schaafsma F, Hulshof C, van Dijk F, Verbeek J (2004) Information demands of occupational health physicians and their attitude towards evidence-based medicine. *Scand J Work Environ Health* **30**, 327–30.
- 14) Anema JR, Jettinghoff K, Houtman I, Schoemaker CG, Buijs PC, van den Berg R (2006) Medical care of employees long-term sick listed due to mental health problems: a cohort study to describe and compare the care of the occupational physician and the general practitioner. *J Occup Rehabil* **16**, 41–52.
- 15) Buijs P, van Amstel R, van Dijk F (1999) Dutch occupational physicians and general practitioners wish to improve cooperation. *Occup Environ Med* **56**, 709–13.
- 16) Buijs PC, van Dijk FJ, Evers M, vd Klink JJ, Anema H (2007) Managing work-related psychological complaints by general practitioners, in coordination with occupational physicians: a pilot study. *Ind Health* **45**, 37–43.
- 17) de Buck PD, van Amstel RJ, Buijs PC, Maasen JH, van Dijk FJ, Hazes JM, Vliet Vlieland TP (2002) Communication between Dutch rheumatologists and occupational physicians in the occupational rehabilitation of patients with rheumatic diseases. *Ann Rheum Dis* **61**, 62–5.
- 18) Baker BA, Katyal S, Greaves IA, Rice HR, Emmett EA, Meyer JD, He W (2007) Occupational medicine residency

- graduate survey: assessment of training programs and core competencies. *J Occup Environ Med* **49**, 1325–38.
- 19) Van Dijk FJ (2000) Aims and contents of modern occupational health services. Helsinki: Finnish Institute of Occupational Health; People and work, research report 38. p 27–35.
- 20) Cloeren M, Gean C, Kesler D, Green-McKenzie J, Taylor M, Upfal M, Hodgson M, Adamo P, Harber P, McLellan R (2014) American College of Occupational and Environmental Medicine's Occupational and Environmental Medicine Competencies-2014: ACOEM OEM Competencies Task Force\*. *J Occup Environ Med* **56**, e21–40.
- 21) Anema JR, Van Der Giezen AM, Buijs PC, Van Mechelen W (2002) Ineffective disability management by doctors is an obstacle for return-to-work: a cohort study on low back pain patients sicklisted for 3–4 months. *Occup Environ Med* **59**, 729–33.
- 22) Beaumont DG (2003) The interaction between general practitioners and occupational health professionals in relation to rehabilitation for work: a Delphi study. *Occup Med (Lond)* **53**, 249–53.
- 23) Franche RL, Cullen K, Clarke J, Irvin E, Sinclair S, Frank J; Institute for Work & Health (IWH) Workplace-Based RTW Intervention Literature Review Research Team (2005) Workplace-based return-to-work interventions: a systematic review of the quantitative literature. *J Occup Rehabil* **15**, 607–31.
- 24) Schwarze M, Spallek M, Korallus C, Manecke IA, Teumer F, Wrbitzky R, Gutenbrunner C, Rebe T (2013) Advantages of the JobReha discharge letter: an instrument for improving the communication interface in occupational rehabilitation. *Int Arch Occup Environ Health* **86**, 699–708.
- 25) Williams RM, Westmorland M (2002) Perspectives on workplace disability management: a review of the literature. *Work* **19**, 87–93.
- 26) Beach J, Watt D (2003) General practitioners and occupational health professionals. *BMJ* **327**, 302–3.