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Geographically-targeted prioritization model of covid-19 vaccines distribution across Sudan states, using GIS

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This study explored the rationale for introducing a prioritization approaches for COVID-19 vaccine distribution in Sudan, by reconstructing adjustments to the ages stratified for vaccination, on the basis of a ranking scale to arrange Sudan States in a 3-level geographically targeted order for the vaccines distributions. Results suggest targeting population aged 55 years and above (older adults and elderly) with the highest burden of COVID-19 during the first vaccination phase; followed by the young and middle-age adults of 30-54 years in the second phase; and finally the population groups aged below 30 years in the third phase. In addition, the study modeled a geographically-targeted vaccination approach for prioritizing vaccines distribution amongst the different states, based on the degrees of their exposure to the pandemic as measured by systematic integration of state based scores and ranks in various indicators, and by using GIS-based weighted sum overlay and regression analysis. Accordingly, a vast geographical region of ten states was identified as the first priority for vaccination (El Gezira; Gedaref; Kassala; Khartoum, North Darfur; North Kordofan; Northern; Red Sea; River Nile; White Nile). The second priority encompasses three states (Sinnar; Eat Darfur; and South Darfur); and 5 states for vaccination as the priority (Blue Nile; Central Darfur; South Kordofan; West Darfur; West Kordofan). In practice, vaccination in each phase should include supply of vaccines to all three groups of states according to the order of prioritization. The credibility and usefulness of using the compiled maps and adoption of the proposed adjustments of prioritizations (regarding the age groups and the geographically-based dispatch of vaccines) can be evaluated as adds-in for achieving successful vaccination interventions, especially in the epidemically hot spots states across Sudan.

Biography

Abdel Rahman Khider H has completed his bachelor and MSC Degree at the University Of Khartoum, Sudan, 1985 and 1990 respectively. During 2003 he was awarded PH.D in applied geography/GIS. He was a lecturer at the same university and later on at the University of Juba during early 1990'. He also served as the regional director of Alibrahm International Humanitarian Foundation in east Africa (Kenya), between 1993 and 2000 - managing humanitarian, health and feeding programmes for local communities. Since 2013, he established and is managing a GIS training center in Sudan; devising, coaching and teaching variable courses in applications of GIS in Public health and healthcare services. In addition, he is also involved in training and consultation activities with NGO'S working in Sudan.

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Effect of maintaining goal-oriented therapeutic exercise on low back pain from the hospital to the community

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Objective: To investigate the effect of maintaining goal-oriented therapeutic exercise in subjects with low back pain (LBP) from hospital to community

Methods: Eligible adult subjects who have symptoms of LBP without surgery and have been diagnosed with imaging studies were enrolled. They were assigned randomly to either intervention group A (n=15) or control group B (n=15). The group A underwent a goal-oriented exercise program at a hospital two times a week to reduce pain and improve daily activities. The exercise program consisted of warm-up for 5 minutes, a customized exercise for 30 minutes, and cooling down for 5 minutes. The group A underwent the exercise program for 2 weeks and then took a two-week break. Then, the previous intervention and the break were repeated. The community-based therapeutic exercise continued over the next 4 weeks. The control group B exercised at home for the same period as the group A. The evaluation items were a visual analog scale (VAS) to assess pain, an UCLA activity score to assess activities of daily living, a range of motions in trunk, a power of trunk flexion and extension, a gait and balance functions {timed up and go (TUG) test, modified functional ambulation category, Berg balance scale (BBS), and Romberg test}, and an Oswestry disability index (ODI) over 3 times.

Keywords: Low back pain, Exercise, Activities of daily living, Function, Community Results :The VAS, ODI score, TUG, BBS and UCLA score before and after 12-week exercise showed statistically significant differences in the group A ($p<0.05$). Low back pain showed a tendency to improve not only when exercising at the hospital, but also after continuing exercise in the community. Especially there was a marked difference in the VAS and ODI score ($p<0.001$). And the TUG and BBS showed also significant differences in the group B ($p<0.05$). However, there was no statistically difference when comparing the two groups.

Conclusion The maintaining goal-oriented therapeutic exercise from the hospital to the community helped to improve low back pain and decrease ODI score. In addition, this study confirmed that maintaining therapeutic exercise affects balance, gait, and daily activities. However, no differences were identified between home training and one-on-one therapeutic exercise training. Further studies based on a larger number of subjects are needed. Acknowledgement: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2021M3I2A1077409)

Biography

Il-Young Jung is currently an assistant professor at the Chungnam National University Sejong Hospital in the department of Rehabilitation Medicine at Sejong Korea. His Research field includes: Musculoskeletal diseases and Pain management, Rehabilitation and physical medicine, Therapeutic exercise, Digital healthcare and artificial intelligence.

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Artificial intelligence for cyber security applications

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The recent White House report on artificial intelligence (AI) highlights the importance of AI and the need for a clear roadmap and strategic investment in this area. As AI emerges from science fiction to become the frontier of world-changing technologies, there is an urgent need to systematically develop and implement AI to see its real impact in diverse fields of study. This paper offers a contribution to the deployment of AI for cybersecurity applications. Intrusion detection has been the subject of numerous studies in industry and academia, but cybersecurity analysts still want a greater accuracy and comprehensive threat analysis to secure their systems in cyberspace. Improvements to intrusion detection could be achieved by adopting a more comprehensive approach in monitoring security events from many heterogeneous sources. Merging security events from heterogeneous sources and learning from data can offer a more holistic view and a better knowledge of the cyber threat situation. A problem with this approach is that at present even a single event source (for example, network traffic) can encounter big data challenges when it is considered alone. Attempts to use more heterogeneous data sources poses far greater challenges. Artificial Intelligence and Big Data Technologies can help solve these heterogeneous data Problems. The proposed approach includes the pre-processing of data and learning. The experimental results show effectiveness of the approach in terms of accuracy and detection rate and prove that Artificial Intelligence I can help achieve better results in Cyber Security context.Key words: Artificial Intelligence, Cyber Security.

Biography

Farah Jemili had the Engineer degree in Computer Science in 2002 and the Ph.D degree in 2010. She is currently Assistant Professor at Higher Institute of Computer Science and Telecom of Hammam Sousse (ISITCOM), University of Sousse, Tunisia. She is a senior Researcher at MARS Laboratory (ISITCOM –Tunisia). Her research interests include Artificial Intelligence, Cyber Security, Big Data Analysis, Cloud Computing and Distributed Systems. She served as reviewer for many international conferences and journals. She has many publications; 6 book chapters, 6 journal publications and more than 20 conference papers.

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