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COMMENTARY

New demands for digital and AI skills in health occupations: a few perspectives for the future of the Istituto Superiore di Sanità (ISS)

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Abstract
The OECD Report "Digital and AI skills in health occupations: What do we know about new demand?" published in 2025 analyses the impact of digital technologies, AI, and advanced robotics on health occupations across OECD (Organisation for Economic Co-operation and Development) countries, with a particular focus on Canada, United Kingdom, and United States. Drawing on the analysis of more than 55 million online job postings (2018-2023), the study examines trends in the demand for digital skills and classifies health occupations according to their susceptibility to automation or augmentation. Conclusions indicate that, while a limited share of roles faces automation risks, a variety of health professions are expected to benefit from forms of task augmentation. The report highlights the need for tailored policies on lifelong training, data governance, and human-centred bioethical approaches to ensure the sustainable integration of AI into healthcare systems.

Key words
- artificial intelligence
- ethics
- health occupations

The OECD Report "Digital and AI skills in health occupations: What do we know about new demand?" published in 2025 [1] explores the impact of digital technologies and artificial intelligence (AI) on health occupations across OECD (Organisation for Economic Co-operation and Development) countries, focusing on the way these innovations can support health workers amid rising demand for healthcare services, providing three key empirical contributions. It analyses about 55.5 million online job postings (OJPs) from Canada, UK and USA, tracking the demand for digital and AI skills in health-related jobs between 2018 and 2023. It also identifies specific digital and AI skill requirements for various health functions, revealing emerging priorities such as Health Information Management, Telehealth, and Cybersecurity. Finally, it evaluates the potential effects of Generative AI (GenAI) and Advanced Robotics (AR) on health occupations, classifying roles based on their susceptibility to automation or augmentation. Results indicate that while some job types face automation risks, most professions stand to benefit from productivity-enhancing advancements, depicting the relevance of targeted reskilling policies and continuous training to maximise AI benefits integration in healthcare, ensuring that technological progression complement rather than displace health professionals and their reasoned choices.

Such a volume categorises health jobs into four main groups based on their susceptibility to automation by these technologies (yet it misses some relevant perspectives, such as the Asian ones): low risk of automation, potential augmentation, potential automation, and high risk of automation. Low risk occupations consist in tasks mainly involving complex human interactions and decision-making, high-risk ones involve a large share of routine, automatable tasks (physical, cognitive or both).

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Job roles where augmentation is or seems possible could witness efficiency gains in a limited number of tasks through automation, while other responsibilities remain difficult to render automatic. Potential automation, by contrast, refers to occupations where GenAI and/or AR can replace numerous tasks, potentially transforming the nature of the occupation at hand; however, some tasks still fully necessitate human expertise.

Based on information from the United States, occupations with potential for augmentation, such as Registered Nurses and Physician Assistants but also Family medicine physicians, seem to benefit significantly from digital technologies enhancing human capabilities. For these roles, continuous, long-last in training in advanced medical technologies, including EHR systems and telemedicine, is a basic to maximize the benefits of technological integration.

Other occupations as Orderlies and Medical Transcriptionists, face significant automation threats due to emerging developments that integrate GenAI into intelligent robots and other even less sophisticated automated systems. Policy measures should focus on reskilling these workers and providing career mobility to minimize displacement.

Following these results, this study further assesses the proportion of health employment in the

USA that would be susceptible to augmentation or automation. The study indicates significant variation in automation potential across health roles, with 32% of employment stratified under potential augmentation. Approximately 4.3% of roles, such as Pharmacy Technicians, are on the contrary identified as potentially automatable. The high automation risk category, including roles like Orderlies and Medical Transcriptionists, range at around 0.6% of the health workers as a whole. The results highlight how the integration of GenAI and Advanced Robots will likely reshape employment patterns but that most of such a relevant impact may be channeled through a positive enhancement of the individual capabilities of existing health workers.

