Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/yztab291

USE OF ARTIFICIAL INTELLIGENCE TOOLS IN EMERGENCY MEDICINE: A CROSS-SECTIONAL SURVEY AND NARRATIVE REVIEW

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ABSTRACT

Background: The use of artificial intelligence (AI) tools in emergency medicine is expanding rapidly, with clinicians increasingly integrating platforms such as ChatGPT, Gemini, and DeepSeek into their daily workflows. Despite the growing prevalence of these tools, there remains a lack of formal guidance around their use, particularly in relation to data governance, medico-legal accountability, and clinical safety. Understanding current utilisation patterns, clinician perceptions, and safety concerns is essential to guide safe and effective AI adoption in emergency departments (EDs).

Objective: To evaluate awareness, utilisation, and clinician attitudes toward AI tools among emergency medicine professionals in the UK, and to identify practical concerns and recommendations for integrating AI safely into NHS emergency care.

Methods: A cross-sectional survey was conducted among emergency medicine clinicians across various NHS hospital types. A total of 31 participants completed the structured questionnaire, covering awareness, frequency of use, perceived safety, cognitive workload impact, and preferred safeguards. Responses were analysed descriptively, with data represented as frequencies and percentages.

Results: AI awareness was high, with 93.5% of respondents reporting familiarity with tools such as ChatGPT and Gemini. Over 83% reported occasional or regular use, predominantly for documentation (63%), clinical decision support (38.7%), prescribing guidance (38.7%), triage stratification (38.7%), and patient explanation (38.7%). While 77.4% believed AI could reduce cognitive workload, 87.1% cited data protection and GDPR compliance as the primary concern. Other concerns included medico-legal accountability (67.7%) and algorithmic bias (61.3%). All respondents supported NHS-hosted, GDPR-compliant AI tools, and 93.5% recommended formal training by Trusts. Open-ended responses emphasised the need for rigorous testing, clinician oversight, local hosting, and integration into existing EPR systems.

Conclusion: Emergency clinicians demonstrate strong awareness and emerging reliance on AI tools, primarily for documentation and clinical decision support. However, widespread adoption is hindered by significant data governance concerns and the absence of NHS-sanctioned infrastructure. There is urgent need for policy frameworks, training pathways, and secure AI integrations that align with legal, ethical, and clinical standards in the UK emergency care context.

Keywords: ChatGPT, Artificial Intelligence (AI), NHS.

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force in global healthcare systems, with its applications extending from diagnostics and imaging to clinical decision support and administrative workflows.[1] In emergency medicine, where time-sensitive decision-making and high

cognitive load are routine, AI presents unique opportunities to improve efficiency, reduce documentation burden, and enhance diagnostic accuracy.[2] Large Language Models (LLMs) such as ChatGPT (OpenAI), Gemini (Google), and DeepSeek are increasingly accessible on personal devices, and their widespread use outside institutional frameworks has introduced new ethical, legal, and practical considerations.[3,4]

Healthcare professionals, particularly in the United Kingdom, are already informally integrating AI tools into their clinical practice. Anecdotal observations and personal experience within emergency departments (EDs) suggest that many clinicians-ranging from SHOs to consultants-are using AI for real-time assistance with documentation, discharge summaries, clarification of differentials, or rephrasing of complex medical explanations for patients. These practices, often undertaken using personal smartphones or non-NHS devices, indicate that AI use in EDs is both emergent and under-regulated.[5,6]

The informal and unregulated adoption of generative AI tools in the NHS clinical settings presents significant risks, including data leakage, clinical inaccuracy, lack of transparency, and algorithmic bias. These concerns are well-documented in the medical literature, which highlights that generative AI models, such as LLMs, can produce plausible but incorrect or misleading clinical content, propagate biases from their training data, and lack transparency in their decision-making processes.[7,8] The closed-source nature of many models further complicates the ability to audit or understand their outputs, undermining trust and accountability in clinical care.[7,8]

The justification for this study stems from a confluence of rapid technological adoption and insufficient institutional oversight. Clinicians are already using AI in the ED, often to bridge the gap in time, manpower, or guidance. However, these practices remain unstructured, unmonitored, and legally ambiguous. There is currently no unified NHS policy on the use of AI for real-time clinical support in emergency care, nor are there established training protocols to ensure safe and effective usage. As such, clinicians are left to navigate AI adoption without formal governance-a gap that could jeopardise patient safety, professional accountability, and compliance with existing regulations.[9]

Recent national strategies acknowledge this changing landscape. The NHS Long Term Workforce Plan (2023) explicitly emphasizes the need to harness digital tools, including AI, to address workforce shortages, improve productivity, and support patient-centred care.[10] Parallel to this, the British Medical Association (BMA) has published its Principles for Artificial Intelligence and Its Application in Healthcare (2023), outlining core standards such as safety, transparency, accountability, and fairness.[11] According to the BMA, AI must be integrated in a way that upholds professional standards, avoids bias, maintains explainability, and preserves patient data integrity. These frameworks underscore the pressing need for empirical research to guide responsible integration of AI in clinical environments.

To that end, this study was designed to Assess the awareness and usage of AI tools among emergency clinicians in the UK; Explore their perceptions regarding safety, benefits, and risks, and; Identify clinician-driven recommendations for safe adoption of AI in emergency departments. By conducting a cross-sectional survey, the aim is to generate actionable insights that can inform NHS policy, support Trust-level planning, and guide ethical AI deployment in frontline care. In doing so, this work contributes to the growing dialogue around AI in healthcare by offering empirical data from practising clinicians in one of the most dynamic and high-stakes clinical environments.

MATERIALS & METHODS

Study Design

This was a cross-sectional, descriptive survey study conducted to assess the awareness, usage, attitudes, and concerns regarding artificial intelligence (AI) tools among healthcare professionals working in emergency departments (EDs) across the United Kingdom. The study adhered to the principles of the Declaration of Helsinki and followed institutional guidance for quality improvement and staff engagement studies. Ethics approval was not required, as no patient data were collected and no intervention was administered.

