

APPLICATION FOR ETHICAL APPROVAL

RESEARCH STUDENTS

This form is to be completed by the student within **SIX** months for full-time students and **TWELVE** months for part time students, after the commencement of the research degree or following progression to Part Two of your course.

Once complete, submit this form via the ***MyTSD Doctoral College Portal*** at (<https://mytsd.uwtsd.ac.uk>).

This document is also available in Welsh.

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk , with the title 'Ethical Approval' followed by your name.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

3	Institute/Academic Discipline/Centre:	Institute of inner City learning
4	Campus:	London
5	E-mail address:	2242089@student.uwtsd.ac.uk

6	Contact Telephone Number:	07776685679
For students:		

The University follows the OECD Frascati manual definition of **research activity**: “creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications”. As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the “principal researcher”.

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Siva prasanth Dandamud			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☒	Postgraduate Research Student

7	Student Number:	2242089
8	Programme of Study:	Msc public health and social care in practice
9	Director of Studies/Supervisor:	Dr.Diola Bijlhout

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☐	NO	☒
				Date	
2		Research Degrees Committee	☐	N/A	

If Yes, please indicate source of approval (and date where known): Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Institute Research Committee	☐	
	Other (write in)	☐	

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.		
1	UWTSD Research Ethics & Integrity Code of Practice	☒	
2	UWTSD Research Data Management Policy	☒	
3	<i>[List any other relevant documents here]</i>	☐	

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution	N/A				
2	Contact person name					
3	Contact person e-mail address					
4	Is your research externally funded?	YES	☐	NO	☐	
5	Are you in receipt of a KESS scholarship?	YES	☐	NO	☐	
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☐
7		Employed	YES	☐	NO	☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	YES	☐	NO	☐

9	Has permission to undertake the research has been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☐
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Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	☐	NO	☒
If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).					

SECTION E: Details of Research Activity

Indicative
Current Applications, Challenges, and Future Needs of Artificial
title:
Intelligence in UK Healthcare: A Systematic Review

Proposed start date: 10-06-2024 Proposed end date: 10-09-2024

Introduction to the Research (maximum 300 words per section)

Ensure that you write for a Non-Specialist Audience when outlining your response to the points below:

Purpose of Research Activity

The purpose of this research is to explore how Artificial Intelligence (AI) is being currently used in the UK's healthcare system, identify the challenges faced in the way of its implementation, and determine what future improvements are needed in this direction. Consequently, by conducting a thorough review of the existing studies on the subject, this research aims to provide a comprehensive understanding of AI's role in healthcare in the context of UK. Additionally, this research also aims to offer insights which could help in enhancing its integration with the UK's existing healthcare systems for better healthcare outcomes.

Proposed Research Question

1. To what extent has AI been integrated into the UK healthcare system, and which specific applications have been the most widely adopted?
2. What are the main challenges encountered in the integration of AI in UK's healthcare system, and what improvement areas can be targeted to address these gaps effectively?

Aims of Research Activity

To comprehensively explore the current applications, challenges and future needs of Artificial Intelligence in UK's healthcare sector by evaluating and synthesizing from existing research.

Objectives of Research Activity

1. To identify and describe the use of AI applications/tools currently integrated into the UK healthcare system.
2. To identify barriers and facilitators of AI use in the healthcare system.

3. To determine areas for improvement and future needs for AI in UK healthcare.

Demonstrate, briefly, how **Existing Research** has informed the proposed activity and explain

This proposed research builds on the existing literature on the subject by highlighting both the potential and the current limitations of AI in healthcare. For instance, Bajwa et al. (2021) demonstrated in their study the transformative power of AI in improving diagnostic accuracy for ailments and personalizing treatment plans. In this context, the British Standards Institute (2023) survey revealed that more than half of the UK's public holds optimism about the benefits of AI in managing NHS backlogs and improving healthcare delivery. Despite these positive perceptions of AI, the existing literature – including a 2018

