Int. j. adv. multidisc. res. stud. 2024; 4(2):1112-1115

Received: 26-02-2024
Accepted: 06-04-2024

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

The Effects of Modernity and Medical Science on the Spread of New Diseases

Samin Foroughi
Isfahan University B.A Occupation Therapist, Head of Biology Studies, M.O.P International Scientific Academy, Poznan, Poland

DOI: https://doi.org/10.62225/2583049X.2024.4.2.2630
Corresponding Author: **Samin Foroughi**

Abstract
With the estimated growth of the world population from 3.5 billion people in 1990 to 2.9 billion people in 2050 and 11.2 billion people in 2100, the sharp increase in human needs and globalization and climate change, meeting the future needs with the conditions and it will not be possible with the current resources and man must deal with many problems and problems and provide basic solutions for them [1]. The most important human problems in the future will be in the fields of energy, water, food, environment, poverty, terrorism (war), disease, education, democracy and population, and using modern and new technologies is the only way out of the mentioned problems [2].
Recent advances in medical sciences, including new treatment methods, new drugs, and manufacturing of medical equipment, have played an important role in improving the lives of patients and health systems [3]. Nowadays, pharmaceutical products or new treatment methods have been invented with the aim of strengthening, improving and treating people with special diseases for which there was no cure, which made it possible for these patients to continue living. These factors have caused the health standards not only in developed countries, but also in many developing countries to face significant progress compared to the past [4].
Identifying and investigating emerging technologies in the field of health and dealing with them is one of the important priorities of the health system of the countries that can lead to improved performance and health outcomes. Also, with their help, the widespread spread of new diseases in the world can be prevented [5].

Keywords: Modernity, New Diseases, Medical Science, Therapy, Medicine

Levels of preventing the spread of new diseases

Preventing the spread of diseases includes four levels. The first level is primary prevention, the purpose of which is to prevent the creation and stabilization of social, economic and cultural factors that have been proven to increase the risk of disease. The second level is primary prevention, the purpose of which is to limit the occurrence of diseases by controlling the causes and risk factors. In fact, there are a group of diseases that are widespread despite being non-contagious and non-transmissible from one person to another [6]. These diseases are often rooted in people's nutrition and lack of movement. Therefore, the goal of prevention at the second level is to control the causes and factors such as nutrition, inactivity and overweight. This level of prevention is done either for the entire population and in order to reduce the average risk of disease outbreak or on individuals at risk. The third level of prevention, which is also called secondary prevention, seeks to reduce the more severe complications of the disease through timely diagnosis and treatment [7]. In fact, this level includes a set of measures that stop the progress of the disease in its hidden stages and prevent its complications. In other words, secondary prevention may be ways that cause early and timely disease diagnosis and effective intervention to improve the health status at the individual and social level. Secondary prevention is carried out in the time interval between the onset of the disease and the time required for its diagnosis and reduces the prevalence of diseases. The two basic principles required for success in secondary prevention include the existence of safe and appropriate methods for diagnosing the disease, as well as the existence of effective treatment methods. Many new diseases and types of cancers can be controlled at this level, and their spread and spread can be prevented by taking timely action. In the fourth level, which is the third type of prevention, the goal is the advanced reduction of the complications of diseases, and this type of prevention is one of the important aspects of treatment and rehabilitation. The third type of prevention includes measures that reduce disabilities and minimize the complications caused by diseases and improve the patient's ability to adapt to an incurable condition [8].

In the meantime, modern medical sciences and the use of modern technologies and equipment have no effect on the first and second levels of prevention, but they can be effective on the third and fourth levels and prevent the progression and spread of diseases.

Achievements and challenges of medical sciences in the era of modernity

Medical sciences have achieved significant progress in the era of modernity, and in the meantime, new technologies have been introduced. The most important of these technologies include patient-centered care systems, digital twin, wearable technologies, Internet of Things, clinical decision support system, computer system for recording medical orders, telehealth, personalized medicine, artificial intelligence, nanotechnology, stem cells, cell therapy, cortisol therapy, tissue engineering, smart biomaterials, 3D printer, gene therapy, genomic editing, medical imaging, bioresonance, biosimilars, modern vaccine production technologies, oral vaccines, mRNA technology and medical biosensors [9].

The emergence of the mentioned modern technologies in medical science can help to facilitate the process of treating diseases and also to reduce the treatment time. In fact, emerging technologies in the field of health can create huge changes in the quality, accessibility and efficiency of health services. These technologies can help improve the diagnosis, treatment, prevention and care of patients and lead to increased interaction and cooperation between health service providers, patients and other stakeholders. Health technologies can also help people take better care of their health, communicate with their doctors and caregivers, manage their health information, and make appropriate health decisions. Modern health technologies play an important role in responding to demographic challenges, public health crises, health inequalities and environmental changes, and from this point of view, it is a great opportunity to improve the health level of the society and prevent the spread of diseases are considered. However, there are several barriers in the entry, production or development and use of new health technologies. The most important challenges include the absence of a road map, the governmental nature of the mechanism for the development of health technologies, the individuality of decision-making and implementation in the field of health technologies. Also, the custodian of the comprehensive scientific and technological map is not clear. The confusion and ambiguity of the institutions in charge of health technologies regarding their results and consequences, the lack of a proper communication network between specialists in different fields, the lack of targeted support and prioritization, issues related to regulation, as well as privacy and information security are some of the other existing challenges [10].