Participant Recruitment and Inclusion Criteria

The survey was distributed via email, social media, and professional messaging platforms to doctors, nurses, advanced clinical practitioners (ACPs), and physician associates (PAs) working in NHS emergency departments. Participation was voluntary. The inclusion criterion was any clinician (regardless of grade or specialty training) who currently worked in an ED in the United Kingdom and consented to complete the survey. Respondents were excluded if they were not affiliated with an ED setting.

Survey Development

The survey instrument was developed using Google Forms and consisted of 14 items covering the following domains: Demographic characteristics (role, years of experience, type of hospital), Awareness and personal use of AI tools in clinical care, Applications for which AI tools had been used, Perceptions of AI's impact on cognitive workload and safety, Concerns regarding AI use in emergency medicine, Recommendations for formal training and safeguards, Open-ended questions for qualitative input. Most questions were mandatory and required single or multiple-choice responses. The final item invited open comments on safeguards, trust-level policies, and preferred use cases.

Data Collection and Integrity

The survey remained open for two weeks in October-November 2025. A total of 31 valid responses were received. All questions were required except for the final open-ended comments. No partially completed surveys were accepted. To ensure anonymity, no personally identifiable data were collected.

Data Analysis

Quantitative responses were summarised using descriptive statistics (counts and percentages). Multiple-response questions were treated as multi-select categorical variables. Figures were prepared to visualise distributions across roles, experience, hospital types, usage frequency, and perceived safety. A p-value threshold of <0.05 was predefined for any future inferential comparisons, although this study was designed for descriptive purposes only. All data were analysed manually and presented using Microsoft Excel.

Qualitative responses were reviewed thematically to identify common patterns in participant concerns and suggestions regarding AI implementation and regulation.

RESULTS

Participant Demographics and Characteristics

A total of 31 emergency medicine clinicians participated in the survey. The most common professional group was Senior House Officers (SHOs), comprising 9 (29.0%) of respondents, followed closely by registrars 13 (41.9%). Consultants, ACPs/PAs, and nurses constituted 6.5%, 6.5%, and 16.1% respectively (Figure 1). Most participants had 5 to 10 years of experience in emergency medicine [15 (48.4%)], while 25.8% each reported less than 5 years or 11-20 years of clinical experience (Figure 2).

In terms of workplace setting, the majority of respondents 25 (80.6%) were based at district general hospitals, with the remainder worked in tertiary or teaching centres (Figure 3).

