Administration safety and occupational risks relationship with job position training quality and needs of medical public health services workforce correlated by political leadership interventions

Ioannis Pantelis Adamopoulos 1,2*, Niki Fotios Syrou 3,4

1 Hellenic Republic Region of Attica, Department of Environmental Hygiene Public Health and Sanitarian Inspections, West Sector of Athens, Athens, GREECE
2 Research Center of Excellence in Risk & Decision Sciences, School of Sciences, Department of Health Sciences, School of Medicine, European University Cyprus, Nicosia, CYPRUS
3 Department of Physical Education and Sport Science, University of Thessaly, Karies, Trikala, GREECE
4 Medical School, National and Kapodistrian University of Athens, Athens, GREECE

* Corresponding author: Ioannis Pantelis Adamopoulos E-mail: adamopoul@gmail.com ORCID: 0000-0002-4942-7123
Received: 10 May 2023 Accepted: 09 August 2023

ABSTRACT

**Background:** Workplaces are changing, work exposures are changing, and medical public health workers’ ability to continue doing productive and healthy work is being impacted by social, technical, environmental, economic, and political pressures. This research has shown the strong link between safety and occupational risks relationship with job position training quality and needs, and their consequences on medical public health services workforce. To determine the severity of the impact as signs of presents a range of threats provides evidence of the perceived risks predictors of these needs, although the sociodemographic characteristics describe the frequency of risk exposure.

**Methods:** This research is a nationwide study in Greece, construction March to June of 2022. For data collection, a web link was distributed to respondents by email. Providing n=185 responses, safety and occupational risks classification, and were measured with a questionnaire instrument developed, and also a questionnaire developed instrument for measured training needs and quality. ANOVAs one-way test to define variable properties job position, training quality, and training needs correlated by political leadership interventions factor (F).

**Results:** Chemical risks scores for head of office (median [Mdn]=2.13) were higher to all other job position, $\chi^2=10.991$, p<0.05. Biological risks for head of office (Mdn=3.08) were higher compared to all other categories, $\chi^2=20.770$, p<0.01. Psychosocial risks scores for employees (Mdn=3.08) were higher compared to all other categories, $\chi^2=11.349$, p<0.05. Organizational risks scores for employees (Mdn=2.84) and head of office (Mdn=2.78) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, $\chi^2(4)=18.278$, p<0.01. Perceived training quality 43.78% of participants rate as low ($\beta=0.195$, p=0.002), and 65.41% high training needs.

© 2023 by the authors; licensee Modestum. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/).
Conclusions: Adding new data to advance the quality of public health services provision organizational support, benefits, resources, and personal protective equipment. Assist in the planning and decision-making phase management provide educational training programs of medical public health workforce to ensure sustainability and optimal performance. There has never been a greater need for trustworthy and unbiased information to assist and guide policymakers, employers, and employees as they go forward.

Keywords: medical public health workforce, occupational risk, administration & job position training, occupational safety & health, medical public health services

INTRODUCTION

This study provides evidence of the safety and occupational risks that are perceived by employees in medical public health services workforce (MPHSW) in Greece, such as working at extreme weather conditions, facing various biological risks, multi-hour computer work, lack of personal protective equipment, human and technical resources, as well as organizational risks of overlapping responsibilities and shortcomings in the legal framework.

To explore the educational training needs and training quality and its association with safety and occupational risks, severity of exposure and frequency of impact of occupational hazards. In addition, this study provides in terms of complete classes of occupational hazards specifically addressing the particularities of the medical public health workforce profession. Perceived risks levels were affected by demographics and more specifically the workplace environment (urban vs. rural) [1, 2]. Environmental factors, such as job characteristics, pay, equality, and justice in the workplace, have a significant impact on the satisfaction of the individual with his work [3].

Research and publications of articles and international conferences papers have been done and published on the safety and occupational organizational factors and socio-psychological risks in the work environment of public health services in Greece also international, inform how they affect employees [1-7]. Occupational safety and performance affected by the policies and administration of public health authority services [8-13]. Job dissatisfaction among employees and the need for training and quality education in public health workers is another determinant of performance and quality service delivery to the society.

