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# Artificial Intelligence Readiness among Healthcare Professionals in Kenyan Urology: Acceptance, Perceived Applications, and Barriers

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## Abstract

**Background:** Artificial intelligence (AI) is increasingly being applied in urology, yet clinician readiness for its adoption in Kenya remains unclear. This study assessed healthcare professionals' readiness to adopt AI in urological practice in Kenya by evaluating acceptance, perceived applications, and barriers to implementation. **Methods:** A descriptive cross-sectional survey was conducted among healthcare professionals involved in urological care in public and private facilities across eight Kenyan counties. Participants were recruited through purposive and snowball sampling. A pre-tested online questionnaire assessed AI readiness, attitudes, trust, perceived applications, and implementation barriers. Data were analyzed using descriptive and inferential statistics. **Results:** Fifty healthcare professionals participated, including urologists (40%), residents (24%), and nurses (24%), predominantly from public/teaching and urban facilities. Overall, 80% expressed positive attitudes toward AI, while 74% believed it could improve urological care. Prior exposure to AI-based tools was associated with higher AI acceptance scores. Trust in AI was largely conditional on clinician oversight, with 86% favoring clinician-supervised systems and only 2% trusting fully autonomous AI. Perceived applications included improved diagnostic accuracy (50%), reduced clinician workload (48%), and faster clinical decision-making (42%). Major barriers were limited AI training (72%), inadequate infrastructure (38%), and implementation costs (36%). Most respondents anticipated AI adoption in urological practice within the next decade. **Conclusion:** Healthcare professionals in

Kenya demonstrate high acceptance of artificial intelligence in urology, particularly when used under clinician supervision. However, addressing gaps in training, infrastructure, and cost will be essential for effective and sustainable integration into clinical practice.

## Keywords

Artificial Intelligence, Urology, Technology Acceptance, Healthcare Professionals, Kenya

## 1. Background

Artificial intelligence (AI) encompasses computational systems capable of performing tasks traditionally requiring human intelligence, such as reasoning, pattern recognition, and decision-making [1]. Over the past decade, AI has revolutionized multiple sectors, with healthcare emerging as one of the most promising areas for its application. Advances in machine learning, deep learning, and natural language processing have facilitated the development of tools for clinical decision support, medical image analysis, and workflow optimization [2].

In urology, AI applications are rapidly expanding across disease diagnosis, treatment planning, surgical assistance, and patient monitoring [3]. Machine learning algorithms have demonstrated promising capabilities in detecting prostate cancer from imaging data, predicting kidney stone treatment outcomes, and supporting risk stratification and therapeutic planning [4]. AI-assisted robotic surgery and image analysis tools are increasingly employed to enhance surgical precision and clinical efficiency [2].

Despite these advances, AI adoption in healthcare remains variable globally. Studies on AI integration in urology predominantly originate from high-income countries, where robust digital infrastructure, research capacity, and investment facilitate implementation [5]. Conversely, low- and middle-income countries (LMICs), especially in Africa, face challenges including limited digital infrastructure, workforce training gaps, and evolving regulatory environments [6] [7].

Kenya's healthcare system comprises both public and private providers with growing digital health initiatives. While electronic health records and telemedicine platforms have seen progress, access to advanced AI-based diagnostic technologies remains limited, particularly beyond major urban centers [6]. Moreover, healthcare professionals' perspectives on AI adoption in specialized fields such as urology remain underexplored.

Understanding clinicians' perceptions is critical for successful AI integration. Healthcare professionals' acceptance strongly influences technology adoption, effective utilization, and sustainability. Factors affecting these attitudes include perceived usefulness, ease of use, ethical concerns, and institutional support.

This study aimed to assess the readiness of healthcare professionals involved in

urological care in Kenya to adopt AI technologies by evaluating acceptance levels, perceived potential applications, and barriers to implementation.

## 2. Methods

### 2.1. Study Design

A descriptive and analytic cross-sectional survey was conducted using a structured online questionnaire among healthcare professionals involved in urological care in Kenya.

The study aimed to assess artificial intelligence (AI) readiness, defined operationally as the degree of willingness, perceived usefulness, trust, and anticipated acceptance of AI technologies in urological practice.

### 2.2. Study Setting

The study included healthcare facilities in counties with established or emerging urology services, namely Nairobi, Mombasa, Kisumu, Eldoret, Nyeri, Nakuru, Kakamega, and Kitui. Both public and private institutions in urban and semi-urban settings were included to capture diverse clinical environments where AI adoption in urology may be relevant.

### 2.3. Study Population and Eligibility

Participants included healthcare professionals involved in urological care or support services, including urologists, urology residents, nurses, radiologists, pathologists, oncologists, medical officers, and allied personnel working in selected healthcare facilities.

Inclusion criteria were involvement in urological care or support services, employment in public or private healthcare facilities within the selected counties, and at least six months' experience in a urology-related role.

Exclusion criteria included failure to provide digital informed consent and submission of incomplete questionnaires.

### 2.4. Sampling Strategy and Sample Size Calculation

A combination of purposive and snowball sampling was used. Facilities with active urology services were purposively selected, after which eligible participants were invited to complete the survey and encouraged to share it with colleagues involved in urological care.

The target sample size was estimated using Cochran's formula for cross-sectional studies:

$$n_0 = Z^2 p\,(1 - p)/d^2$$

Assuming a 95% confidence level ($Z = 1.96$), a 50% estimated prevalence of AI acceptance ($p = 0.5$), and a 5% margin of error ($d = 0.05$), the initial sample size estimate was 384 participants.