	report by the Institute for Public Policy Research – has underscored that integration barriers and operational inefficiencies serve as substantial challenges to the widespread adoption of AI in UK's healthcare system (UK Parliament, 2020). Therefore, these insights form the foundation of this systematic literature review, by directing the focus of this research on the current applications, challenges, and future needs of AI in UK's healthcare sector. <i>What the research activity will add to the body of knowledge</i> This research will add a comprehensive synthesis of the current status of AI within the UK's healthcare system, which will illuminate the specific applications which have been successfully integrated and those which have not been done yet. In addition to this, the research will also provide a clear understanding of the barriers and facilitators to the adoption of AI, thus presenting a holistic view that is currently fragmented across various studies. Finally, the findings of this review will identify the key areas for improvement in this direction and the future needs of AI in healthcare, in order to provide actionable insights for policymakers, healthcare providers as well as technology experts. Subsequently, these will aid in the strategic planning and the implementation of AI in healthcare. <i>How it addresses an area of importance.</i> AI has the potential to fully revolutionize how healthcare is experienced in the UK, by enhancing its efficiency, accuracy as well as patient outcomes. However, it has still not reached its full potential in the UK due to various implementation challenges. Hence, addressing these challenges is crucial for the UK's healthcare system, especially considering that there are increasing demands on the existing healthcare systems and resource constraints. Therefore, this research addresses the critical need to understand and overcome the barriers of AI adoption, thus facilitating more effective and widespread integration of AI in healthcare. Subsequently, the findings of this review will support informed decisionmaking in this domain, leading to better healthcare delivery and improved health outcomes for all UK citizens.
3	Purpose of Research Activity The purpose of this research activity is to conduct a systematic literature review to explore the current state of AI in the UK's healthcare system. This includes identifying how AI is being currently utilized, the challenges faced during its implementation, and the future needs which should be addressed for its effective integration. Ultimately, by synthesizing the existing research, this review aims to provide a detailed understanding in the role of AI in healthcare today, and offer insights to guide its improvements and inform future policy decisions. (this box should expand as you type)
4	Research Question 1. To what extent has AI been integrated into the UK healthcare system, and which specific applications have been the most widely adopted? 2. What are the main challenges encountered in the integration of AI in UK's healthcare system, and what improvement areas can be targeted to address these gaps effectively? (this box should expand as you type)
5	Aims of Research Activity To comprehensively explore the current applications, challenges and future needs of Artificial Intelligence in UK's healthcare sector by evaluating and synthesizing from existing research.

	(this box should expand as you type)
6	Objectives of Research Activity 1. To identify and describe the use of AI applications/tools currently integrated into the UK healthcare system. 2. To identify barriers and facilitators of AI use in the healthcare system. 3. To determine areas for improvement and future needs for AI in UK healthcare. (this box should expand as you type)

7	Proposed methods (maximum 600 words) This research will employ systematic literature review as its research method. Consequently, this will involve systematically identifying and synthesizing primary qualitative evidence in order to answer the defined research question. For this, there will be a pre-defined inclusion/exclusion criterion which will guide the inclusion of studies in the review. Thereafter, a comprehensive search will be conducted across several academic databases (for example: PubMed, Scopus, Wiley Online Library, Web of Science) as well as Google Scholar. The search terms for this search will be derived from the SPIDER framework of the research question. Subsequently, the search string will combine these search terms using Boolean operators AND and OR in order to ensure comprehensive coverage of relevant studies. Post this, the search results will be screened in two stages. In the first stage, an initial screening based on the titles and abstracts will be conducted, in order to establish the relevance of the obtained search results to the research question. In the second stage, full-text articles which have cleared the initial screen will be further assessed on the pre-defined inclusion/exclusion criteria, methodological rigor, risk of bias and the overall credibility of the findings. Thereafter, the selected studies will undergo a detailed data extraction process, during which key information such as the authors, publication year, study aims, methods, key findings and limitations will be extracted. Then, this data will be organized into a data extraction table for a systematic analysis. Finally, the obtained data from the included studies will be analyzed using thematic analysis, by identifying, analyzing, and reporting common patterns, ideas, or themes from the data. Since this is a secondary data analysis without any direct involvement of human participants, the ethical considerations will be related to the included studies. Therefore, all of the included studies will be properly cited throughout the review and the ethical approval process for this research will be followed as per the guidelines of the institution.
	(this box should expand as you type)
8	Location of research activity Identify all locations where research activity will take place.
	United Kingdom (this box should expand as you type)

	Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural and/or legal sensitivities or vulnerabilities of participants. If you live in the country where you will do the research then please state this.
9	<i>(this box should expand as you type)</i>

10	Use of documentation not in the public domain: Are any documents <u>NOT</u> publicly available?	NO	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. <i>(this box should expand as you type)</i>		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☐	☒
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☒
15	A more equal Wales	☐	☒
16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☐	☒
19	If YES to any of the above, please give details:		
	(this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:		NO
1	Use of a questionnaire or similar research instrument?		No
2	Use of interviews?		No
3	Use of focus groups?		No
4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?		No
6	Use of computer-generated log files?		No
7	Participant observation with their knowledge?	☐	☒
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.		
	Details of any other primary data collection method: (this box should expand as you type)	☐	☒

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:		N/A

PG2 / E1 FORM

1	Students or staff at the University?	☐	☐
2	Adults (over the age of 18 and competent to give consent)?	☐	☐

3	Vulnerable adults?	☐	☐
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☐
5	Prisoners?	☐	☐
6	Young offenders?	☐	☐
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☐
8	People engaged in illegal activities?	☐	☐
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.		
	Details of any other participant groups: (this box should expand as you type)	☐	☐

	Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?	
10	How many participants are expected?	N/A <i>(this box should expand as you type)</i>
11	Who will the participants be?	N/A <i>(this box should expand as you type)</i>
12	How will you identify the participants?	N/A <i>(this box should expand as you type)</i>

	Information for participants:	YES	NO	N/A
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PG2 / E1 FORM

13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☐	☐	N/A
14	Will you tell participants that their participation is voluntary?		☐	N/A
15	Will you obtain written consent for participation?		☐	N/A
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?		☐	N/A
17	If the research is observational, will you ask participants for their consent to being observed?	☐	☐	N/A
18	Will you tell participants that they may withdraw from the research at any time and for any reason?		☐	N/A
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☐	☐	N/A
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?		☐	N/A

21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?		☐	N/A
22	If NO to any of above questions, please give an explanation			
	<i>(this box should expand as you type)</i>			

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐		N/A
25	Is specialist electrical or other equipment to be used with participants?	☐		N/A
26	Are there any financial or other interests to the investigator or University arising from this study?	☐		N/A
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐		N/A
28	If YES to any question, please provide full details			
	<i>(this box should expand as you type)</i>			

SECTION H: Anticipated Risks

	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.		
1	Full risk assessment completed and appended?	Yes ☐ No ☒	
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information		
	Risk to participants: N/A <i>(this box should expand as you type)</i>	How you will mitigate the risk to participants: N/A <i>(this box should expand as you type)</i>	
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities		
	N/A <i>(this box should expand as you type)</i>		
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest		
	Risk to the investigator:	How you will mitigate the risk to the investigator: N/A	
	Risk to the University: Access of data, affecting reputation <i>(this box should expand as you type)</i>	How you will mitigate the risk to the University: Store data in secured university cloud <i>(this box should expand as you type)</i>	
6	Environmental risks For example: accidental spillage of pollutants, damage to local ecosystems		
	Risk to the environment: N/A <i>(this box should expand as you type)</i>	How you will mitigate the risk to environment: <i>(this box should expand as you type)</i>	

	Disclosure and Barring Service			
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A

7	Does your research require you to hold a current DBS Certificate?	☐	☐	☒
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when?
	N/A <i>(this box should expand as you type)</i>
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation.
	N/A <i>(this box should expand as you type)</i>
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.
	N/A <i>(this box should expand as you type)</i>

SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.	☐	.NO
	If YES, provide a description of the data and explain why this data needs to be collected:		

N/A			
2	Demographic data, in order to investigate the research topic effectively <i>(this box should expand as you type)</i>		
	Does it involve special category data (as defined by the GDPR)?	YES	NO
3	“Special category data” means sensitive personal data consisting of information as to the data subjects’ – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),		N/A
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	<i>(this box should expand as you type)</i>		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	YES	NO
5	Manual files (i.e. in paper form)?	☒	☐
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☒	☐
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☒	☐
11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	Use of password protection, encryption (this box should expand as you type)		

	Data Protection
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	Will the research activity involve any of the following activities:	YES	NO
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PG2 / E1 FORM

13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☐	☒
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?		No
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☒	☐
20	Data archiving?	☐	☒
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	N/A <i>(this box should expand as you type)</i>		
22	List all who will have access to the data generated by the research activity:		
	Supervisor <i>(this box should expand as you type)</i>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	The student researcher <i>(this box should expand as you type)</i>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	Stored in university cloud until the data ends and afterwards data will be discarded <i>(this box should expand as you type)</i>		
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtسد.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i>		
	N/A <i>(this box should expand as you type)</i>		
26	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtسد.ac.uk/library/research-data-management/)	YES	☒

27	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒
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SECTION K: Declaration

The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/			
1	Signature of applicant:	Siva Prasanth Dandamudi	Date: 16 th July 2024

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Itse Olaoye	Date: 16 th July 2024
3	Signature:		

For STAFF Submissions:

4	Academic Director/ Assistant Dean:		Date:
5	Signature:		

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☐	I confirm that the research activity has received approval in principle
☒	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS ONLY

Once complete, submit this form via the **MyTSD Doctoral College Portal** at (<https://mytsd.uwtsd.ac.uk>).

RESEARCH STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk , with the title 'Ethical Approval' followed by your name.

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References

Bajwa, J., Munir, U., Nori, A., & Williams, B. (2021). Artificial intelligence in healthcare: transforming the practice of medicine. *Future healthcare journal*, 8(2), e188–e194. <https://doi.org/10.7861/fhj.2021-0095>

British Standards Institute (BSI). (2023). *Closing 'AI confidence gap' key to powering its benefits*. Available at: <https://www.bsigroup.com/en-GB/insights-and-media/mediacentre/pressreleases/2023/october/closing-ai-confidence-gap-key-to-powering-its-benefits-for-societyand-planet/> [Accessed on: 2-July-2024].