Burnout is observed in employees and consequently affected and increased by political interventions while the pressure from politicians-administrators combined with urban and semi-urban environments have a negative factor in the operation of workforce in medical public health services, especially this was reflected in the period of during COVID-19 pandemic [1, 2, 7, 8, 13-16]. In the frame of risk factors, the combination of public health and occupational health and safety (OHS) as well as public hygiene and occupational safety, is addressed in this study following a comprehensive approach.

That is to say that this study is more comprehensive relative to possible occupational hazards of employees, incorporating already established but also new evidence of ergonomic and psychosocial risks (i.e., harassment, verbal abuse) that are increasing in current working conditions worldwide. Job risk categories were produced, and the proposed classification was verified scientifically, i.e., by examining the validity and reliability of each proposed risk category with pilot study [1].

The examination of job risks and employees' risk perceptions is becoming increasingly important for the protection of health and safety at work, as well as the prevention of the consequences of harmful factors in the workplace [4, 11]. Based on the reports, complaints and working conditions, responsibilities, and duties of MPHSW, as well as the personal observations and remarks of the researchers, which are confirmed by the international literature, this research was selected in such an important profession that remains neglected despite the fact that it contributes significantly to the protection of society [16].

The importance for the operation MPHSW during the COVID-19 pandemic, global financial crisis, decreased salaries and social instability, the results on safety occupational risks, contribute significantly to the working conditions and the impact on the performance of employees of MPHSW [8]. The multidisciplinary nature of MPHSW, different environments and materials of inspected facilities, out-of-office work, and the responsibilities constitute the basic elements that the importance of health, safety and occupational risks relationship with job position training quality and needs in MPHSW and organizations [1, 5, 17].

The risks that are related to the work life of MPHSW, although this specific occupation possesses a range of threats to physical and psychological health of employees,
similar to a variety of risks that have been reported by the extended literature for public healthcare workers and law enforcement officers [1-7]. Environmental factors, such as job characteristics, pay, equality, and justice in the workplace, have a significant impact on the satisfaction of the individual with his work [13]. Perceived job risks stress, burnout and job satisfaction levels were affected by demographics and more specifically the workplace environment (urban vs. rural) [4, 12].

The pilot study [1] in Greece proposed a classification of OHS risks for PHIs similar for MPHSHW, namely physical, chemical, biological, ergonomic, organizational, and psychosocial risk factors [1, 4, 5, 10]. Economic slowdown of recent decades have increased the probability of the existing occupational hazards and have also introduced new risks for employees, such as psychological risks and burnout [15, 18].

Psychosocial risks for MPHSHW include factors that may adversely affect the emotional state of employees [19] and are of uncontrolled exposure [20], ranging from excessive job demands and workload [21] to lack of human and material support [22, 23], poor psychological safety climate [24, 25], moral harassment and violence [17, 26].

Therefore, the purpose aimed to investigate of this study was to assess the perceived job risks experienced by in Greece and examine the association between job risks, and to explore the educational training needs and training quality of MPHSHW in Greece. The research model of the present study is based on the pilot study [1], to adopt model to the purpose of this study and the setting of public health services in Greece, several modifications were implemented. More specifically verbal abuse, along with other factors such as harassment category of risks.

Training needs (health and safety at work, stress management, health services administration, crisis management in the health sector-natural disasters, personal protective equipment [masks, gloves, antiseptics, labor investor, etc.], protection against biological agents, and protection from chemical agents), according to proposed classification. Medical public health workforce was of immediate need of high-quality training, infrastructure, human and technical resources as well as competitive salaries, opportunities for professional development. Training has been documented as a key part of health and safety at work [27]. Occupational training is needed to ensure the high quality of outcomes [28-30].

**Study Objectives**

1. To investigate the perceived job risks experienced severity of exposure and frequency of impact of safety and occupational hazards, relationship with political job position of MPHSHW in Greece.

2. To explore the educational training needs and training quality of MPHSHW in Greece and its association with the perceived administration safety and occupational risks hazards.

Therefore, the purpose of this study was to assess the perceived safety and occupational risks experienced by MPHSHW in Greece, aimed to investigate the training needs and training quality of Greek MPHSHW.

**MATERIALS AND METHODS**

This research is a cross-sectional study, data were collected online mainly through state board directly from a sample of employees of MPHSHW in Greece, at one time-period, and statistical analysis was utilized to uncover possible associations between the data. An online survey was created, and the web link was distributed to respondents by email, through the National Public Health Inspectorate Administration, while anonymity was retained. The research was approved by the Scientific Council of the Department of Public Health Services.