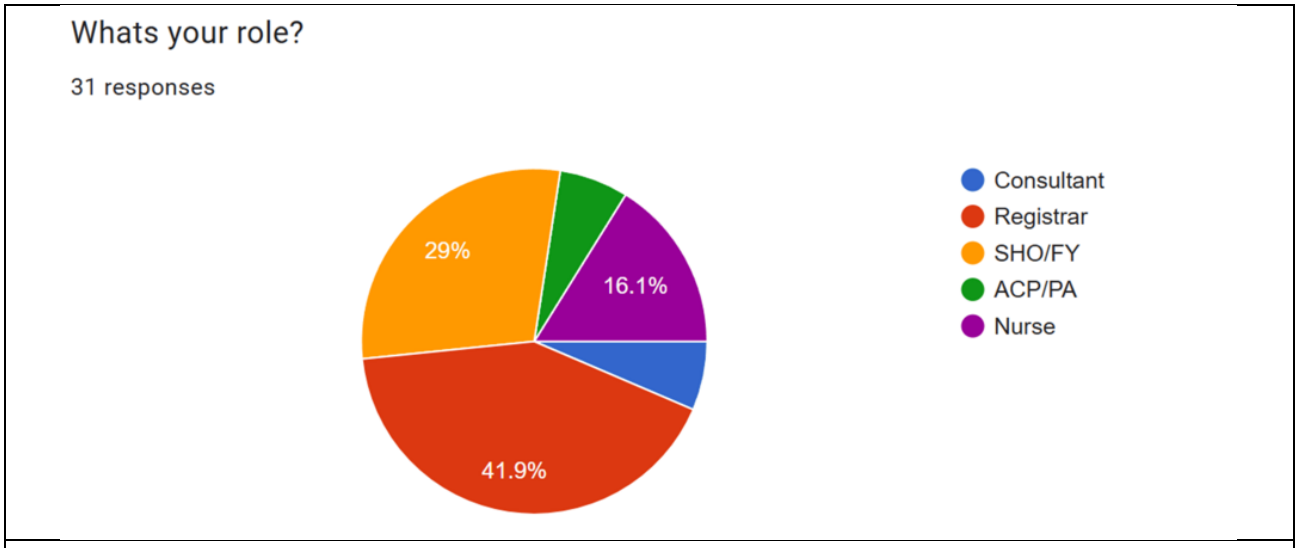

Figure 1: Role

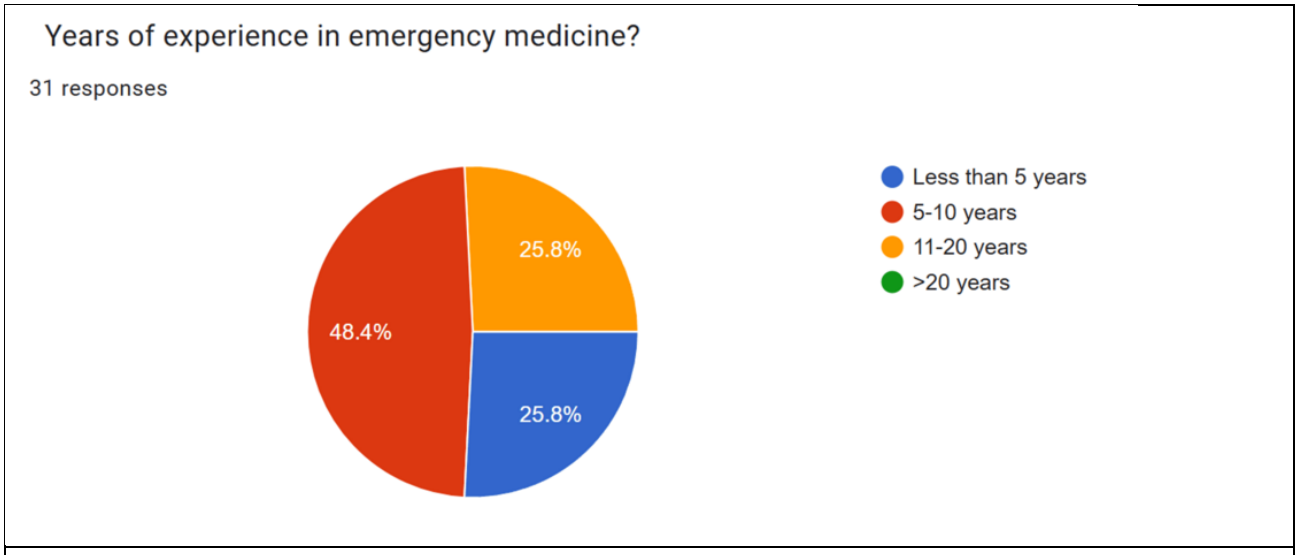

Figure 2: Years of Experience

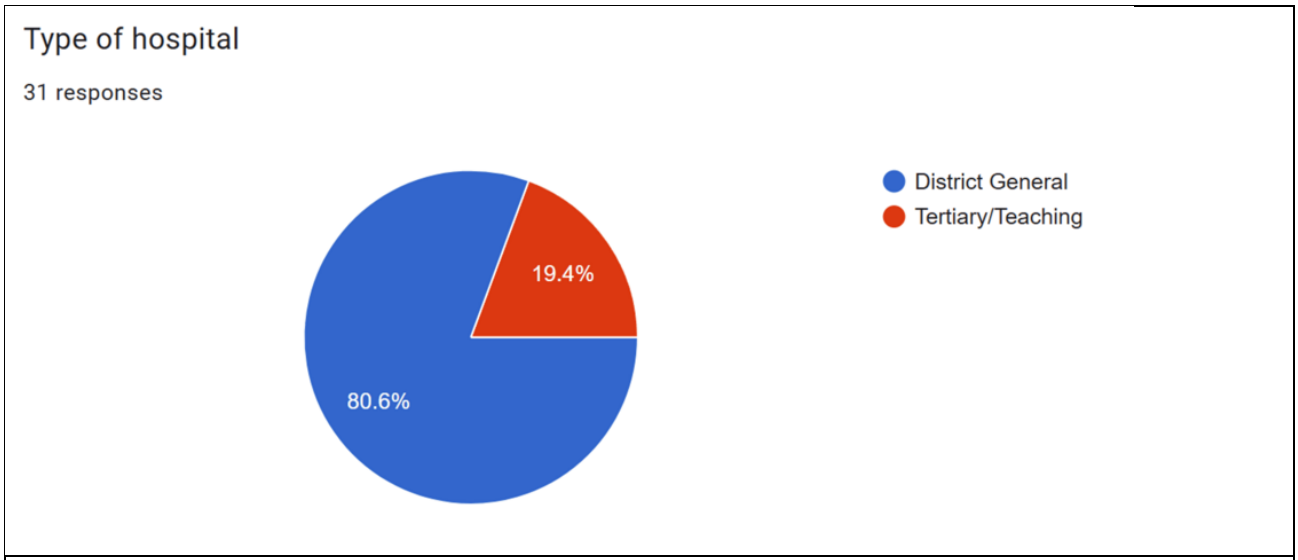

Figure 3: Hospital

Awareness and Usage of AI Tools

Almost all participants 29 (93.5%) indicated awareness of AI tools such as ChatGPT, Gemini, and DeepSeek, reflecting widespread familiarity across the ED workforce (Figure *4*). Interestingly, awareness was significantly associated with AI use ($\chi^2 = 11.117$, $p = 0.004$), with 89.7% of those aware actively using AI, compared to none among those unsure or unaware (Table *1*).

Despite high awareness, personal use of AI tools varied. A combined 83.9% of respondents reported using AI tools either regularly or occasionally, while 16.1% had never used them (Figure *5*). Among those who used AI, tasks included clinical documentation (63%), decision support, prescribing guidance, triage support, and patient education. A few participants also reported using AI for general communication tasks such as email drafting and summarisation (Figure *6*).

Influence of Clinical Role and Experience

When usage was analysed by clinical role, consultants, ACPs/PAs, and nurses, they reported 100% adoption of AI tools. Registrars followed with 69.2% usage, and SHOs/FYs with 88.9%. However, the association between role and AI use did not reach statistical significance ($\chi^2 = 3.958$, $p = 0.377$).

A similar trend was observed across experience levels. All respondents with 11-20 years of clinical experience reported using AI tools. Among those with 5-10 years of experience 15 (86.7%) were users. Usage was slightly lower (62.5%) among those with less than 5 years of experience. Again, this association was not statistically significant ($\chi^2 = 4.326$, $p = 0.115$), although a trend toward higher AI use among more experienced clinicians was noted. These findings align with recent studies suggesting that adoption of AI tools may be driven less by digital nativity and more by perceived clinical utility and workload management.[12-14]

