

Core Competencies Required for Occupational Medicine Practice in Brazil

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Abstract

Objectives: The aim of this study was to present the core competencies required for occupational medicine practice in Brazil, developed by the Brazilian National Association of Occupational Medicine (ANAMT) and to describe the process and the results of this assessment in order to guide continuing medical education and board-certified occupational medicine specialists.

Methods: A Delphi study was carried out using a questionnaire based on the literature review, a previous Brazilian matrix of competencies, an expert panel review and validated by 223 Occupational Physicians (OP), members of ANAMT.

Results: An integrated approach is essential for the effective accomplishment of the competencies. A matrix includes five domains: moral judgment and professionalism; workers' comprehensive health; occupational risk assessment and health protection; occupational health, safety and environment policies, organization and management and transversal competences as legal requirements, teamwork, leadership and conflict management, communication and interpersonal relationship, knowledge management. A total of 71 specific competencies were proposed. Moral judgment or professionalism was elected an essential domain.

Conclusion: This study reinforces the importance of an integrated matrix to address Occupational Medicine (OM) education. Moral judgment or professionalism remains cut the biggest challenge in OM, According to the OP. Further and periodic reviews are required to adjust competencies to new or modified OM practices and changes in the workers' health conditions, as well providing guidance for ongoing education. These findings may be applied to other countries in Latin America.

Keywords: Professional Competencies; Occupational Medicine; Education; Continuing; Certification

Introduction

The aim of OM is fostering workers' health promotion and protection, preventing work related injuries and diseases, adapting work processes and environment and managing disabilities. Occupational medicine (OM) is in continuous evolution due to changes of work environment and conditions, workforce profile, new or modified public policies and legal framework. Occupational Physicians (OP) have to deal with different stakeholders, including employers and employees, health providers, social organizations, unions, public and private institutions, training entities, insurers, the legal system, cut what introduce that requires broader competences compared to other medical specialities.

In this scenario, a continuous process to develop or improve new competences is required. Many international references have been proposed in order to attend these needs. In the United States of America, the American College of Occupational and Environmental Medicine (ACOEM) updated the OM competencies, in 2014 [1]. The Japanese Society of Occupational Health, Mori, *et al.* revised their orientations, in 2015 [1]. In the United Kingdom (UK), Lalloo, *et al.* [3] used a Delphi methodology to define 12 domains of OM competences, in

2016. The Pan American Health Organization published a guideline for public health professionals, in 2013 [4]. European Union defined a set of training requirements for OM, in 2012 [5].

Brazil applies the Perrenoud., *et al.* [6] concept of professional competence that involves the ability to mobilize multiple resources as theoretical knowledge, professional skills and experiences to solve concrete problems. Gontijo., *et al.* [7] emphasizes that medical competence is expressed in the capacity to mobilize knowledge, information, rules and values, correctly and timely, often under time pressure and with uncertainties due to the lack of complete or reliable data.

The Brazilian National Association of Occupational Medicine (ANAMT) is in charge to develop and update OM competences in Brazil and its first version was published in 2003 [8]. This study describes the process and results to update these competences, in order to guide the continuing education for occupational physicians and to provide adequate criteria for the board certification in OM.

Methods

A Delphi methodology with minor adjustments was adopted in this study that was approved by the Ethical Committee and carried out in six phases:

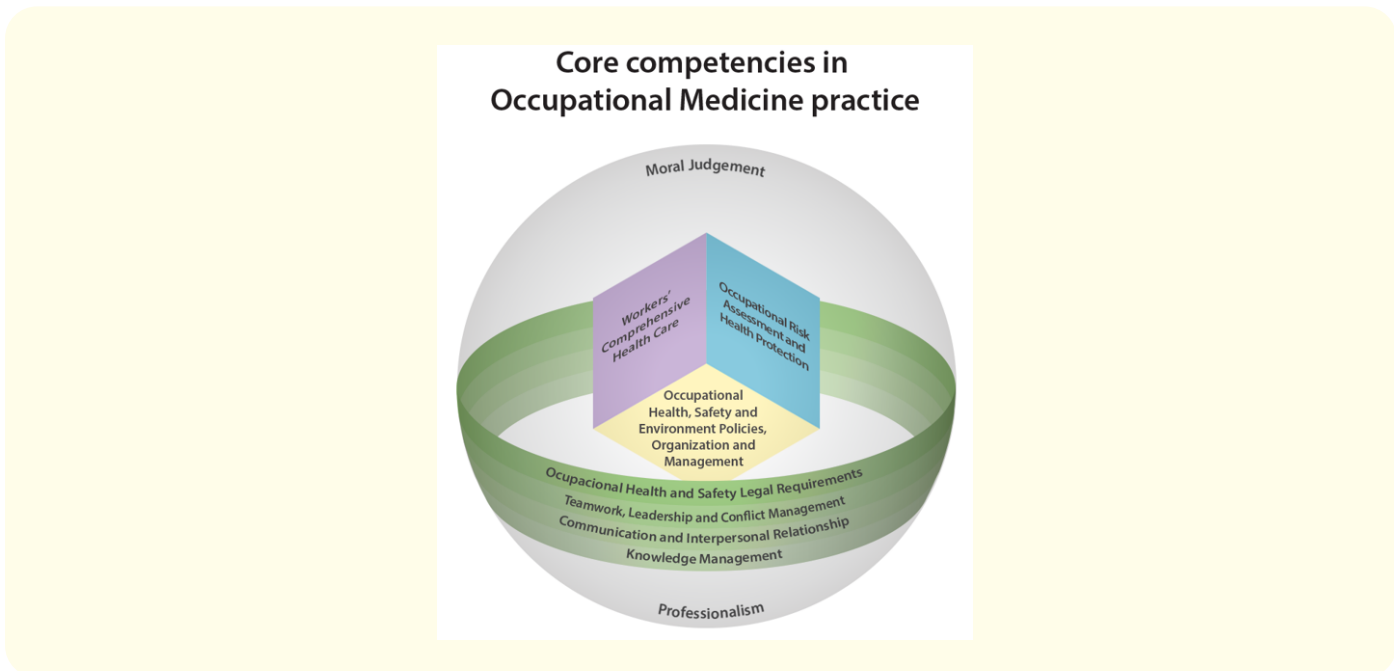
1. Comprehensive and critical literature review about OM competencies in Brazil and globally. Selection of the most relevant papers.
2. Development of a questionnaire based on the literature review and the core competencies required for OM in Brazil (ANAMT, 2003), resulting in questions organized in five main domains and 71 specific competencies, assessed through a 4 degrees Likert scale.
3. Participants were elected among 1275 certified OP, with available electronic address on the ANAMT's database. The representative sample was stratified according to sex, age and macro- region of practice, resulting in 223 professionals (confidence level of 90%, error margin of 5%). Questionnaire was applied through online tool.
4. Statistical and critical analysis of the results. Development of an updated competency matrix.
5. Discussion of the competency matrix in the expert panel, composed by 32 OM specialists from different regions of the country and various professional fields, such as public health, private companies, regulatory institutions, workers and employers' unions, universities, and social security.
6. Validation by consensus of the final version of competency matrix.

Results

Comprehensive literature review identified 60 publications in Brazil and other countries. Authors elected seven international papers as the most relevant references for this study. In the United Kingdom (UK), Lalloo., *et al.* [3] used a Delphi methodology to define 12 domains of competences. Cloeren., *et al.* [1] updated 10 essential fields of competences for the American College of Occupational and Environmental Medicine (ACOEM). In the European Union (EU), the Competencies in Health Promotion Project (CompHP) defined nine standards of competences for health promotion professionals [9-11]. The Association of Public Health Schools in Europe (ASPHER) developed a list of competencies focused on public health [12]. Mori., *et al.* revised the competences for the Japanese Society of Occupational Health [2]. The European Union of Medical Specialists (UEMS) established requirements for OP in 10 domains [5]. The International Code of Ethics for Occupational Health published by the International Commission on Occupational Health (ICOH) describes some competences for these professionals [13].

