# HEALTH WORKERS IN THE INDUSTRIAL REVOLUTION 4.0 ERA

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The industrial revolution began from industry 1.0 to industry 4.0. The industry 1.0 began in England in the late 18th, and 19th centuries, which people began to move from agriculture to industrialization, and several sectors such as the textile industry were changed using machines. The industry 2.0 started in the 20th century marked by mass production and technological advances. The industry 3.0 began in the 21st century, which digitalization systems were used, as well as the use of robots for various activities. And the industry 4.0 started in this century where a combination of technology and human changed the way of life in work (Park, 2016).

Badri *et al*. revealed that there are several categories of technology that are relevant to the industrial revolution such as big data, Internet of things, cyber-physical system robotics, and artificial intelligence stimulation (Badri et al., 2018). On a broader scale, the current industrial revolution is in the form of e-money for various non-cash transactions (Tarazi & Breloff, 2010) like the bank industry with the advent of mobile banking and Internet banking, and the emergence of FINTECH, like *paytren, paypal*, on-line taxi, and online shop (Nicoletti et al., 2017).

Some of the uses of big data in health care are for medical image analysis, physiological signal processing, and genome data processing. For medical examinations, medical personnel needs high-resolution images, so computing scientists must find innovative solutions in processing data into easy-to-read icons (Belle et al., 2015).

The industrial revolution 4.0 will change our perspective as well as affect our identity and everything related to it, such as privacy, consumption patterns, time spent working and relaxing, developing skills, and building relationships with people around us (Schwab, 2017).

On the other hand, the 2030 agenda for sustainable development emphasizes that a third reduction of early death from NCD is through prevention and improving mental health (Nishtar et al., 2018). It is estimated that the world population will increase to 9.7 billion by 2050. This situation is not supported by good health systems and services (Runde et al., 2018).

Progress in health services in regards to the industry 4.0 will open opportunities to develop

health services that are faster and more effective. Therefore, health applications can be used to monitor health. Biosignal: electrocardiogram (EKG), electroence-phalogram (EEG) can be used to predict clinical events (Yoon, 2017). Biotechnology is the basis in almost all pharmaceutical biotherapy processes. This technology is widely applied to manipulate various biological materials that can be used as therapies for multiple conditions and types of diseases, especially those that are deadly (Sander & Joung, 2014).

Additionally, health services with telemedicine are useful in monitoring and treating patients remotely through sensors connected to the Internet. In the future, telemedicine will prove to be very valuable in the treatment of chronic diseases that are often experienced by the elderly. So that it is possible for the community to receive medical check-ups in their own homes, telemedicine can also be applied in medical care in remote locations (Wootton, 2001).

In conclusion, health workers in serving the community must develop themselves and follow the technology that emerged in the industrial revolution era 4.0.

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