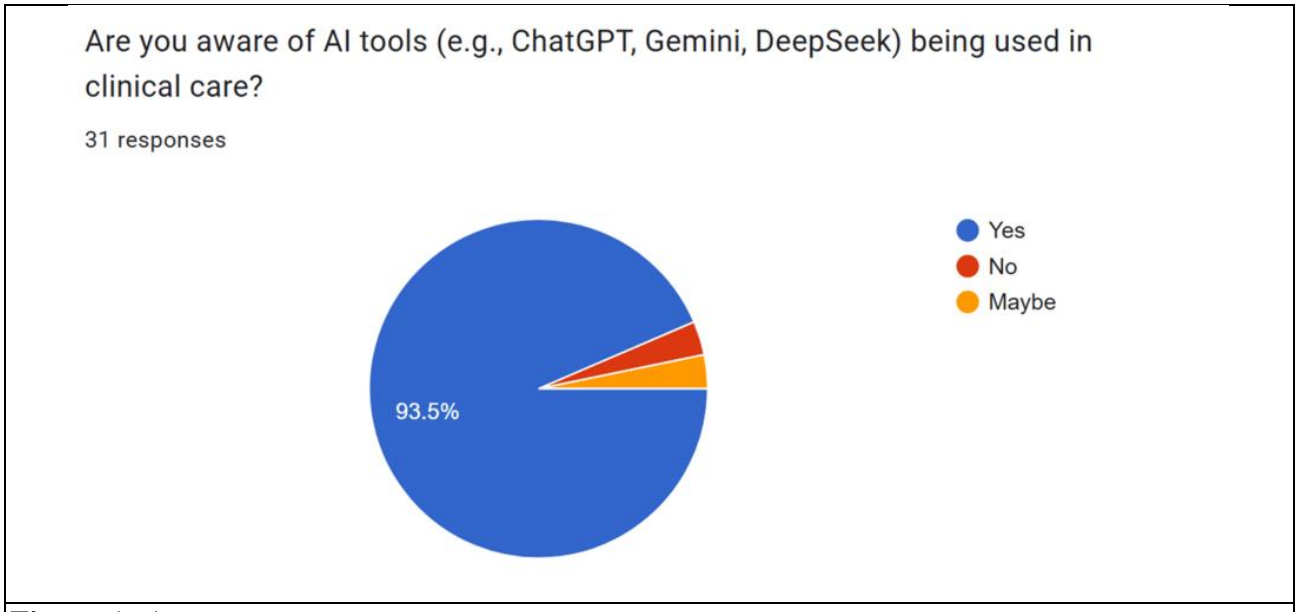

Figure 4: Awareness

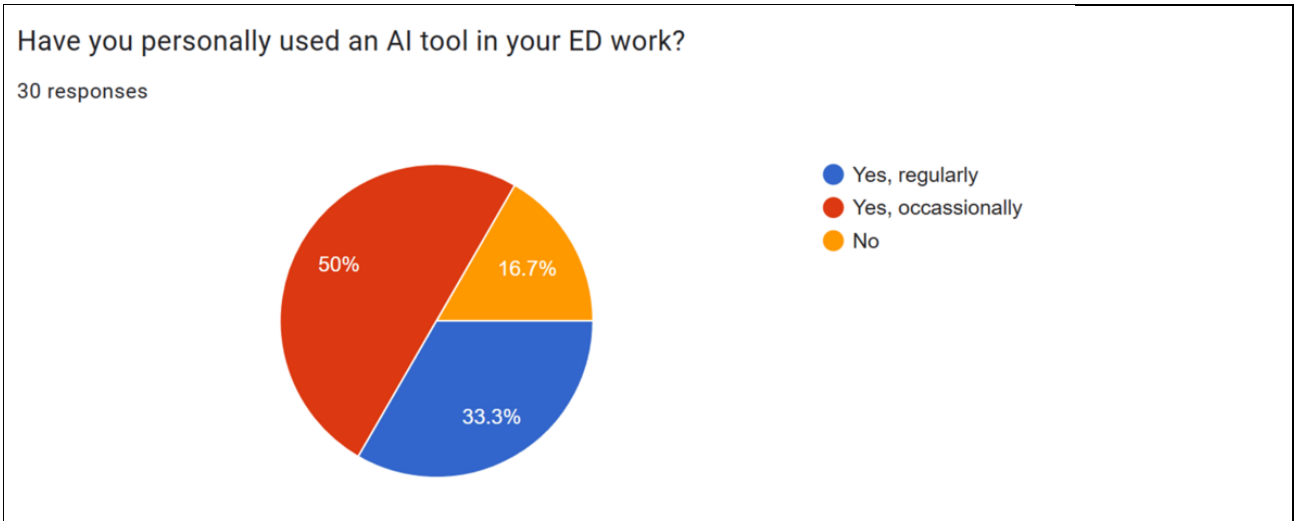

Figure 5: Use

Variable	Used AI (n, %)	Did Not Use AI (n, %)	Chi-Square	p-value
Role	29 (93.5%)	2 (6.5%)	3.958	0.377
Experience	26 (83.9%)	5 (16.1%)	4.326	0.125
Hospital Type	26 (83.9%)	5 (16.1%)	1.431	0.313
AI Awareness	26 (89.7%)	3 (10.3%)	11.117	0.004
Cognitive Workload Belief	26 (83.9%)	5 (16.1%)	2.421	0.380