After two rounds, 218 OM specialists returned the questionnaire (97,7% of response rate). The ratio between males and females OP was 2:1. The mean age was 50.08 years old. Half of the participants were concentrated in the South-Southeast, the most developed regions of Brazil. Considering the professional fields of practice, 46.3% referred also working in other medical specialities besides OM; 26% have only one job, while 21% referred four or more jobs in OM.

All domains were approved by the participants. The specific competences were rated as extremely or very important by at least 60% of the participants (variation from 60.6 to 99.5%). Only few specific competencies were considered as moderately important (0.5 to 39.4%) or unimportant (0.4 to 7.4%). Results were presented, assessed and approved by the expert panel. Authors built the updated Matrix of Competencies in OM Practice (Figure 1). A detailed description description of the five domains and their respective specific competences are presented on table 1 to 4.



<p>Values to be continuously developed</p>	<p>Recognize and promote decent work, according to the ILO¹ definition as a right of all workers. Recognize the ethical, technical and social-political responsibility inherent to OM² practice. Adopt a critical attitude and social responsibility when implementing workers' health promotion, protection and recovery actions, including rehabilitation. Value interdisciplinary teamwork and interinstitutional participation for health promotion, protection and surveillance, hazards exposure control, disease prevention, care delivery and rehabilitation to provide integral healthcare to workers. Value the workers' knowledge of their own work and health conditions, particularly technological changes and work management.</p>
<p>Desired professional behaviors</p>	<p>Consider each worker individually and respect their rights and autonomy in decision making regarding their health, based on ethical principles and legislation. Ground professional actions on the bioethical and medical deontology principles described in the ICOH³ Code of Ethics, and critically apply laws and norms on occupational HSE⁴. Oppose any form of discrimination and social exclusion in the workplace. Ensure workers' access to information on occupational hazards and on their state of health. Ensure the confidentiality of health information, medical records and respect the worker's right to make decisions about its use within ethical and legal boundaries. Commitment to protect all workers' health, particularly the most vulnerable ones and those under precarious working conditions, formal or informal. Consider ideological, political and cultural differences, religious beliefs and social forces involved in the occurrence and assessment of risk factors to health in the workplace as perceived by workers, and in interventions aim the elimination or minimization of exposure, with commitment to continuous improvement of workers' health and quality of life. Care for one's own health and well-being as a citizen and professional, adopting biosafety and workplace safety standards. Ground professional practice on ethical values and critical attitude in regarding to the available scientific evidence.</p>

Table 1: Professionalism or moral judgment competency.

¹: ILO - International Labor Organization.

²: OM - Occupational Medicine

³: ICOH - International Commission on Occupational Health

⁴: HSE - Health, Safety and Environment.

<p>Actions at the individual level</p>	<p>Understand the social determination of the workers' health- disease process at the individual and collective levels, including the role played by work or the absence of (unemployment and precarious work). Provide and/or manage integral care of workers' health in urgent and emergency situations, clinical follow-up, surveillance, health promotion and protection actions, care delivery and rehabilitation. Consider occupational history, valuing the workers' perceptions of occupational hazards and their effects on workers' health to establish a causal relationship between their complaints and/or illness and current/past job. Suggest and follow-up diagnostic and therapeutic procedures of work-related diseases, including physical and professional rehabilitation. Guide workers on their state of health, occupational hazards exposure and their potential effects to health, adequate protective measures to improve overall health and quality of life. When applicable, guide/refer workers to adequate departments to ensure access to labor and social security rights. Notify health, social security and labor authorities in case of recordable health problems, according legal requirements. Carry out appropriate clinical and trauma cases, urgent and emergency situations. Along with other HSE and human resources professionals, provide orientation to adjust workers tasks to according their fitness, as established in medical examination and health evaluations required by legislation. Consider individual characteristics, vulnerability and/or disability conditions, respecting professional confidentiality. Apply adequate medical procedures to protect travellers or expatriated workers and their family.</p>
<p>Collective actions</p>	<p>Diagnose the workers' health profile considering the social determination of health, demographic and epidemiological particularities, organization and access to health services, and workers' knowledge to set priorities and action plans. Understand work as a social life organizer, a promoter for health and social inclusion, but also as a potential risk for injuries and diseases among workers and their family, surrounding communities and environment. Know how to apply epidemiology, toxicology, occupational hygiene, ergonomics, environmental and social science concepts and methods, as well as the workers' knowledge to establish health diagnosis. Gather, organize, access, analyse and manage health information. Know the conceptual foundations, principles and strategies to provide integral healthcare to workers, including planning and management of actions for health promotion and protection, disease prevention, health surveillance and care delivery, including rehabilitation.</p>

Table 2: Integral care of workers' health individual and collective.