Modern medicine is a new type of medicine that is based on treatment with chemical drugs. Strong dependence on chemical drugs is one of the basic problems of modern medicine, which leads to bad side effects. Because every year about 2 million people in the whole world die due to injuries caused by drugs and treatments based on modern medicine. Therefore, modern medicine, along with the many benefits it has in treating diseases and preventing their spread, may also have risks for the health of patients due to the complications caused by the use of chemical drugs. In fact, the use of chemical drugs in modern medicine has increased the sensitivity of treatment methods based on modern medicine. If the doctor cannot correctly diagnose the disease, the use of prescribed drugs may increase the patient's pain and in many cases add another problem to the patient's problems [11].

Improving the position of emerging technologies in modern medicine

In order to strengthen the position and abilities to obtain and use the emerging technologies in the field of health in a timely and effective manner, as well as to remove the existing obstacles, some basic measures are suggested. The first step is to develop a specific, comprehensive and operational road map for health-related technologies, which is considered one of the basic prerequisites for progress in this field [12]. It is also suggested that planning and investment in the field of health technologies should be done based on accurate needs assessments, so that effective results can be obtained while creating appropriate efficiency in the use of resources for the development of health technologies. In order to reduce the involvement of innovative and knowledge-based companies in government and administrative bureaucracies, it is necessary to shorten and facilitate the processes related to the approval and issuance of licenses for new technologies [13].

In addition, the strengthening of infrastructure, the training of specialized human resources, and the promotion of entrepreneurship and innovation should also be considered, which includes the creation of high-speed Internet networks, ensuring data security, and the establishment of electronic medical information systems. Also, the training of human resources with expertise in the field of health technology through specialized training courses and internship programs is very important so that the medical and technological personnel are up-to-date with the processes and technologies of the world.

The control of infectious diseases is more than a result of modern medical sciences, it is caused by improving nutrition, environmental health, birth control and improving the level of immunity in society. This is despite the fact that in recent decades, various scientific organizations overseeing the aspects of health and hygiene, such as the World Health Organization, have thought about determining suitable alternative and complementary methods for the traditional medicine of different societies. These new methods are based on new and modern technologies. Therefore, with the wide changes in the field of new technologies in the field of health and prosperity of the fourth industrial revolution in the 21st century with unique characteristics, all relevant organizations and institutions have to improve their ability to discover changes and developments, uncertainties and upgrade the engines. This is done with the aim of not only not being surprised by the fundamental changes, but with smart investment they can play a role as the main players in the field of science and technology and innovation in the field of health [14].

The role of modern vaccines in preventing the spread of diseases

With the emergence of modern diseases in societies, it is necessary to be equipped with a series of advanced technologies to diagnose and treat these diseases. New diseases can be divided into two general categories of infectious and non-infectious diseases. Meanwhile, the use

of medical science and modern medical equipment can be effective in the treatment of non-communicable diseases and the prevention and treatment of contagious diseases.

One of the new technologies that entered the field of medicine in the modern age and had a significant effect in preventing the spread of new diseases, are nucleic acid or mRNA-based vaccines. In fact, although the modernization of various medical equipment can be effective in improving the health system of different societies, what has the greatest effect in preventing the spread of diseases are vaccines [15]. Nucleic acid or mRNA-based vaccines are a new type of vaccines designed to prevent infectious diseases such as Covid-19 [16]. By using a small piece of the genetic material of the virus, these vaccines teach the cells of the body how to fight the infection. These vaccines inject the virus into the body and cannot cause infection. Instead of introducing a weakened or killed virus into the body, mRNA vaccines only give instructions to the cells to make virus proteins. These proteins are similar to what is on the surface of the virus and stimulate the body's immune system. mRNA vaccines are higher in terms of safety and effectiveness than other traditional vaccines because they reduce the risk of penetration into cells and facilitate the production of a stronger immune response. mRNA vaccines can also be produced quickly and cheaply because they do not need to grow and process the virus in laboratory conditions.

