LETTER TO THE EDITOR

Big data analytics: A promising healthcare solution

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Madam, Big data is extensive and complex information for learning patterns and trends that can improve healthcare systems. It is a burgeoning field that is fast gaining traction, which involves: 1) Integration of data sets, 2) Quality control, 3) Analysis, 4) Modeling, 5) Interpretation and 6) Validation.[1] With the analysis of large datasets from patients' multitudes, identifying correlations and linkages between datasets leads to valuable prognostic patterns, comparisons, and markers to inform clinical practice. Patient-specific services, early detection of disease spread, novel insights into disease mechanisms, quality checks of healthcare institutions, and the development of better treatment methods are some of the salient advantageous applications of big data analytics.[2]

In developed countries, data analytics is a well-established industry to aid the health structure; however, this concept is unheard of in developing countries' healthcare industry. Due to staggeringly low resource systems and a shortage of appropriate data collection systems, the data sets usage is cumbersome.[3] Developing countries need to work on a unified, efficient data collection system to apply analytical methods in deducing factual information extensively. Big data analytics applications in developing countries can range from identifying and monitoring of epidemics and endemics to better allocation of healthcare budgets. It can be valuable in predicting and controlling diseases such as dengue fever and tuberculosis in Pakistan. Tracking immunization coverage is another achievable goal through bridging data science and healthcare dispensation.

An example of this is the Reaching Every District (RED) initiative introduced in Africa in 2002, which included increasing immunization coverage to decrease disease rates. It monitored and used data to direct modes of action, leading the country's Polio Eradication Initiative to track polio vaccinations effectively.[4] Pakistan can apply a similar model for its polio eradication campaign. As one of the world's last nations still battling polio, a data-focused approach is needed to galvanize eradication efforts such as strengthening surveillance and providing adequate technical support. On a larger scale, the allocation and subsequent distribution of health resources also apply big data. In Peru, an electronic medical record programme allowed the government to detect problems and allocate resources to the areas hit hardest by TB.[5]

As a primary challenge, data collection and storage modalities need to be fully established to allow our healthcare setup to benefit from the plethora of advantages that big data analytics can offer.

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References

1. Wu PY, Cheng CW, Kaddi CD, Venugopalan J, Hoffman R, Wang MD. -Omic and Electronic Health Record Big Data Analytics for Precision Medicine. IEEE Trans Biomed Eng 2017; 64: 263-73.
2. Ristevski B, Chen M. Big Data Analytics in Medicine and Healthcare. J Integr Bioinform 2018; 15: 20170030.
3. Bram JT, Warwick-Clark B, Obeysekare E, Mehta K. Utilization and Monetization of Healthcare Data in Developing Countries. Big Data 2015; 3: 59-66.
4. Clements CJ, Nshimirimanda D, Gasasira A. Using immunization delivery strategies to accelerate progress in Africa towards achieving the Millennium Development Goals. Vaccine 2008; 26: 1926-33.
5. Fraser HS, Jazayeri D, Mitnick CD, Mukherjee JS, Bayona J. Informatics tools to monitor progress and outcomes of patients with drug resistant tuberculosis in Peru. Proc AMIA Symp 2002: 270-4.

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