General Competences	Specific Competences
<p>3.1. Know how to apply concepts and methods for the study of work, in qualitative and quantitative models to fit the human and technological variability.</p>	<p>Know the historical, conceptual, social and technical foundations of production processes and work organization forms, highlighting the current and local context and trends. Detect when studies of work are necessary and guide them in real situations. Formulate adequate "terms of reference" according the detected needs, workers' complaints, technical- scientific records, document analysis and technical reports, among others. Know how to apply concepts and methods for the study of work, in qualitative and quantitative models to fit the person and technological variability, with emphasis on ergonomics, ergology, analysis of activity, occupational toxicology, occupational hygiene and workplace safety, etc.</p>
<p>3.2. Use results of work studies to suggest changes in work processes aiming the workers' health and quality of life.</p>	<p>Suggest and discuss methods for the study of work. Follow up assessments and technical reports development on health and risk premiums and early retirement, considering legal regulations and the absolute priority of eliminating risks rather than providing financial compensation. Critically evaluate results and reports of studies in the workplace, considering the technical limits of the hazards and risks exposure assessments and effects on health. Know how to apply the results of the working conditions assessments to establish a causal relationship between disease and work, to prepare technical reports or expert evidence in compliance with resolutions and norms formulated by the Federal Medical Council and the ICOH Code of Ethics. Apply the results of studies on working conditions to guide decision making on process changes, including elimination, control and replacement, prevention, correction or reduction of exposure to health hazards, considering the hierarchy of control measures, uncertainties and precautionary principle.</p>
<p>4.1. Formulation of policies for workers' health and safety.</p>	<p>Know the conceptual and methodological foundations to formulate health and safety¹ policies in the public and private sectors. Participate in the formulation process of policies for workers' health at companies, workers' organisations, public and private institutions accordingly to his/her professional role.</p>

Table 3: The study of work - assessment of risks to health, and the study of work - assessment of risks to health, according general and specific competences.

¹: HS - Health and Safety.

	Contribute to design and implement policies and intervention programs for public health situations, including violence, epidemics and prevalent noncommunicable diseases.	
4.2. Management of workers' health care at the individual and collective levels.	<p>Know management principles, concepts and tools for integrated HSE management, quality and audit programs.</p> <p>Plan and manage services, activities, people, resources, materials and information; articulate health promotion and protection actions with care delivery and rehabilitation targeting the integral care of workers' health.</p> <p>Conduct studies on absenteeism to suggest interventions in work processes that reduce and enable workers to return to work after short and/or long term sick leave.</p> <p>Participate in the work accidents and incidents analysis and contribute to propose corrective measures to prevent deviations and new occurrences.</p> <p>Formulate guidelines, plan and technically supervise the occupational hazard assessment and management, contribute to analyse and communicate results among workers, employers and social leaders in routine situations or upon the occurrence of major accidents.</p> <p>Provide technical advice to employers, labor union leaders, authorities and opinion makers of health subjects, reinforcing autonomy and empowering workers' decision- making.</p>	
4.2. Health promotion from the perspective of enhancing the autonomy and involvement of workers.	<p>Develop and implement health promotion programs in an effective, ethical and efficient manner, culturally adapted and based on the needs and resources, with measurable goals and objectives, considering the determinants of health in partnership with stakeholders.</p> <p>Communicate and guide employers, workers, health committees, committees of accident prevention and labour union representatives of existing hazards. Provide copies of documents, technical reports and assessments, respecting professional confidentiality.</p> <p>Promote actions to improve worker's health, well-being and empowerment for formal and informal workers, according to health promotion perspectives.</p> <p>Work in collaboration with other field professionals, sectors and partners to increase the impact and sustainability of health promotion actions.</p> <p>Promote educational activities on workers and communities' health, particularly for the most vulnerable social groups.</p>	
Transversal competences	General Competences:	Specific Competences:
5.1. Legislation applied to workers' health and safety	<p>Knowledge and application of workplace health and safety legislation, particularly those which concern social security, labor and health.</p>	<p>Know the laws and complementary legislation which guide the planning, implementation, management and assessment of workers' health actions in public and private sectors.</p> <p>Adopt a critical attitude and consider ethical principles to apply worker health and safety legislation.</p> <p>Know norms, regulations or references from international agencies to enhance workers' protection, such as OSHA - Occupational and Safety Health Administration (USA); ACGIH - American Conference of Governmental and Industrial Hygiene; EPA - Environmental Protection Agency (USA)-and others recognized by their excellence, and adapt them to the local context (see ABHO - Brazilian Association of Occupational Hygiene).</p> <p>Participate in discussions of technical standards for workplace health and safety on social forums, in public and private sectors, and contribute to improvements in various levels.</p>

