Occupational Health and Industrial Revolution 4.0 - Opportunities and Challenges

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Abstract

Industrial revolution 4.0 (4IR) is a transition towards a sustainable, eco-friendly, socially responsible, resource-conserving type of economic development using self-configuring, digital, and interconnected solutions. With these, employees' skillsets, job descriptions, physical and mental demands are also changing. Manual and traditional manufacturing and production are gradually being replaced by automation, robotics and other smart technologies. Businesses worldwide are now more integrated into communities with a growing emphasis on occupational health and wellbeing of the workforce and social responsibility. It is pertinent to analyze the challenges and opportunities for occupational health in this latest phase of industrialization.

Objective

To review and analyze existing evidence in the literature regarding occupational health in context of 4IR.

Methods

A systematic search of three main literature databases (PubMed®, ProQuest® and Scopus®) was undertaken using keywords for occupational health and 4IR. The inclusion criteria included peer-reviewed articles on the subject matter in English, published from 2000 onwards. The retrieved articles were screened for quality and relevancy by the author.

Results

The data search yielded a total of 22 relevant articles. These articles have a common theme that the trend of innovative work organization and smarter work processes in 4IR will change the health and safety of the workers considerably. On the one hand, automation and self-configuring technologies will probably make work more flexible, less manual, safer, and healthier. On the other hand, such systems will pose new challenges for occupational health professionals, such as dealing issues arising from remote working, highly automated, relatively monotonous, repetitive jobs resulting in mental fatigue, lack of concentration or possibly burnout. In addition, the development of technologies and processes, such as artificial intelligence and virtual reality, require high mental acumen, quick decision-making, prolonged concentration, and high mental exertion while engaged in virtual and artificial environments. In a nutshell, occupational health and safety risks and hazards will evolve with time in the coming decades. Independent of 4IR, emerging global health threats pose additional challenges to occupational health professionals.

Conclusion

As industries and economies aim for more eco-friendly, sustainable, innovative and smart solutions, proactive engagement and investment into occupational health and wellbeing are necessary for a resilient and healthy workforce. Occupational health professionals must also be more creative and practical in protecting workers' health from ever-evolving occupational risks and hazards.