Advance Technologies for Smart Patient Tracking Systems

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Introduction: According to the advances of AI, the way of life has been changed and alongside that, service delivery in different areas has changed a lot. Healthcare domain is not an exception and is affected by AI in many aspects including prognosis, diagnosis, management, cure and etc. Actually, there are many challenges in this area which is handled or can be handled by AI. One of them is the monitoring, management and tracking of patients in the hospital. A patient tracking system is a system that is put in place to monitor patient movements throughout their time in the hospital. Over the years, clinicians have used many different ways to track their patients, including pen and paper, spreadsheets, and now with the use of Radio Frequency Identification (RFID) technology and the Internet of Things (IoT). This study aims to review articles about smart patient tracking systems.

Materials & Methods: The articles published between 2012 and 2022 were studied in this review. To access related scientific documentation, electronic search was conducted on the Scopus, PubMed, ScienceDirect, InterScience, ProQuest and Google Scholar databases. At first, 190 articles were found and 35 papers were considered to cover the objectives of this study and 20 of them were selected after reading their full texts. The criteria for entering the reviewed articles include its relation to registry, publishing between 2012-2022, publication in English, and the availability of the full text of the articles. In addition, those papers which were not written in English, presented at conferences, had only their abstracts available and published only on websites were excluded. In order to evaluate the quality of the collected articles, the researchers reviewed the articles in terms of title, abstract, introduction, method, results, discussion, and also references where needed.

Results: Most commonly, (RFID) tags and IoT technology are used by means of providing a patient tracking system in a smart hospital environment. Patient must wear the RFID tags so they can be monitored by healthcare providers so can track the real-time status and their locations in addition to accessing a digital directory of their health records. These tags are often provided in hospital bracelets or worn around the neck on a lanyard or even implanted. Also, hospital equipment could be enhanced with IOT to help authorized users keep tracking the place and status of any patient.

Conclusion: Patient tracking may reduce workflow errors and improve communications between staffs and it can help to understand and evaluate how processes actually work and where an unplanned issue occurs. Patient tracking capabilities can also extend beyond hospital to the hands of loved ones in order to alert them when an emergency such as a fall or even missed appointment happens. A smart Patient tracking system can help to locate patients, driving patient safety, better tracking of the treatment process, enhancing internal schedules, reduced wait time for patients, increased patient and visitor satisfaction, predict patient flow and admission rates, alert hospital staff of emergency situations, efficient bed management, improved decision-making and optimized cleaning.

Keywords: Artificial Intelligence, Patient Tracking System, Smart Health, Smart Hospital