

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

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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

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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 diseases¹). 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 physician², since the general practitioners (GPs) usually function as a gatekeeper

for specialists and other medical disciplines of the primary and secondary healthcare system^{3,4}. Consequently, GPs and other specialists may play a key role in the field of OM by detecting possible links between patients' health problems and occupation⁵. 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^{6,7}. 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 work⁸. 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 work⁵. 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 employability⁹.

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 2nd-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^{10–13}, and the studies that investigated the cooperation between OPs and GPs or other physicians^{2, 5, 6, 9, 14–17}, 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 (χ^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 ± 1.12 and 3.27 ± 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 ± 1.15), especially for workers who have been exposed to carcinogens (mean score: 3.79 ± 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

| | |
|---|------------------------------------|
| Gender | % |
| Male | 72.4 |
| Female | 27.6 |
| Age | % |
| <35 yr | 2.7 |
| 35–44 yr | 22.8 |
| 45–54 yr | 23.6 |
| 55–64 yr | 40.6 |
| ≥65 yr | 10.3 |
| Geographical area of residence | % |
| Northern Italy | 44.6 |
| Middle Italy | 21.5 |
| Southern Italy and Islands | 33.9 |
| Legal requirements to perform OP profession | % |
| 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 |
| Other medical activities in addition to OP profession* | % of responses (% of cases) |
| 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) |
| OP profession as...* | % of responses (% of cases) |
| 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) |
| N° of companies served as OP | % |
| <10 | 30.6 |
| 10–25 | 19.1 |
| 26–50 | 15.5 |
| >50 | 34.8 |
| Total number of workers seen as OP | % |
| ≤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 ± 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 ± 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)

| | |
|--|------------------------------------|
| 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? | % |
| Yes | 90.6 |
| No | 9.4 |
| For what reasons you came into contact with the Local Public Health Authority of the NHS? * | % of responses (% of cases) |
| 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) |
| The assistance provided by the Local Public Health Authority relating to OSH problems may increase the effectiveness of the activities carried out by OPs | % |
| Strongly agree | 18.2 |
| Agree | 33.8 |
| Neither agree nor disagree | 32.4 |
| Disagree | 10.9 |
| Strongly disagree | 4.7 |
| The workshops and training events organized by the Local Public Health Authorities may increase the effectiveness of the activities carried out by OPs | % |
| Strongly agree | 18.0 |
| Agree | 33.5 |
| Neither agree nor disagree | 32.0 |
| Disagree | 13.0 |
| Strongly disagree | 3.5 |
| The control and inspection activities of the Local Public Health Authorities may induce OPs to change some aspects of their profession | % |
| Strongly agree | 9.3 |
| Agree | 23.8 |
| Neither agree nor disagree | 43.9 |
| Disagree | 19.2 |
| Strongly disagree | 3.8 |
| The inspection activities of the Local Public Health Authorities is effective in improving health and safety at work | % |
| Strongly agree | 6.9 |
| Agree | 19.0 |
| Neither agree nor disagree | 40.8 |
| Disagree | 25.3 |
| Strongly disagree | 7.9 |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? | % |
| Yes | 55.0 |
| No | 45.0 |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? | % |
| Yes | 52.4 |
| No | 47.6 |
| Degree of complexity encountered by OPs in the interaction with the NHS structures related to... ** | Mean score±SD |
| 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 |
| Degree of effectiveness of the NHS facilities related to... *** | Mean score±SD |
| 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 |
| In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? | % |
| Yes | 81.2 |
| No | 18.8 |
| Are you agree with the following sentences regarding the cooperation between OPs and GPs? **** | Mean score±SD |
| 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^{18, 19}. 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^{10, 18}. 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 programs²⁰.

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^{8, 17, 21–25}. 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^{17, 21, 22}, 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^{23–25}. 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^{2, 5, 7, 9, 15, 17, 22, 26}. 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^{9, 17}. 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 | | | |
| 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? (%) | | | | | | | |
| Yes | 83.3 | 92.4 | 94.5 | 98.6 | <0.001 | | |
| No | 16.7 | 7.6 | 5.5 | 1.4 | | | |
| The assistance provided by the Local Public Health Authority relating to OSH problems may increase the effectiveness of the activities carried out by OPs (%) | | | | | | | |
| 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 | | | |
| The workshops and training events organized by the Local Public Health Authorities may increase the effectiveness of the activities carried out by OPs | | | | | | | |
| 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 | | | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%) | | | | | | | |
| Yes | 46.9 | 61.9 | 56.1 | 60.8 | 0.001 | | |
| No | 53.1 | 38.1 | 43.9 | 39.2 | | | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%) | | | | | | | |
| Yes | 41.6 | 56.5 | 62.3 | 57.4 | <0.001 | | |
| No | 58.4 | 43.5 | 37.7 | 42.6 | | | |
| Degree of complexity encountered by OPs in interaction with NHS structures related to... (Mean score±SD) | | | | | | | |
| 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 | | |
| Degree of effectiveness of the NHS facilities related to... (Mean score±SD) | | | | | | | |
| 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 | | |
| In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%) | | | | | | | |
| 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 | |
| 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? (%) | | | | | | | |
| 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 | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%) | | | | | | | |
| 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 | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%) | | | | | | | |
| 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 | |
| In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%) | | | | | | | |
| 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 | |
| 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? | | | | | | |
| Yes | 90.6 | 87.7 | 92.2 | 96.2 | 89.5 | 0.007 |
| No | 9.4 | 12.3 | 7.8 | 3.8 | 10.5 | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to diagnose occupational diseases? (%) | | | | | | |
| Yes | 54.1 | 56.9 | 49.0 | 63.9 | 47.3 | 0.002 |
| No | 45.9 | 43.1 | 51.0 | 36.1 | 52.7 | |
| Have you contacted hospitals or other facilities of the NHS to request advices in order to assess fitness for work? (%) | | | | | | |
| Yes | 49.2 | 53.0 | 47.1 | 60.9 | 41.7 | <0.001 |
| No | 50.8 | 47.0 | 52.9 | 39.1 | 58.3 | |
| In the last five years have you contacted a GP to have an exchange of information concerning the health conditions of a worker? (%) | | | | | | |
| Yes | 79.2 | 82.1 | 71.3 | 89.3 | 77.6 | <0.001 |
| No | 20.8 | 17.9 | 28.7 | 10.7 | 22.4 | |
| Are you agree with the following sentences regarding the cooperation between OPs and GPs? (Mean score±SD) | | | | | | |
| 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^{2, 26)} 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^{5, 9, 17)}. 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^{5, 9, 15, 17}). In this regard, it has been noted that very often GPs had a lack of information about the OP's position, competencies and activities^{5, 15, 17}). Furthermore, considering that OPs are often paid by employers their role and impartiality is frequently perceived as biased in favour of their paymaster²⁶). 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^{5, 15, 17}) 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^{9, 26}). 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 ± 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 Watt²⁶) 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 Watt²⁶) 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.

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Competing Interests

The authors have no conflict of interest to declare.

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