Table 1: Chi-Square Associations with AI Use

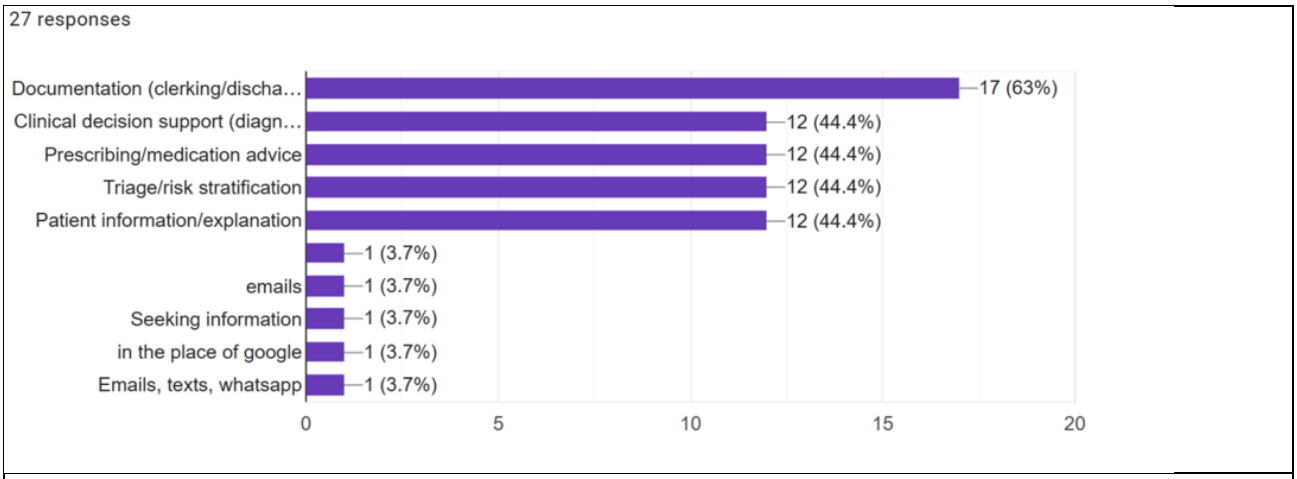

Figure 6: Tasks

Perceived Cognitive Benefits

Most participants viewed AI tools as helpful in reducing cognitive load. A combined 77.4% either agreed or strongly agreed that AI could ease cognitive demands in the ED. Only 7 (22.6%) were neutral, and none disagreed. Despite this, the association between belief in cognitive relief and actual AI use was not statistically significant ($\chi^2 = 2.421$, $p = 0.380$), indicating a potential gap between perceived benefit and behavioural adoption.

Safety, Trust, and Concerns

When asked to compare AI-generated recommendations to human clinical judgment, 21 (67.7%) considered AI equally safe, while 7 (22.6%) rated it safer. A small minority 2 (6.5%) believed it was less safe, and 1 (3.2%) was unsure (Figure 7).

The most frequently cited concern was data protection and GDPR compliance, selected by 27 (87.1%) of respondents. Other major concerns included medico-legal accountability 21 (67.7%), bias and

inequality 19 (61.3%), and patient safety risks 20 (64.5%) such as hallucinations or inaccurate outputs (Figure *8*).