**Sample**

The sample of this study comprised 185 employees of MPHSHW in Greece. We should point out that according to the information that existed from the human resources directorates and the organizational charts of the services of public health organizations. The active professionals had the position of employees, head of departments, head of office, directors or supervisors in the directorates of public health control and environmental hygiene of all the regions prefectures, Ministry of Health of Greece, and the Hellenic Food Authority of all peripheral directorates.

Took place between March 2022 and June 2022, the sampling process was carried out by first communicating via email to explain the purpose and frame of the research study and assure them that the survey will be anonymous, optional, and encoded. Public health services organizations and departments nationwide participants could be working in any capacity unit.

**Data Collection**

In this study a questionnaire was utilized for data collection, which consists of three parts:
In section A, the questions cover the participant’s basic demographics (gender, age, marital status) as well as job status and work experience.

Section B included a questionnaire designed to record participants’ perceptions of the possible types of safety & occupational risks and their intensity. To investigate the perceived job risks experienced, severity of exposure and frequency of impact of occupational hazards. In the development of the risk assessment questionnaire, the content of the questionnaire was based on the findings of pilot study research [1].

More specifically, physical, chemical, biological, ergonomic, a psychosocial hazards and organizational risk factors were included, and the respondent had to answer with the frequency of exposure and the severity of consequences in a 5-point Likert scale (0=not at all/never, 4=very often/very high).

Section C included a short set of questions to assess training quality (two items) and training needs (seven items) of MPHSW, as training satisfaction [31]. Training needs included health and safety of work, stress management, health services administration, crisis management in the health sector, natural disasters, personal protective equipment (masks, gloves, antiseptics, labor investor, etc.), protection against biological agents, and protection from chemical agents. The answers were given on a 5-point Likert scale (1=strongly disagree, 5=strongly agree).

**Statistical Analysis**

Data were summarized with the use of descriptive statistics. Frequency analysis was performed for nominal and ordinal demographic and job-characteristic variables, while for scale variables mean, median (Mdn), standard deviation (SD), and range measures were calculated.

Cronbach’s alpha was calculated to assess the reliability of each questionnaire and sub-scale. Based on the scoring of each survey section, new variables were calculated, and they were examined relative to their distribution characteristics with the Shapiro-Wilk test, that showed non-normal distributions leading to non-parametric statistical test selection.

All demographics and job characteristics were examined in relation to job risks. Significant differences between groups of employees relative to workplace environment (urban, rural and semi-urban) were identified and reported Kruskal-Wallis tests. The associations between job risks, and training needs, and training quality were calculated with non-parametric correlation analysis (Spearman’s coefficient). Since the main aim of this study was to investigate how the perceived job risks of Greek of MPHSW are associated to training needs, and training quality, job risks were considered as independent variables.

Finally used ANOVA one-way test to define variable properties job position, training quality and training needs effected for political leadership interventions factor (F). Statistical analyses and met analysis were performed using the statistical package SPSS v.23 and statistical significance was set at p<0.00.

**RESULTS**

The population under study, 37.84% men (n=70) and 62.16% women (n=115) with a mean age of 48.96 years (SD=8.22) and a mean work experience of 15.84 years (SD=8.53). Most participants were employees (64.86%), yet 12.97% had the position of head of office, 11.89% of head of department, and 10.27% supervisor or director.

Most participants were married (63.24%) and had children (70.27%). The prevailing educational level was college/university (60%) followed by MSc/MA or postgraduate diploma (36.76%) and PhD (3.24%). Most participants lived (56.22%) in an urban environment, while 27% lived in a provincial city (semi-urban environment) and 16.76% in village-town (rural environment).

Regarding their workplace most participants worked (61.08%) in an urban environment, 19.46% in a provincial city (semi-urban environment) and 19.46% in village-town (rural environment). Table 1 presents the results of the Kruskal-Wallis tests of job risks in relation to job position. Chemical risks scores for head of office (Mdn=2.13) were higher compared to all other categories, a difference that was statistically significant, $\chi^2=10.991$, p<0.05.

Moreover, biological risks scores for head of office (Mdn=3.08) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, $\chi^2=20.770$, p<0.01. Psychosocial risks scores for Employees (Mdn=3.08) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, $\chi^2=11.349$, p<0.05.

