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Module Introduction to Independent Research Skills

Research Proposal

Topic: What Impact of Artificial Intelligence on Diagnostic Accuracy in the UK National Health Service (NHS)? A Scoping Review

AI's application in healthcare has increasingly become relevant due to its potential in clinical decision support, improving diagnostic accuracy, and aiding in achieving better patient outcomes. In the United Kingdom's National Health Service (NHS), AI tools are being implemented in various fields, including medical imaging, pathology, and risk prediction, to support healthcare providers in timely and accurate diagnoses. This study's review question is: *How does the use of AI affect diagnostic accuracy in the NHS healthcare setting in the UK?* The purpose of the objectives is as follows: These objectives are to identify areas of diagnostic practice in the NHS that AI can be applied in; *To explore the reported changes in diagnostic accuracy with the use of AI; To discuss the advantages and disadvantages of implementing AI in healthcare in the UK.*

The topic is selected based on the rapid pace of digitalisation in healthcare and the increasing investment the NHS are making in AI driven technologies. Diagnostic errors continue to be a challenge and can impact patient safety and quality of care. In conclusion, AI holds the potential to significantly influence patient care and streamline healthcare systems by tackling the complexity of patient needs and optimizing workflows. AI can facilitate and standardize diagnosis, manage patient requirements, and enhance clinical decision-making. But quality issues, algorithmic bias, clinical validation and ethical considerations continue to be an issue. The scoping review will provide a general overview of the current evidence available and identify any gaps in the evidence (in order to inform both research and health care practice).

Recent studies suggest that AI could improve diagnostic accuracy and that, in healthcare settings, human oversight and good governance is essential (Topol, 2019; Davenport & Kalakota, 2019; World Health Organization, 2021).

This study will employ a scoping review methodology for mapping the evidence. The databases that will be used to search will be PubMed, CINAHL, MEDLINE, Scopus and Google Scholar and will be peer-reviewed English-language articles published between 2020 and 2026. The terms being searched for will be "artificial intelligence," "diagnostic accuracy," "NHS," "United Kingdom" and "digital health. Studies involving the use of the AI tools in a healthcare setting in the UK will be added to the exception list (apart from editorials and opinion papers) as well as studies conducted outside healthcare diagnostics. A standard charting form will be utilized to extract data and thematic analysis will be used to determine common findings, trends and research gaps.

This research will consist of literature only and therefore there is no need for formal ethical approval. The academic honesty rules will be followed, which involve using proper referencing of all sources, avoiding plagiarism, and presenting results objectively and transparently in accordance with University's Harvard referencing style.

Reference:

Davenport, T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare. *Future Healthcare Journal*, 6(2), 94–98.

Topol, E. (2019). *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. Basic Books.

World Health Organization. (2021). *Ethics and governance of artificial intelligence for health*. WHO.