As a whole, the analysis attempts to monitor the evolving landscape of digital and AI related skills in the health sector across Canada, UK and the USA. The study leverages data from millions of OJPs to track the longitudinal change of the demand for digital competencies, including GenAI and those related to the interaction with Advanced Robots, and their progressive integration into the various typologies of health occupations.

Results for the USA indicate that its health sector exhibits a significant demand for digital skills, mainly in areas such as Health Information Management/Medical Records, Computer Science, and Data Analysis.

The adoption of AI in niche roles, such as the very often mentioned AI-driven diagnostic tools in radiology, also underlines the transformative potential of such new technologies. The UK demand for digital skills like Cybersecurity, Data Analysis, and Clinical Informatics reflects the health sector effort to integrating advanced technologies in order to ameliorate patient care and operational efficiency. The demand for clinical informatics skills underlines the importance of managing and analyzing clinical data to profitably support decision-making processes. In this integration resides the core problem today. Canada has a more stable (yet growing) demand for digital skills in health occupations, with a notable emphasis on Health Information Management/Medical Records, Computer Science, and Data Analysis. The increased need for data collection and clinical informatics competencies points to the focus on leveraging data.

The analysis identifies several health occupations with high potential for augmentation and automation through AI and the use of Advanced Robotics. However, some USA tasks of Registered Nurses and Physician Assistants are likely to be augmented by AI and AR, increasing their productivity and efficacy. These roles could also benefit from enhanced digital literacy and competencies related to advanced technologies, such as AI-integrated diagnostic tools and telehealth platforms. In particular, robotic systems, theoretically can handle tasks such as cleaning, sterilising, and preparing medical instruments, thereby reducing manual workload and enhancing operational efficiency. These technologies may possibly enable health staff to focus on more complex, patient-centred activities, (including psychological empathic bonding) improving overall health delivery, but the steady advancement in AI and AR will fruitfully lead to further automation which could bring significant impacts on employment prospects.

The need for targeted policy interventions facilitating the current digital transformation of the health workforce will in final conclusion entail:

- investment in training and education remains paramount;
- if the digital transition and the adoption of new AI technologies has to benefit the largest number of people everyone, policymakers must address the digital divide by providing resources and support to underserved areas, ensuring that all health providers can leverage the benefits of digital and AI technologies; the same applies to taking care of minorities, disabled and in general vulnerable sets or stratified subsets of human population;
- data protection and security are also a priority.

The document fits into a time and context in which AI is the focus of attention worldwide and its applications are pervasive in every field. Various authoritative international institutions have recently addressed similar topics, including, for example: the World Health Organization (WHO), the International Labour Organisation (ILO), the Council of Europe (CoE), the World Medical Association (WMA) and others.

From an ethical point of view, there are recurring issues in the various perspectives, such as: responsibility, dignity, fairness, equality, non-discrimination, confidentiality, sustainability, self-determination, inclusiveness, safety, etc. These cross-cutting criteria must then find appropriate specific concrete applications for the various areas of application in the health professions: it is clear that data analysis software and a robot used in personal care are not equivalent and require different considerations.

Particular attention must be paid to the impact of new technologies in the health professions, which typically involve direct contact with the people being cared for. In such circumstances, one of the main recommendations expressed by the World Medical Association in the WMA Statement on Artificial and Augmented Intelligence in Medical Care (adopted by the 76th WMA General Assembly in October 2025) is particularly significant. The WMA places the notion of "augmented" among the key principles of the Declaration: "The term signals a human-centred approach to AI – one that reinforces the physician's role as the final decision-maker. Rather than viewing AI as a replacement, augmented intelligence frames these tools as extensions of clinical expertise, designed to support – not replace – professional judgement, empathy, and responsibility".

These are issues in which legal, deontological, and ethical considerations are closely intertwined. Significant in this regard, for example, is the "right to human interaction", which is currently the subject of particular attention.