Organizational risks scores for employees (Mdn=2.84) and head of office (Mdn=2.78) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, $\chi^2(4)=18.278$, p<0.01.
Table 1. Univariate analyses of job risks in relation to job position (Kruskal-Wallis test)

<table>
<thead>
<tr>
<th>Employee</th>
<th>Physical</th>
<th>Chemical</th>
<th>Biological</th>
<th>Ergonomic</th>
<th>Psychosocial</th>
<th>Organizational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.1847</td>
<td>2.0315</td>
<td>2.7444</td>
<td>2.9264</td>
<td>2.8833</td>
<td>2.7901</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>.76964</td>
<td>.81619</td>
<td>.88004</td>
<td>.73074</td>
<td>.69111</td>
<td>.68070</td>
</tr>
<tr>
<td>Median</td>
<td>2.3333</td>
<td>2.1071</td>
<td>2.8333</td>
<td>3.0000</td>
<td>3.0833</td>
<td>2.8438</td>
</tr>
<tr>
<td>Range</td>
<td>3.33</td>
<td>3.43</td>
<td>3.33</td>
<td>3.33</td>
<td>3.25</td>
<td>3.25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Head of office</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical</td>
<td>2.0347</td>
<td>.70365</td>
<td>2.3155</td>
<td>3.0590</td>
<td>3.0347</td>
<td>.69951</td>
<td>2.5000</td>
<td>3.0833</td>
<td>2.9167</td>
<td>.65084</td>
<td>.63127</td>
<td>.62890</td>
<td>.80367</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>2.1667</td>
<td>.91458</td>
<td>1.5357</td>
<td>2.0341</td>
<td>2.6894</td>
<td>.88029</td>
<td>2.1250</td>
<td>2.6667</td>
<td>2.4583</td>
<td>.88066</td>
<td>.50473</td>
<td>.82518</td>
<td>.87282</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological</td>
<td>2.67</td>
<td>.87061</td>
<td>2.93</td>
<td>2.17</td>
<td>2.33</td>
<td>.92044</td>
<td>2.7327</td>
<td>2.00</td>
<td>3.17</td>
<td>.74617</td>
<td>1.00664</td>
<td>.92956</td>
<td>1.03798</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ergonomic</td>
<td>1.8333</td>
<td>.50473</td>
<td>1.6786</td>
<td>2.1250</td>
<td>2.6667</td>
<td>.50473</td>
<td>2.4167</td>
<td>3.1667</td>
<td>2.5000</td>
<td>.88066</td>
<td>.50473</td>
<td>.82518</td>
<td>.87282</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychosocial</td>
<td>3.33</td>
<td>.87061</td>
<td>2.79</td>
<td>3.25</td>
<td>3.25</td>
<td>.92044</td>
<td>3.33</td>
<td>3.33</td>
<td>3.33</td>
<td>.74617</td>
<td>1.00664</td>
<td>.92956</td>
<td>1.03798</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational</td>
<td>1.9649</td>
<td>.50473</td>
<td>1.7895</td>
<td>2.2675</td>
<td>2.7327</td>
<td>.92044</td>
<td>2.0770</td>
<td>4.012</td>
<td>11.349</td>
<td>.74617</td>
<td>1.00664</td>
<td>.92956</td>
<td>1.03798</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kruskal-Wallis</th>
<th>$\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>low risk</td>
<td>5.950</td>
<td>0.114</td>
</tr>
<tr>
<td>high risk</td>
<td>10.991</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Figure 1. Total scores in each risk category (low risk-high risk) (Source: Authors’ own elaboration)

Descriptive Statistics

Descriptive statistics (mean values and SDs) of the perceptions relative to the 33 different job risk factors. The summary statistics for the total scores per risk category were calculated as averaged values of the responses in frequency and severity perceptions and are presented in Table 1.

Physical risks of working outdoors at extreme high/low temperatures, chemical risks of insufficient ventilation of workplaces, biological risks (exposure to viruses, fungi, pests and bacteria, lack of cleanliness in the workplace), ergonomic risks (multi-hour office work and using a computer), psychosocial risks (excessive workload, pressure from audited citizens, verbal abuse by members of the public, work under psychosomatic stress and political leadership interventions) and organizational risks (lack of equipment, office materials, official vehicles for inspections, overlapping responsibilities and shortcomings in the legal framework, lack of conflict management framework and lack of regular training, have presented above average ratings, as perceived by the participants of this study. Following, frequencies of participants providing above average (>2) and below average (<2) total scores in each risk category were calculated and the results are presented in Figure 1.