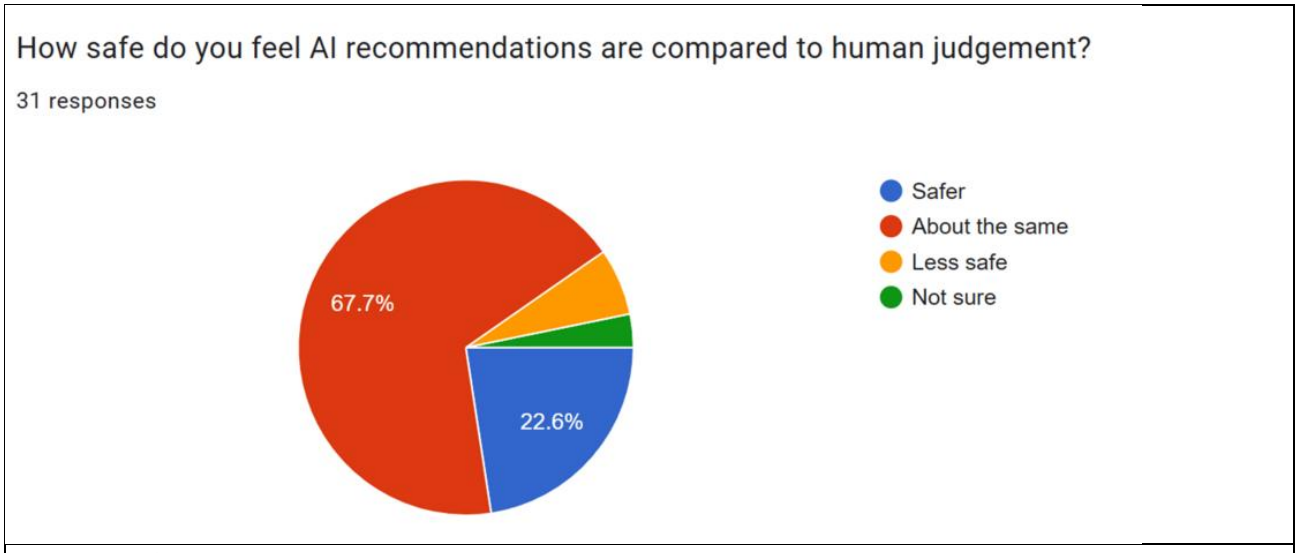

Figure 7: Safety

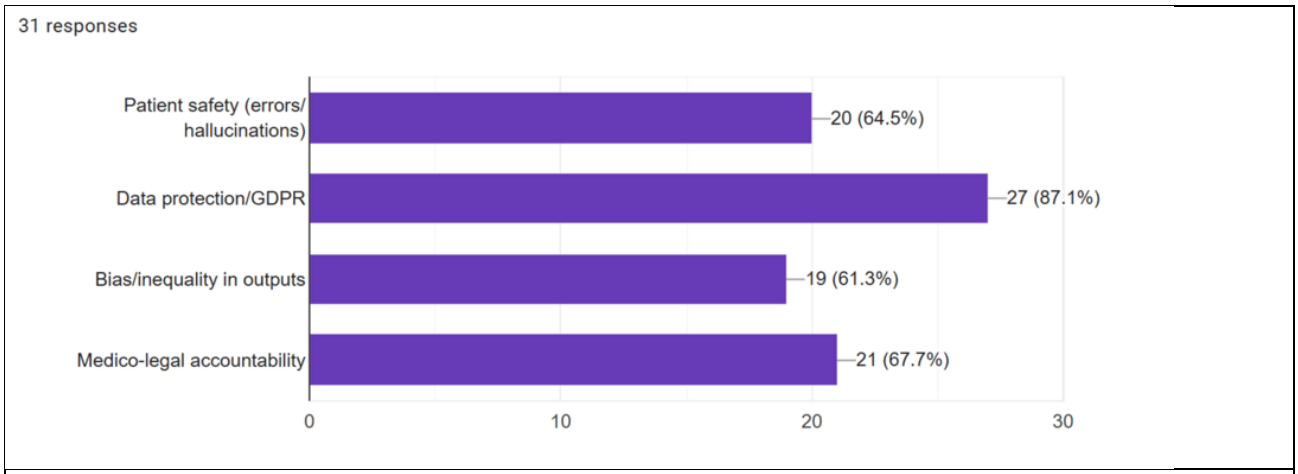

Figure 8: Problems with AI

Attitudes toward Implementation and Training

Respondents demonstrated strong support for structured AI integration. All participants (100%) expressed willingness to adopt GDPR-compliant NHS-hosted AI systems, provided appropriate safeguards were in place. Additionally, 29 (93.5%) agreed that NHS Trusts should offer formal training on AI tools and their appropriate use.

Participants called for clear firewalls, local hosting, validation before clinical integration, and approval protocols. Some also recommended embedding AI into existing electronic patient record (EPR) systems like Lorenzo, EDIS, or Epic to streamline workflow while remaining within data protection guidelines (Table *2*).

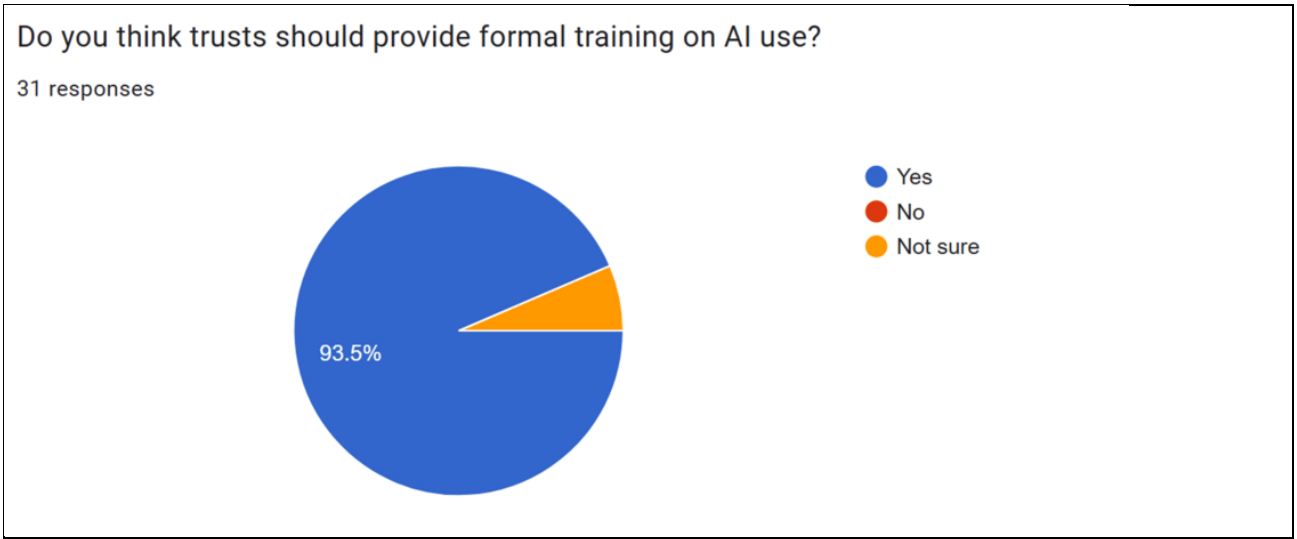

Figure 9: Formal training

Regarding the implementation of an NHS-hosted GDPR-compliant AI tool: 100% of respondents said yes, supporting formal institutional integration.

Suggested Safeguards

Open-ended Comments
Use of AI for writing emails and text messages
AI used instead of Google for quick clinical information
Trust must implement firewalls to limit unsanctioned AI use
Integration into EPR suggested for discharge summaries
Clinician must approve final AI-generated outputs
Requests for locally hosted AI with GDPR compliance
AI should assist but not replace professional judgment

Table 2: Qualitative Responses Summary

Appendices

Q#	Question	Answer Options
1	What is your current role?	- Consultant- Registrar- SHO / Foundation Doctor- ACP / Physician Associate- Nurse
2	How many years of experience do you have in emergency medicine?	- Less than 5 years- 5–10 years- 11–20 years- More than 20 years
3	What type of hospital do you work in?	- District General Hospital- Tertiary / Teaching Hospital
4	Are you aware of AI tools (e.g., ChatGPT, Gemini, DeepSeek) being used in clinical care?	- Yes- No- Maybe
5	Have you personally used any AI tool in your emergency department work?	- Yes, regularly- Yes, occasionally- No
6	If yes, for which tasks have you used AI tools? (Multiple selections allowed)	- Documentation (e.g., clerking, discharge summaries)- Clinical decision support (e.g., diagnosis, differentials)- Prescribing advice- Triage / Risk stratification- Patient education / explanation- Seeking clinical information- Messaging (e.g., email, WhatsApp, texts)- Other (please specify)
7	Do you believe AI can reduce your cognitive workload?	- Strongly agree- Agree- Neutral- Disagree- Strongly disagree
8	How safe do you feel AI recommendations are compared to human judgment?	- Safer- About the same- Less safe- Not sure

DISCUSSION

The integration of artificial intelligence (AI) tools in emergency medicine is rapidly evolving from peripheral experimentation to frontline application. Historically, clinicians have relied on external knowledge sources such as Google, Radiopaedia, and NICE guidelines to support real-time decision-making. In this context, the use of AI tools-such as ChatGPT, Gemini, and DeepSeek-represents a natural extension of longstanding information-seeking behaviours. However, these tools introduce a step-change in how information is accessed, processed, and applied. They are capable of rapid synthesis, fluent natural language generation, and dynamic decision support. Despite their potential, our study highlights that formal adoption remains limited and accompanied by considerable concerns regarding governance, safety, and legal accountability.