It can be said that the most important advantage of these vaccines compared to other vaccines is the ability to simultaneously induce blood immune response and cellular immunity without the help of additional substances in the vaccine formulation. Also, the speed and flexibility in the production of this type of vaccines makes it possible to quickly develop new vaccines in epidemic situations and prevent the spread of the virus and human casualties. In cases like the corona virus, where the virus has the ability to genetically change and new strains of the virus are created, mRNA vaccines reduce the possibility of creating new variants due to their strong effectiveness and the possibility of rapid production and with the rapid production of vaccines against new variants, it is possible to create proper immunity in the society [17]. These vaccines have been approved by the World Health Organization and other authoritative authorities, and their effectiveness and safety have been proven in clinical studies. Nucleic acid vaccines are an innovative solution to protect public health against disease outbreaks.

Conclusion

Medical advances have provided the possibility of treatment and preventive measures for various new diseases. For example, vaccination against some infectious diseases is widely accepted to eradicate it from society and reduce its prevalence significantly. Similarly, advances in diagnostics have helped doctors to diagnose health problems early and start effective treatment accordingly to prevent the spread of diseases. The research efforts of modern medical sciences are also carried out to discover new drugs, treatments or preventive measures that can deal with diseases on a large scale and have a significant impact on public health. Such efforts are gaining more attention than ever because they speed up the process of disease control and help people stay healthier for longer. One of the most important pillars of modern medical science, which is always trying to promote it in the society, is a healthy lifestyle. If people in the society live healthily and correct their habits as well as their bad habits, medical science will actually achieve its most important goal and prevent the spread of new diseases.

References

1. Cleland J. World population growth; past, present and future. Environmental and Resource Economics. 2013; 55:543-554.
2. Rahman MM, Rahaman MS, Islam MR, Rahman F, Mithi FM, Alqahtani T, *et al*. Role of phenolic compounds in human disease: Current knowledge and future prospects. Molecules. 2021; 27(1):233.
3. Vaou N, Stavropoulou E, Voidarou C, Tsigalou C, Bezirtzoglou E. Towards advances in medicinal plant antimicrobial activity: A review study on challenges and future perspectives. Microorganisms. 2021; 9(10):2041.
4. Kandel N, Chungong S, Omaar A, Xing J. Health security capacities in the context of COVID-19 outbreak: An analysis of International Health Regulations annual report data from 182 countries. The Lancet. 2020; 395(10229):1047-1053.
5. Qadri YA, Nauman A, Zikria YB, Vasilakos AV, Kim SW. The future of healthcare internet of things: A survey of emerging technologies. IEEE Communications Surveys & Tutorials. 2020; 22(2):1121-1167.
6. Chhikara BS, Rathi B, Singh J, Poonam FNU. Corona virus SARS-CoV-2 disease COVID-19: Infection, prevention and clinical advances of the prospective chemical drug therapeutics. Chemical Biology Letters. 2020; 7(1):63-72.
7. Abboah-Offei M, Salifu Y, Adewale B, Bayuo J, Ofosu-Poku R, Opare-Lokko EBA. A rapid review of the use of face mask in preventing the spread of COVID-19. International Journal of Nursing Studies Advances. 2021; 3:100013.
8. Nahid P, Dorman SE, Alipanah N, Barry PM, Brozek JL, Cattamanchi A, *et al*. Official American thoracic society/centers for disease control and prevention/infectious diseases society of America clinical practice guidelines: Treatment of drug-susceptible tuberculosis. Clinical infectious diseases. 2016; 63(7):e147-e195.
9. Shryock RH. The development of modern medicine: An interpretation of the social and scientific factors involved. University of Pennsylvania Press, 2017.
10. Yuan H, Ma Q, Ye L, Piao G. The traditional medicine and modern medicine from natural products. Molecules. 2016; 21(5):559.
11. Lu DY, Lu TR, Lu Y, Sastry N, Wu HY. Discover natural chemical drugs in modern medicines. Metabolomics (Los Angel). 2016; 6(181):2153-0769.
12. Ermak G. Emerging medical technologies. World scientific publishing company, 2015.
13. Zhang X, Catalano PN, Gurkan UA, Khimji I, Demirci U. Emerging technologies in medical applications of minimum volume vitrification. Nanomedicine. 2011; 6(6):1115-1129.
14. Le DN, Van Le C, Tromp JG, Nguyen GN. (Eds.). Emerging technologies for health and medicine: Virtual reality, augmented reality, artificial intelligence, internet of things, robotics, industry 4.0, 2018.
15. Kowalzik F, Schreiner D, Jensen C, Teschner D, G

ehring S, Zepp F. mRNA-based vaccines. Vaccines. 2021; 9(4):390.
16. Chavda VP, Soni S, Vora LK, Soni S, Khadela A, Ajabiya J. mRNA-based vaccines and therapeutics for COVID-19 and future pandemics. Vaccines. 2022; 10(12):2150.
17. Wang YS, Kumari M, Chen GH, Hong MH, Yuan JPY, Tsai JL, *et al*. mRNA-based vaccines and therapeutics: An in-depth survey of current and upcoming clinical applications. Journal of Biomedical Science. 2023; 30(1):84.