Associations Between Job Risks and Training Needs & Quality

The associations between job risks, and training needs & quality were examined with Spearman correlation coefficients, as presented in Table 2.

It is shown that had medium to strong positive association with biological ($r=0.371, p<0.01$), ergonomic ($r=0.418, p<0.01$) and organizational ($r=0.351, p<0.01$) risks, and strong positive correlation with psychosocial risks ($r=0.513, p<0.01$). Moreover, training needs are positively associated with physical ($r=0.337, p<0.01$) and organizational ($r=0.350, p<0.01$) risks. Physical risks and chemical risks they do not
Table 2. Spearman correlation coefficients between job risks, training quality, & training needs

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical risks</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical risks</td>
<td>.666**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological risks</td>
<td>.450**</td>
<td>.589**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ergonomic risks</td>
<td>.360**</td>
<td>.448**</td>
<td>.609**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychosocial risks</td>
<td>.349**</td>
<td>.446**</td>
<td>.579**</td>
<td>.628**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational risks</td>
<td>.363**</td>
<td>.359**</td>
<td>.523**</td>
<td>.517**</td>
<td>.656**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training quality</td>
<td>0.098</td>
<td>-0.041</td>
<td>-0.032</td>
<td>-0.06</td>
<td>-0.057</td>
<td>-0.012</td>
<td>-0.071</td>
<td>-0.132</td>
<td>-0.136</td>
<td>-0.12</td>
<td>.194**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Training needs</td>
<td>.337**</td>
<td>.185*</td>
<td>.185*</td>
<td>.175*</td>
<td>.260**</td>
<td>.350**</td>
<td>0.011</td>
<td>-1.515*</td>
<td>-2.722*</td>
<td>-0.093</td>
<td>-0.136</td>
<td>0.02</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. **p< 0.01 level (2-tailed) & *p<0.05 level (2-tailed)

Figure 2. Training quality level (1-6): low (≤3), medium (3, 4), & high (≥4)/training needs level (0-4): low (≤2), medium (2, 3), & high (≥3) (Source: Authors’ own elaboration)

Figure 3. Median values of job risk scores per job risk category & job position (Source: Authors’ own elaboration)

have important correlations with training needs. Training quality as low 43.78% while only 17.30% rate training quality as high, 64.51% of participants report high training needs while only 8.11% report low training needs presented in Figure 2.

Figure 3 presents the results of the Kruskal-Wallis tests of job risks in relation to job position. Chemical risks scores for head of office (Mdn=2.13) were higher compared to all other categories, a difference that was statistically significant, \( \chi^2 = 10.991, p < 0.05 \). Moreover, biological risks scores for head of office (Mdn=3.08) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, \( \chi^2 = 20.770, p < 0.01 \). Psychosocial risks scores for employees (Mdn=3.08) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, \( \chi^2 = 11.349, p < 0.05 \). Organizational risks scores for employees (Mdn=2.84) and head of office (Mdn=2.78) were higher compared to all other categories, and the Kruskal-Wallis test indicated that this difference was statistically significant, \( \chi^2 (4) = 18.278, p < 0.01 \).

Table 3 presents the results of the ANOVAs one-way test to define variable properties job position, training quality and
training needs correlated by political leadership interventions factor (F).

DISCUSSION

Training has been documented as a key part of health and safety at work [27]. During the COVID-19 pandemic, PHSW and healthcare workers faced greater biological risks of infections and therefore personal protective equipment has been found to be of great importance for their health and safety [9, 32]. OHS, education take place in universities within bachelor diploma (BSc), master diploma (MSc), and doctoral (PhD) programs studies, in professional contexts (internship, on-the-job training, continuous personal development, industry-based research), and inspection education (learning from company inspection or other inspectorates). In terms of health literacy [33, 34], education and training on basic medical matters may help prevent pandemics and ensure self-care for the public, mainly because expanding the formal healthcare system to every town and village is financially almost impossible [35].