In our survey, 83.9% of participants reported using AI tools in their emergency department (ED) work, with the most frequent applications being clinical documentation (63%), clinical decision support, prescribing advice, triage, and patient education. Crosstab analysis of AI use by clinical role revealed 100% usage among consultants, ACPs/PAs, and nurses. Registrars followed with 69.2% (9/13) reporting use, and SHOs/FY doctors with 88.9% (8/9). Despite this apparent trend, Chi-square analysis showed no statistically significant association between clinical role and AI use ($\chi^2 = 3.958$, $p = 0.377$).

These results support the view that AI adoption is task-driven rather than hierarchy-dependent. This mirrors findings by Bienefeld et al., who observed that in critical care environments, both clinicians and data scientists favoured task-specific human-AI teaming-where automation was deemed suitable for narrow procedural tasks (e.g., monitoring), but human input was retained for complex, relational responsibilities such as patient communication and nuanced decision-making.[12] Cooper et al. similarly reported that clinicians' willingness to adopt AI tools hinges on the perceived utility of the system for specific tasks, such as enhancing safety and streamlining documentation, rather than organisational directives or seniority.[13]

AI awareness was nearly universal among respondents (93.5%), and this demonstrated a statistically significant correlation with AI use ($\chi^2 = 11.117$, $p = 0.004$). Conversely, years of clinical experience did not significantly influence AI adoption ($\chi^2 = 4.326$, $p = 0.115$). However, there was a trend suggesting that experienced clinicians were more likely to use AI: 100% of those with 11-20 years of experience reported using AI tools, compared to 86.7% in the 5-10 years group, and only 62.5% in the <5 years group.

These results challenge the commonly held belief that younger, digitally native clinicians are more likely to adopt AI tools. Instead, the findings align with literature suggesting that clinicians experiencing higher cognitive or administrative burdens-often senior staff-are more inclined to adopt supportive technologies. Cinalioglu et al. demonstrated that although younger clinicians may exhibit greater familiarity with AI concepts, older practitioners often express higher comfort levels with using AI in clinical environments.[14] Similarly, Heinrichs et al. found that chief physicians, facing higher documentation demands, were more enthusiastic and less sceptical of AI than junior staff.[15] Taken together, these findings indicate that perceived workload and task complexity-rather than age or digital fluency-are the primary drivers of AI adoption.

The majority of respondents (77.4%) agreed or strongly agreed that AI could reduce cognitive workload. This is in line with the current consensus in the literature that AI systems can reduce cognitive burden and, by extension, mitigate clinical errors-particularly in high-stakes environments such as EDs.[16-18] However, a gap remains between belief and implementation. Our analysis found no statistically significant association between belief in AI's cognitive benefits and actual AI use ($\chi^2 = 2.421$, $p = 0.380$). This implementation gap is echoed in broader literature, where studies attribute it to infrastructural barriers, lack of standardised training, data governance concerns, and scepticism around reliability.[19-20]

Of all concerns expressed, data protection emerged as the most significant, with 87.1% of participants identifying it as a major issue. This concern reflects wider national discourse. The British Medical Association (BMA), in its 2023 principles on AI in healthcare, emphasized the need for transparency, safety, and strict adherence to data privacy frameworks.[21] These concerns are reinforced by the UK's

Data Protection and Digital Information Bill, which mandates that health-related data must be processed only in secure and auditable environments.[22] AI models currently available-such as ChatGPT or Gemini-are typically hosted on non-UK servers, lack NHS integration, and are not GDPR-compliant, thereby rendering them unsuitable for handling identifiable patient data.

Clinicians are therefore caught in a regulatory dilemma: the tools are useful and increasingly essential for managing workload, but cannot be used safely or legally in many practical situations. NHS-hosted models (e.g., MedPaLM or locally deployed open-source systems) could solve this issue by ensuring GDPR compliance and safe integration within clinical governance frameworks.[23]

Medico-legal accountability was another key concern, identified by 67.7% of respondents. This issue is particularly complex. If harm results from an AI-generated recommendation, where does responsibility lie-clinician, AI developer, or the NHS Trust? Existing BMA and Medical Defence Union guidance holds clinicians accountable, warning that reliance on opaque or unvalidated AI outputs may increase litigation risks.[21]

A major factor here is the limited transparency and explainability of current AI tools. Most LLMs function as 'black boxes'-producing recommendations without clear rationale or source citation. This undermines their trustworthiness for clinical decision-making.[24] The American Academy of Otolaryngology-Head and Neck Surgery has cautioned that models lacking interpretability hinder clinical confidence and patient safety.[24] Furthermore, LLMs can hallucinate-generating plausible but factually incorrect content-and may reflect training data biases.[25,26] These issues necessitate robust human oversight and restrict LLMs to an assistive role rather than autonomous functioning.

Another frequently cited concern was bias in AI outputs, selected by 61.3% of respondents. This concern is not unfounded. Studies have shown that AI algorithms can exhibit reduced accuracy in underrepresented groups, including ethnic minorities, children, and patients with rare diseases.[27] For example, Obermeyer et al. revealed that a widely used algorithm in the United States systematically underestimated the healthcare needs of Black patients due to biased training data.[28] This highlights the urgent need for AI tools in the NHS to be retrained on demographically diverse, UK-specific datasets to prevent exacerbation of existing health inequalities.