UK Parliament. (2020). *AI and Healthcare*. Available at: <https://researchbriefings.files.parliament.uk/documents/POST-PN-0637/POST-PN-0637.pdf> [Accessed on: 2-July-2024].

Topic: Current Applications, Challenges, and Future Needs of Artificial Intelligence in UK Healthcare: A Systematic Review

Research Aim:

To comprehensively explore the current applications, challenges and future needs of Artificial Intelligence in UK's healthcare sector by evaluating and synthesizing from existing research.

Research Question:

1. To what extent has AI been integrated into the UK healthcare system, and which specific applications have been the most widely adopted?
2. What are the main challenges encountered in the integration of AI in UK's healthcare system, and what improvement areas can be targeted to address these gaps effectively?

Research Objectives:

1. To identify and describe the use of AI applications/tools currently integrated into the UK healthcare system.
2. To identify barriers and facilitators of AI use in the healthcare system.
3. To determine areas for improvement and future needs for AI in UK healthcare.

Research Gap:

The adoption of AI in healthcare has seen a global rise due to its transformative potential, such as improving diagnostic accuracy, personalizing treatment plans, and streamlining hospital operations (Bajwa et al., 2021). In the UK, there is a growing perception of AI's benefits in healthcare as a survey by the British Standards Institute (BSI) indicates that more than half of the UK public is optimistic about AI's potential to improve healthcare delivery and help manage National Health Services (NHS) backlogs (BSI, 2023).

Notably, a report published by the Institute for Public Policy Research in 2018 estimated that AI and automation could potentially save £12.5 billion per year to the NHS by freeing up staff time (UK Parliament, 2020). Despite this optimism, there are still substantial challenges to widespread

AI implementation in UK's healthcare sector. While AI has been widely adopted in various other industries within the UK—such as consumer devices, virtual assistants, and search engines—healthcare has not yet reached the same level of integration (NHS England, 2024). Therefore, this systematic literature review (SLR) is essential to fully identify the extent of AI adoption in UK healthcare. Additionally, it aims to uncover the specific challenges and barriers that are hindering this progress and to highlight key areas for improvement. Subsequently, the findings from this SLR can inform future policy decisions to enhance AI adoption in healthcare, ultimately benefiting UK citizens through improved health outcomes and more efficient healthcare services.

Methodology:

Research Method: Systematic Literature Review **Inclusion/Exclusion Criteria:**

Criteria	Inclusion	Exclusion
Sample studies	Studies exploring AI applications in UK's healthcare sector	Studies not exploring AI applications in UK's healthcare sector
Study design	Primary qualitative or mixedmethod studies	Primary quantitative studies, secondary reviews, metaanalyses, editorials, opinion letters, conference abstracts
Publication Date	Published between 2014-2024	Published prior to 2014
Language	Published in English language	Published in non-English languages
Research focus	Studies which explore the current AI applications in the UK healthcare industry, or discusses the challenges and future needs of AI in this sector	Studies not reporting on these outcomes
Accessibility	Open access with full-text availability	Studies with restricted access

In addition to this, the specific search categories which will be considered for the relevant literature search includes: AI applications in healthcare, challenges of AI in healthcare, future needs of AI in healthcare, AI in diagnostics and treatment, operational efficiency of AI in healthcare, and policy and ethical considerations of AI in healthcare

Search terms (and a list of synonyms or related terms):

Keywords	Synonyms/Related Terms
Artificial Intelligence	AI, Machine Learning
Healthcare	Diagnosis, Treatment
Challenges	Barriers, Efficiency, Management, Regulation, Ethics
Future Needs	Advancements, Future

Accordingly, the following search string was developed to obtain the relevant studies for this review:

("Artificial Intelligence" OR "AI" OR "Machine learning")

AND

("healthcare" OR "diagnosis" OR "treatment")

AND

("challenges" or "barriers" or "efficiency" or "management" OR "regulat*" OR "ethic*")

AND

("future needs" or "advancements" or "future")

Data Collection: The relevant keywords as per the topic will be identified, and a search string will be developed to conduct a literature search across various academic databases. Thereafter, the obtained search results will be screened as per the predefined inclusion/exclusion criteria by evaluation of their titles and abstracts for relevance. Thereafter, the full-text articles that meet the initial screening criteria will be further scrutinized for inclusion, based on their methodological rigor and topic relevance. Lastly, the data will be extracted from the finalized articles, including

authors, publication year, study aims, methods, and key findings, and organized into a data extraction table.

Data Analysis: Thematic Analysis

References

Bajwa, J., Munir, U., Nori, A., & Williams, B. (2021). Artificial intelligence in healthcare:

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UK Parliament. (2020). *AI and Healthcare*. Available at: <https://researchbriefings.files.parliament.uk/documents/POST-PN-0637/POSTPN0637.pdf> [Accessed on: 21-June-2024].