

AI REMOTE PATIENT MONITORING SYSTEM FOR LILLYBROOK CARE HOME IN THE UK

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INTRODUCTION

Remote Patient Monitoring (RPM) systems play a crucial role in modern healthcare by digitally collecting data to improve chronic disease management and decrease hospital readmissions (Kumar & Singh, 2020; Guk et al., 2019). A care home, such as Lillybrook Care Home, provides residential accommodation and personal care for individuals who require support due to age, illness, or disability.



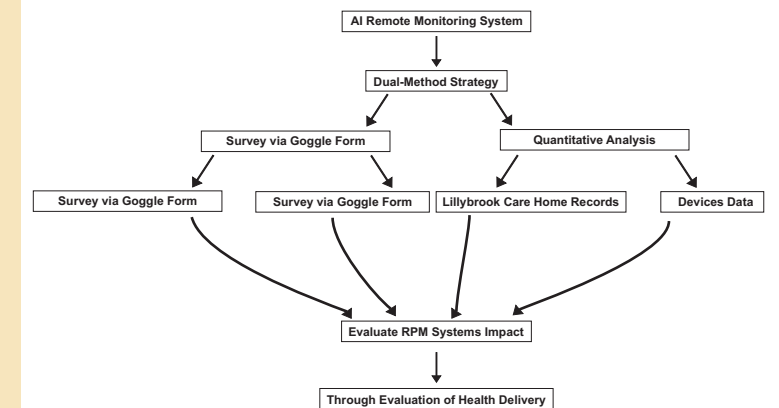
METHODOLOGY

The research employs a mixed-methods approach, integrating quantitative data from clinical records and patient-monitoring devices at Lillybrook Care Home with qualitative insights from surveys targeting healthcare professionals and patients experienced with Remote Patient Monitoring (RPM). This holistic strategy enables a thorough analysis of RPM systems' efficacy, user experiences, and areas for improvement.

Ethical considerations are crucial for ensuring research integrity and respecting participant privacy at Lillybrook Care Home. Informed consent will be obtained, and data anonymized to protect privacy. Access to data will be secured and limited to authorized personnel. Our use of Google Forms for data collection will adhere to these ethical standards, focusing on anonymity and data security. We will seek ethical approval in line with university guidelines, ensuring all activities, especially at Lillybrook Care Home, comply with ethical standards and contribute positively to healthcare technology research.

Data Gathering

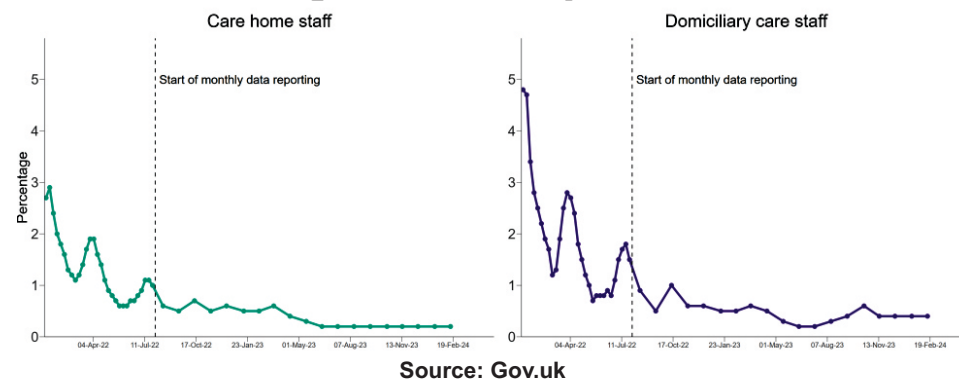
Our AI Remote Patient Monitoring Systems research employs a dual-method strategy, combining surveys via Google Forms for qualitative insights from RPM-experienced healthcare professionals and patients, with quantitative analysis of 200 data points from Lillybrook Care Home's clinical records and devices. This integrated approach aims to thoroughly evaluate RPM systems' impact on healthcare delivery.



