**Data Analytics in Healthcare**

**Introduction**

The provisions of modern technology have made it possible to improve the efficiency of service delivery through enhanced methods of data collection, analysis, and decision structures. In a healthcare system, modern technology has been leveraged to reduce patient stay and readmission to the hospital through the integration of modern technology devices for monitoring patient health whether in or outside hospital. This allows the heath care service provide to follow up the recuperation process and advice the patients where necessary on issues regarding their health. This paper seeks to evaluate the applications of modern technology in healthcare based on the functionality of data analytics, data diffusion, and six-sigma analytics.

**Question 1: Real-time patient monitoring technology devices for improved communication between the patient and doctor.**

The use of real-time feedback devices to aid communication between a patient and the doctor is very crucial for the recuperation and rehabilitation process. The modern technological devices are designed to facilitate the interaction for better self-care practices and patient monitoring. Wireless sensor devices, Google glass aids, and health check chair are some examples of the devices that can be used for communication between the patient and the healthcare provider to aid the recuperation process (Ortiz et al., 2015). The Wireless sensor devices are used to provide the healthcare service provider with real-time updates of the health condition of the patient being monitored. This allows the doctor to monitor the healing process and identify vital signs of remedies that may be urgently needed.

Additionally, telehealth application has been used for efficient patient-doctor communication to facilitate the transmission of data concerning the current health status of the patient and the areas that need attention. Using these devices, the patient can alert the healthcare service provider if their condition keeps deteriorating for the appropriate self-care practices that can be used to alleviate the conditions (Ortiz et al., 2015). As a result of usage of these applications, the integration of big data analytics in the treatment process has been made possible especially for the facilities in remote areas where the current infrastructure cannot sustain the inflow of patients. The impacts of the usage of these applications have been mainly reduced cases of patient admission, especially those with minor conditions. The communication between patients and doctors using real-time technology devices has made it possible for the health service providers to remotely attend to the needs of each patient based on the data collected through the applications. This has cumulatively led to the reduction in the cost of treatment as well as congestion in healthcare facilities.

**Question 2: How data analytics leads to improved outcomes in a healthcare system.**

Data analytics is primarily concerned with the evaluation and interpretation of the statistical data that has been collected using various methods of collecting primary data. The application of data analytics in the healthcare system allows the service providers to process the data collected through both qualitative and quantitative research methods to inform critical decisions pertaining to patient health and general management issues (Raghupathi & Raghupathi, 2014). Additionally, it facilitates efficiency in the analysis of the patient depending on the level of urgency regarding their health condition. On a managerial point of view, data analytics provide the hospital managers with the appropriate data to determine the level of staffing required at the healthcare facility to improve the quality of the services. Data analytics provide the basis for evaluation and analysis of the health conditions of each particular patient to determine the type of medication and streamline the entire treatment process accordingly. Therefore, healthcare facilities can use data analytics to evaluate the performance of different products and services to understand the product strengths and weaknesses. Through the application of data analytics, the health service providers can ensure patient satisfaction by engaging in evidence-based practices to improve the quality of care.

**Question 3: The concept of situational awareness and data fusion based on their applicability in situations of noisy and conflicting data.**

The integration of data fusion and situational awareness in the provision of healthcare services is critical in ensuring the effectiveness of the treatment process. Basically, the information synthesized within a healthcare setting is made up of data collected from a wide range of sources within the facility. The data may be collected from patient health records or even documentation of various activities that are carried out in a healthcare facility. Therefore, application of data fusion strategies plays an important role in ensuring the accuracy of healthcare interventions and consistency in the coordination of various activities in the healthcare system for administrative purposes (Baloch et al., 2018). Additionally, data fusion allows for easy retrieval of critical information remotely to use in the various activities involved in the healthcare system. Situational awareness significantly contributes to the rapid response to various situations and emergencies within a healthcare system. Data fusion and situational awareness reduce the likelihood of conflict in data storage since every source is documented according to the specification. Consistency in data management facilitates the identification and integration of data from common sources to allow efficiency in retrieval.

**Question 4: The six sigma analytics and the application of its key concepts in healthcare.**

The six sigma analytics is a quality control approach that is used to increase customer satisfaction through provision of high-quality products and services. This proactive process presupposes the need to identify the areas of weakness to propose the best improvement strategies for better customer satisfaction. However, the six sigma analytics is not efficiently applicable to a health information system due to its rigidity and poor response to situational changes (Ortiz et al., 2015). Proper data analytics for use in the provision of healthcare services should be flexible to accommodate inevitable and dynamic changes within the system. The workflow of activities within a healthcare system requires the application of a reactive process to improve the efficiency of the system. For instance, the system should be designed such that it allows for a seamless retrieval and analysis of the patient data. As a result, the implementation of six sigma analytics is costly and requires comprehensive training to efficiently handle critical issues in a healthcare system.

**Conclusion**

Communication is an important aspect of the recuperation process in health care. Therefore, ensuring seamless communication between the doctors and their patients is very important as it provides the doctor with a real-time update of the status of patient health. Additionally, efficiency in service delivery is also a function of the application of proper data collection techniques such as six sigma analytics and data analytics. These methods facilitate the creation of situational awareness and evidence-based decision-making on various issues affecting the quality of service.

**References**

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