5.2. Teamwork, leadership and conflict mediation	Valuing teamwork and interdisciplinary and intersectoral actions.	Develop teamwork skills, including proactive attitude and leadership in the routine OM practice. Interact with workers, managers and other health and safety professionals to provide complete and integrated health care to workers. Develop competencies for a collaborative work to seek solutions, and apply skills to negotiate and solve conflicts, build consensus, effective and strategic communication focused on results.
5.3. Communication and interpersonal relationships	Communication with employers and governmental and non-governmental agencies about exposure to potential or actual hazards in the workplace and their risk to the health of workers, their family and community.	Inform public opinion about matters of interest regarding workers' health and the environmental impacts of work processes through available media, preserving professional confidentiality. Know how to listen, dialogue, negotiate and communicate adequately with different interlocutors, using different technologies and languages. Record medical information (medical records, forms, requests of tests, referrals and reports) adequately, clearly and in compliance with the ethical principles. Plan and design key messages targeting the overall and organizational population.

Table 4: Transversal competences.

Discussion

We found many similarities in comparison to international studies. The most relevant include clinical competences, communication skills, knowledge of legal framework and health management. These competences are well valued mainly in the United States of America, United Kingdom, European Union and Japan. More than ever, OP need to develop transversal competencies to get sustainable results such as communication, leadership, teamwork, mediation and conciliation, knowledge management as well as occupational health and safety legal requirements. However, full comparison of similarities remains difficult due to different concepts.

Moral judgment or professionalism was elected as the most important of the five domains in our study, a significant difference considering the first Brazilian matrix of OM competences and also compared to other countries. Participants of this study raised concerns about ethical and moral issues, which was reinforced by the expert panel. This may be explained by the current context in Brazil, where social inequalities produce a combination of high level use of technologies at the same time that we have precarious and/or informal work conditions, with poor or no social protection. Also, litigation remains as a critical issue in OM fields what brings more uncertainty for OP, especially when they work in fields of conflicts.

The new Core Competencies Matrix illustrates the interaction of the different domains of competencies and points out that effective practice in OM requests a well-balanced development of the different domains during specialist education. Competencies need to be considered in an integrated approach.

The outcomes of this study can be used as a reference to improve the OM specialization training, continuing education, board-certification, aligned with the needs and expectations of the workers and the whole society, in the context of the industrial revolution (4.0) and its potential effects on the workers' health and well-being, in respect of the standards of technical excellence and social responsibility.

Participants' opinion may have impacted these results, considering the variety of fields in OM practice. About 26% of the respondents of the modified Delphi study were active in only one specific field of practice.

Conclusion

In conclusion, our study reinforces the importance of an integrated matrix to address Occupational Medicine (OM) education. Moral judgment or professionalism remains as the biggest challenge in OM, according the OP. Further and periodic reviews are required to adjust competencies to new or modified OM practices and changes in the workers' health conditions, , as well to providing guidance for ongoing education. These outcomes must be questioned, reassessed and updated periodically.

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