BACKGROUND AND OBJECTIVES

Amid workforce shortages and COVID-19 impacts, England's adult social care sector, with staff absence peaks reaching 4.8% in January 2022 and ongoing fluctuations into 2023, urgently needs AI-based solutions, as indicated by the Department of Health and Social Care (2024).

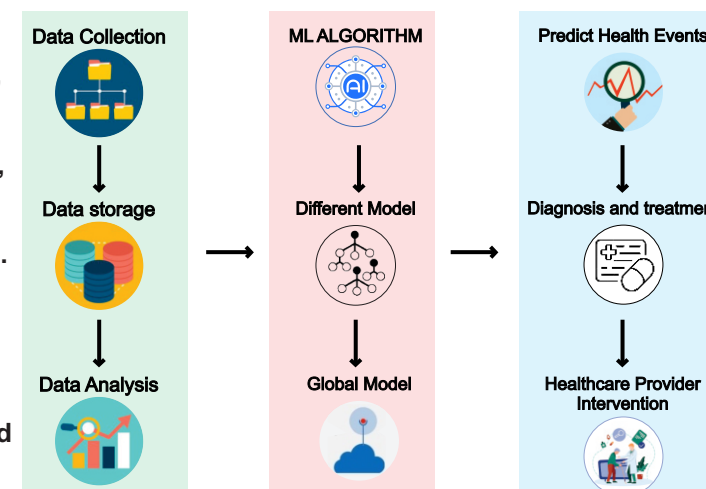
This research, through a case study at Lillybrook Care Home, focuses on developing, training, and testing a tailored Machine Learning Remote Patient Monitoring System (RPMS) to identify the most effective predictive model. These models are specifically designed to alert healthcare professionals, analyze current conditions, predict future scenarios, and provide actionable recommendations, thereby enhancing the efficiency and effectiveness of healthcare decision-making and service delivery.



Source: Gov.uk

Machine Learning Model Development

The absence of AI and machine learning in healthcare hinders swift, effective care; their integration could revolutionize operations, fostering personalized care and improved provider communication. The image outlines a healthcare workflow using ML algorithms to predict health events, leading to improved diagnosis, treatment, and personalized care.



Expected Outcome

The research anticipates improved decision-making and patient care, with a focus on real-time monitoring and proactive health management. By integrating diverse data, we aim to enhance RPM effectiveness and patient experience, promoting healthcare innovation. This is expected to lower readmissions and personalize care, reflecting a significant leap in healthcare technology.

RELATED WORK

Remote Patient Monitoring (RPM) is highlighted as a transformative approach in healthcare, emphasizing the importance of effective communication through patient portals to improve health outcomes and safety (Baughman, D.J., Botros, P.A. & Waheed, A., 2024). The system's capability to monitor various parameters for chronic conditions plays a crucial role, though challenges like insurance coverage variability, administrative burdens, data privacy concerns, and effectiveness across conditions persist (Baughman et al., 2024). Addressing these barriers is essential for maximizing RPM's potential in healthcare delivery (Baughman et al., 2024).

References

1. Kumar, S. & Singh, A., 2020. Efficacy of Remote Patient Monitoring in Chronic Disease Management: A Systematic Review. *Journal of Medical Systems*.
2. Guk, E.T., Lee, J.N. & Park, Y.H., 2019. Remote Patient Monitoring: The Foundation for a New Healthcare Era. *Healthcare Technology Journal*.
3. Department of Health and Social Care, 2024. Adult social care in England, monthly statistics: March 2024. [online] GOV.UK. Available at: [https://www.gov.uk/government/statistics/adult-social-care-in-england-monthly-statistics-march-2024/adult-social-care-in-england-monthly-statistics-march-2024] [Accessed March 10, 2024].
4. Baughman, D.J., Botros, P.A. & Waheed, A., 2024. Remote Patient Monitoring. *FP Essentials*, (537), p.21.