Education and training are also important for leaders of healthcare professions, general practitioners, and other healthcare professionals to ensure their capability of helping people to remain or to return to work, enhancing the occupational health function [36]. Training of OHS specialists is a key issue for the protection of the health and safety of workers and the public, especially because OHS specialists are experts in resolving many issues simultaneously, emphasizing the need for OHS education and training in a wide range of systems approaches [27]. E-learning training programs were also introduced for OHS education of migrant industrial workers in Korea [30, 37], described the proposed methods of OHS training, such as risk mapping, body mapping, storytelling with graphic materials, simulations, role plays, computer-based instructions, quizzes and games and art-based approaches.

Biological risks and especially exposure to viruses have been identified as important for Greek PHIs, which relates to the inspection of healthcare and welfare facilities, as well as restaurants, since infectious diseases from biological agents are the most frequent among occupational diseases [38, 39]. Moreover, the factor of exposure to viruses may also be attributed to the fact that this study took place during the COVID-19 pandemic.

Training needs were associated with physical, biological, ergonomic, psychosocial, and organizational risks, but none of the risk categories were significant predictors of training needs. In this frame, an ongoing communication based on the specific training needs and circumstances of employees, between the organization and the training institutions is a key factor to facilitate best outcomes [40]. Yet, job risks were not significant predictors of training needs, while demographics, gender, age, educational level and workplace environment were the only significant predictors. More specifically, younger, women employees and employees with lower educational levels in urban workplace environments have higher levels of training needs [9, 16].

STUDY’S LIMITATIONS AND SUGGEST NEW LINES OF RESEARCH

Online sampling biased respondents may choose to respond and therefore affect the sample. Cross-sectional design, which does not allow for the examination of causal effects between the variables. Suggested study in the Republic of Cyprus and countries of southern Europe that were hit most severely by the financial crisis and therefore are expected to have limited resources, and technical, equipment for personal protection equipment and training opportunities. Examine other facets such as motivation and commitment, providing a deeper understanding of the effects that perceived job risks have on the qualitative aspects of work and hence the performance and wellbeing of employees, would help to develop country- or cluster-specific strategies to enhance the work conditions.
CONCLUSIONS

This research has shown the strong link between safety and occupational risks relationship with job position training quality and needs, and their consequences on PHSW. Perceptions of job risks have been studied based on the classification proposed, including physical, chemical, biological, ergonomic, psychosocial, and organizational risks. Overall, psychosocial and organizational risk factors were perceived as the most important by Greek MPHSW, followed by ergonomic, biological, physical and chemical risks. The solid facts and results of biological, ergonomic, psychosocial and organizational factors, are perceived as hazardous by 87.00% of participants gave high ratings to psychosocial risks and ergonomic risks, followed by 78.00% for organizational risks, and 74.00% for biological risks. Physical risks and chemical risks are less prevalent (55.00% and 56.00%, respectively). Most participants (65.41%) reported high training needs (health and safety at work, stress management, personal protective equipment, protection against biological agents and protection from chemical agents). This study contributes to the literature were provided relative to the safety and occupational hazards risks that are encountered by Greek MPHSW updating the evidence from a limited global literature. The risk assessment questionnaire and checklist that was created in response to the results of this study may be a very useful tool for the managers of public health organizations in health and occupational safety. Assist in the planning and decision-making phase management provide educational training programs of medical public health workforce to ensure sustainability and optimal performance, for specialists (occupational safety technicians, occupational physicians, managers, etc.) to be able to assess the occupational hazards of health professionals and especially MPHSW related with the job position correlated by political leadership interventions.

Author contributions: All authors were involved in concept, design, collection of data, interpretation, writing and critically revising the article. All authors approved the final version of the article. Supervision, and Project Administration, I.Adamopoulos.

Funding: The authors received no financial support for the research and/or authorship of this article.

Acknowledgements: The authors would like to thank the participants.

Ethical statement: The authors stated that ethical approval of the research was carried out in accordance with the rules and current bioethics legislation, all the conditions and specifications of the national and European Union legislation for the protection of personal data as well as in accordance with the instructions of the quality assurance and the study was carried out according to the Declaration of Helsinki.

Declaration of interest: The authors declare no competing interest.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES


10. Adamopoulos IP. Epidemiological surveillance, detection and classification of infection in community from SARS-CoV-2, and control in municipal wastewaters in Cyprus and reuse water. SSRN. 2022.


35. WHO. Preparing for pandemics. World health Organization; 2022. Available at: https://www.who.int/westernpacific/activities/preparing-for-pandemics