One of the report's main strengths lies in its methodological design. The use of granular job posting data allows for cross-country comparability and the identification of fast-growing skill clusters, such as Health Information Management, Telehealth, Cybersecurity, and Clinical Informatics. The distinction between clinical health occupations and other occupations within the health sector further enhances analytical clarity, highlighting how digital transformation is progressing more rapidly in non-clinical and support functions than in direct patient care roles.

The report also makes a notable contribution by addressing the potential impact of Generative AI and advanced robotics on health occupations. The findings suggest that, while a limited share of roles may face automation risks, the majority of health occupations are more likely to experience forms of task augmentation, with digital technologies enhancing productivity rather than replacing human labour.

At the same time, the review highlights several conceptual and interpretative limitations. Most notably, the reliance on OJPs as a proxy for technological transformation captures only part of the ongoing changes in healthcare work. AI adoption increasingly occurs within existing workflows, embedded in clinical decision-making tools, monitoring systems, and administrative processes, without being explicitly mentioned in recruitment requirements. As acknowledged in the report itself, this dynamic risks underestimating the actual penetration and influence of AI in clinical practice, particularly in public health systems and regulated care environments.

Furthermore, while the automation *vs* augmentation framework represents a methodological choice, it remains largely abstract and insufficiently contextualized. Moreover, it poses significant ethical issues: all the major reference documents recommend great caution towards the complete replacement of human activity with AI. Convergent agreement states that man has to remain "in the loop", not "on the loop" and even less "out of the loop". The analysis does not fully engage with key healthcare-specific dimensions such as professional accountability, regulatory constraints, ethical considerations, and the cognitive workload associated with human-AI collaboration. In clinical settings, the feasibility and acceptability of automation are shaped not only by technical capability, but also by medico-legal responsibility, trust, and the centrality of professional judgement and other factors that are difficult to capture through task-based scoring alone.

From a policy perspective, the report's recommendations are necessarily broad. Emphasis on continuous training, reskilling, and skills development is appropriate, yet the discussion would benefit from deeper engagement with system-level governance issues. These include health data governance, integration of AI into care pathways, organisational redesign, and differentiated strategies across hospital, primary care, community-based, and long-term care settings. Without such integration, skills-based analyses risk remaining disconnected from the operational realities of healthcare delivery.

Looking forward, the main trajectories of clinical technological development point towards the progressive integration of AI-enabled decision support systems, predictive analytics, digital diagnostics, and remote monitoring tools directly into clinical workflows. These technologies are expected to support earlier diagnosis, personalised treatment, continuity of care, and preventive approaches, while increasing the need for systemic capabilities rather than isolated digital skills. In this context, the challenge is not merely technological adoption, but ensuring that innovation reinforces clinical reasoning, ethical responsibility, and human oversight within increasingly complex socio-technical systems.

The recent establishment of the National Centre Artificial Intelligence and Innovative Technology for Health (Centro Nazionale Intelligenza Artificiale e Tecnologie Innovative per la Salute, CN-IATIS – Istituto Superiore di Sanità, ISS) emerges within this evolving landscape as a response to the need for integrated, human-centred innovation in healthcare. The Centre is positioned as a platform for applied research, experimentation, and capacity building at the intersection of clinical practice, digital technologies, and health system governance. By focusing on the responsible development, evaluation, and implementation of AI-driven solutions, the IATIS Centre aims to bridge the gap between technological potential and real-world clinical and organisational impact, supporting health systems in translating innovation into sustainable improvements in quality of care and system resilience.

Overall, the OECD Report represents a robust and informative contribution to the analysis of digital and AI-related skills in healthcare. As a descriptive labour market study, it provides valuable insights for workforce planning and training policies. Its findings, however, are best interpreted as a starting point rather than a comprehensive account of healthcare transformation, and should be complemented by process-oriented, clinical, and governance-focused analyses to fully capture the implications of AI for health systems.

Conflict of interest statement

The Authors declare no conflict of interest.

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