Amidst these challenges, the pathway to AI integration in UK emergency medicine may lie in Electronic Patient Record (EPR) systems. The NHS has contracted A&E documentation to various EPR providers-such as Lorenzo, EDIS, and others, depending on the Trust. These platforms are now in a race to become the first to fully incorporate AI functionality. The potential benefits are extensive. If an EPR system were to locally host an AI tool like ChatGPT, it could automatically generate discharge summaries, structure ward round notes, and even suggest patient-specific plans based on prior documentation. Such a system could also cross-check prescriptions against patient renal function or allergy records, flagging unsafe combinations or offering dosing recommendations.

The advantage of this approach is its alignment with GDPR and NHS governance. By embedding AI tools into existing NHS-hosted EPR systems, legal and data protection hurdles are inherently addressed. Furthermore, integrating AI into familiar EPR platforms increases the likelihood of clinician adoption. It offers real-time decision support, documentation automation, and prescribing validation-all within a trusted system. The opportunity here is substantial, and the race to create the first AI-enhanced EPR system is already underway.

Finally, clinician support for structured implementation is clear. A full 93.5% of respondents supported formal training initiatives by Trusts, and 100% supported GDPR-compliant, NHS-hosted AI tools. This echoes the NHS Long Term Workforce Plan and NHS AI Lab strategy, both of which highlight AI as a transformative tool for reducing workload, improving accuracy, and supporting the overstretched healthcare workforce.[6,9]

To realise this vision, Trusts must invest in digital infrastructure, clinician education, real-time auditing, and clear governance protocols. AI adoption should not be treated as a peripheral upgrade but as a system-wide transformation requiring cross-disciplinary collaboration.

This study, while informative, has limitations. The sample size (n = 31) may limit generalisability, and participants were self-selected, possibly introducing selection bias. Despite the use of Chi-square

analysis to explore associations, the cross-sectional design precludes causal inference. Additionally, responses were self-reported and may not accurately reflect actual usage patterns or attitudes in clinical practice.

Author (Year)	Study Design	Focus/ Population	Key Findings	Relevance to the Present Study
Topol (2019)[1]	Book	Global healthcare systems	Argues that AI has the potential to humanise medicine by reducing clerical burden and restoring clinician–patient interaction.	Highlights the potential cognitive relief AI offers, aligning with respondents' support for AI to reduce workload.
Shen et al. (2019)[2]	Systematic review	AI vs clinician diagnostic accuracy	Found AI systems comparable or superior to clinicians in diagnostic accuracy in specific domains.	Supports survey findings that clinicians view AI as similarly safe to human judgment (67.7%).
Johnson et al. (2018)[3]	Review article	Emergency medicine	Reviews AI applications in EDs including triage, diagnostics, and documentation, with emphasis on early-stage limitations.	Provides foundational understanding of AI integration into ED workflows, mirroring patterns of informal use in this study.
Mesko (2022)[5]	Commentary	Healthcare innovation	Discusses future roles of AI and importance of regulatory and ethical frameworks for safe deployment.	Reinforces clinicians' demand for GDPR-compliant platforms and formal governance structures.
Bienefeld et al. (2024)[12]	Mixed-methods	Critical care clinicians and data scientists	Found that both groups preferred AI augmentation over full automation, especially for patient-facing or complex tasks.	Aligns with preference among ED clinicians for selective AI use, with greater trust in AI for documentation than for decision-making.
Cooper et al. (2025)[13]	Qualitative interview study	UK healthcare professionals managing long-term conditions	Adoption of AI is driven more by perceived task utility than by organisational directives or clinician rank.	Supports cross-tab analysis showing usage varies by perceived relevance rather than seniority.
Heinrichs et al. (2025)[15]	Mixed-methods	German physicians	Younger doctors were more open to AI, while older physicians showed greater scepticism.	Mirrors differences in awareness and use patterns across experience levels observed in the present study.
Ayorinde et al. (2024)[20]	Systematic review with narrative synthesis	Healthcare professionals globally	Identified lack of training, unclear clinical value, and weak policy as primary barriers to AI adoption.	Supports finding that 93.5% of respondents recommend formal Trust-led AI training.
Boonstra & Laven (2022)[17]	Systematic review	ED clinicians	Found AI can reduce workload but may interrupt clinical flow without proper integration.	Reinforces the need for integrated and NHS-hosted AI tools, a key

				recommendation from survey participants.
Kachman et al. (2024)[19]	Narrative review	Emergency medicine (US)	Outlined the potential for AI to transform ED care if issues like regulation, safety, and workflow integration are addressed.	Supports discussion themes on embedding AI in EDs only after resolving safety, accountability, and governance concerns.

Table 3: Summary of Literature on Artificial Intelligence Use in Healthcare and Emergency Medicine

Summary of key studies exploring artificial intelligence (AI) adoption, utility, and clinician attitudes across healthcare and emergency medicine. Studies were selected for relevance to the objectives of the present work, which focused on awareness, usage patterns, perceived risks, and integration barriers of AI in emergency departments. Data include systematic reviews, qualitative studies, performance evaluations, and narrative commentaries. Relevance to the present study column outlines how each work aligns with or informs the findings of this study. All studies are peer-reviewed and publicly accessible.

CONCLUSIONS

Artificial intelligence tools are becoming increasingly embedded in the informal workflow of emergency clinicians, particularly in documentation, patient education, and differential diagnosis generation. This study demonstrates high levels of awareness and a positive perception of AI's utility in reducing cognitive burden. However, substantial concerns remain around data governance, algorithmic bias, medico-legal accountability, and safe deployment. Although no statistically significant associations were observed between demographic characteristics and AI usage, awareness was a strong predictor of engagement.

The widespread, albeit unofficial, use of generative AI by clinicians calls for formal policy interventions. Integration of AI into NHS workflows must prioritise data protection (GDPR compliance), transparency, and clinical validation. There is strong support among clinicians for institutional training programmes and NHS-hosted AI platforms. In light of these findings, the NHS must urgently transition from reactive to proactive governance, ensuring that the digital transformation of emergency medicine proceeds safely, equitably, and with clinician input.

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