COVID-19 MONITORING AND TRACKING SYSTEM USING INFORMATION TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE

SYSTEM MONITOROWANIA I ŚLEDZENIA COVID-19 Z WYKORZYSTANIEM TECHNOLOGII INFORMACYJNYCH I SZTUCZNEJ INTELIGENCJI

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Authors' contribution
Wkład autorów:
A. Study design/planning
zaplanowanie badań
B. Data collection/entry
zebranie danych
C. Data analysis/statistics
dane – analiza i statystyki
D. Data interpretation
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E. Preparation of manuscript
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F. Literature analysis/search
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G. Funds collection
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Dear Editor,

The appearance of COVID-19 almost coincided with the beginning of an active phase of the digitalization process in all areas, including public health. Moreover, COVID-19 unwittingly became an impulse that accelerated the introduction of digital technologies, as well as initiated new innovative solutions to combat both the virus and its devastating social and economic consequences. At the time of writing this letter to the Editor, COVID-19 is still actively spreading, having a negative impact on the global economy and health, despite the start of global vaccination. In this regard, the governments of all countries are developing new innovative approaches to prevention, treatment and rehabilitation of the virus.

Most of the countries faced with the coronavirus relied on the use of classical epidemiological measures to combat the viral infection, including WHO recommendations. Nevertheless, being in the middle of the second year of the global fight against COVID-19, it has become obvious that without the use of the full range of existing digital technologies, it is difficult to effectively counteract the pandemic.

In this regard, WHO has developed recommendations for the fight against COVID-19, which consist in the organization of affordable testing, isolation and care for patients, as well as contact tracking. These epidemiological measures are the most effective strategy for interrupting the transmission of the COVID-19, and the role of digital technologies, for example, when tracking contacts of sick people, is decisive. Simultaneously according to WHO, it is necessary to strictly consider the ethical aspects related to the confidentiality, accessibility, security and accountability of the data obtained.

The existing approaches to the implementation of digital solutions for tracking contacts with COVID-19 are currently conditionally divided into three groups (Figure 1). This division is based on the methodology of the approach to tracking contacts at the national level.

Countries such as Israel and South Korea represent a centralized approach to tracking contacts, however, with this approach, the most serious criticism is the protection of personal data [1,2]. In this regard, most countries that use the official contact tracking applications apply a decentralized approach, which implies

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a voluntary consent to contact tracking and personal data processing [3,4]. A combination of two approaches, the so-called hybrid approach is used, for example, by Germany [5].
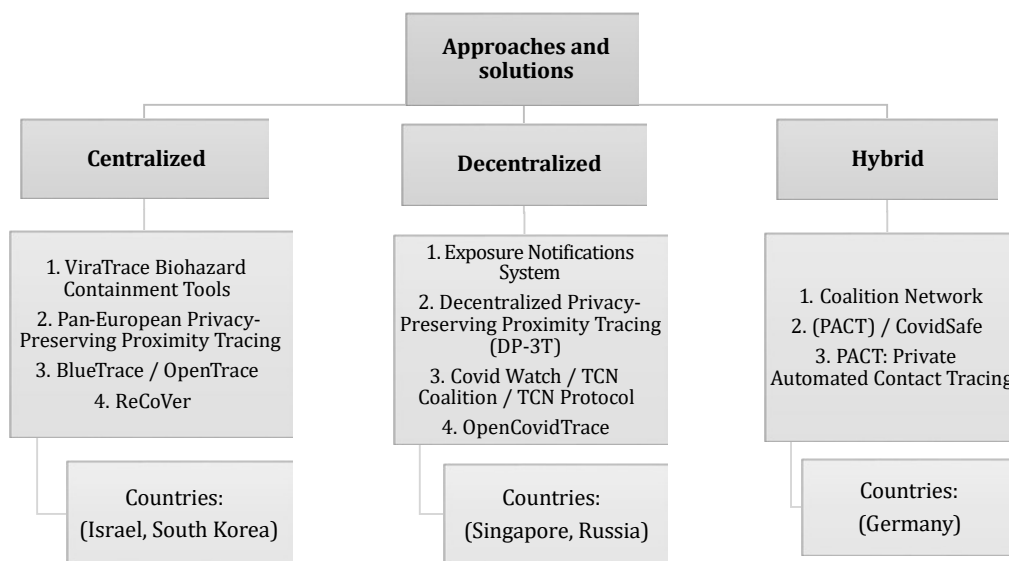

Figure 1. Approaches and solutions to the implementation of digital contact-tracing systems for COVID-19

The combination of digital technologies with artificial intelligence (AI) has made it possible to fight the pandemic more effectively and has led to the spread of mobile applications with AI for tracking contacts. At the same time, a number of ethical and regulatory issues remain a barrier to the dissemination of AI applications, in connection with which framework and ethical guidelines for the use of detailed technologies of responsible AI were proposed.

As for the population monitoring, there is still a gap in AI solutions that needs to be filled in terms of contact tracking and distancing methods. In contact tracking, the role of AI is not central, since the AI functions in contact-tracking applications are not deployed in most cases.

In Uzbekistan, digital solutions for tracking contacts with AI are still under development. Although numerous variants of COVID-19 mobile contact-tracking applications were proposed, they could not find their place in the official anti-epidemic measures of the Uzbek Government to combat the spread of infection. Nevertheless, the effective capabilities of such digital solutions for the epidemiological prevention of infection at the level of communities, cities and countries are beyond doubt.

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