Because the estimated target population of healthcare professionals involved in

urological care in Kenya was relatively small (approximately 190 individuals), finite population correction was applied, resulting in an adjusted sample size of 127 participants. Assuming a 50% non-response rate, the minimum target sample size was estimated at 64 participants.

Recruitment was conducted through institutional contacts, professional association and WhatsApp groups, and peer referrals. Approximately 28 clinicians were approached through institutional and departmental contacts, 14 through professional association and WhatsApp groups, and 22 through peer referral or snowball sharing. Due to the snowball dissemination approach, the exact number of clinicians reached could not be determined precisely.

## 2.5. Data Collection

Data were collected over a three-month period using an anonymous, self-administered online questionnaire adapted from the Technology Acceptance Model (TAM). The questionnaire incorporated elements from previously published studies assessing healthcare professionals' perceptions of AI in clinical practice.

The instrument included sections on demographic and professional characteristics, awareness and understanding of AI, attitudes toward AI adoption, perceived applications of AI in urology, ethical considerations, and barriers to implementation.

The questionnaire was reviewed by consultant urologists and a digital health expert for content validity and was pre-tested among five junior urology residents to assess clarity and relevance.

AI readiness was assessed using domains related to attitudes toward AI adoption, perceived improvement in quality of care, trust in AI-assisted outputs, perceived applicability of AI in urology, and anticipated future adoption.

For questions assessing perceived benefits and barriers, respondents were allowed to select multiple responses. Accordingly, reported percentages for these variables represent item-level proportions rather than mutually exclusive categories.

## 2.6. Data Analysis

Data were analyzed using R version 4.5.2.

Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participant characteristics and survey responses.

An AI acceptance composite score was computed using three questionnaire items assessing: overall attitude toward AI in urology, perceived improvement in quality of care with AI use, and trust in AI-generated clinical outputs. Responses were ordinally coded such that higher scores represented more favorable acceptance of AI. Internal consistency of the composite scale was evaluated using Cronbach's alpha. Trust was initially included in the composite score because it is recognized as an important determinant of technology adoption in AI-assisted healthcare systems.

Inferential analyses included chi-square tests for associations between categorical variables and independent t-tests for comparison of mean AI acceptance scores across participant subgroups. Statistical significance was set at $p < 0.05$.

Missing responses were handled using complete-case analysis for individual variables, with percentages calculated based on the number of respondents answering each item. No imputation of missing data was performed.

### 2.7. Ethical Considerations

Ethical approval was obtained from the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (Approval No. P665/07/2025). Participation was voluntary, and electronic informed consent was obtained prior to questionnaire completion. The survey was anonymous and did not collect personally identifiable information. The study adhered to the principles of the Declaration of Helsinki.

## 3. Results

### 3.1. Participant Characteristics

Out of the 64 projected healthcare professionals, 50 completed the questionnaire (78% response rate). Respondents included urologists (40%), urology residents (24%), nurses (24%), oncologists (4%), pathologists (4%), radiologists (2%), and medical officers (2%). The majority worked in public or teaching hospitals (86%), with minority representation from private (8%) and mission/faith-based facilities (4%). Most practiced in urban settings (82%), with 18% in semi-urban or rural areas (Figure 1).

### 3.2. Acceptance of Artificial Intelligence

Overall, 80% exhibited a positive attitude toward clinical AI use. Trust in AI

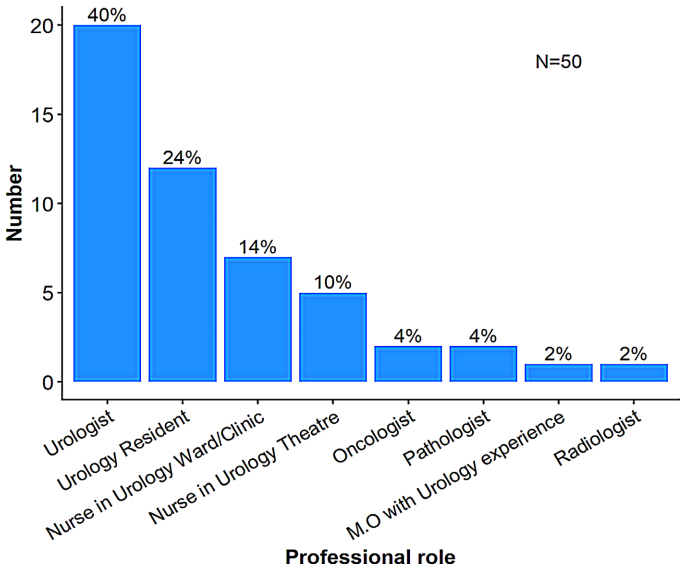


Figure 1. Cadres involved in the study.

outputs was largely conditional on clinician oversight; 86% trusted AI when used adjunctively, while only 2% fully trusted autonomous AI outputs (Figure 2). The composite acceptance scale had marginal internal consistency ($\alpha$ = 0.60), which improved when excluding trust ($\alpha$ = 0.74), suggesting trust is a distinct perception. Acceptance was consistent across professional cadres, with higher scores among those with prior AI experience (Figures 3-5).

### 3.3. Perceived Applicability

Majority of respondents believed AI could improve urological care quality in Kenya. Key perceived uses of AI in Urology included improved diagnostic accuracy, reduced clinician workload, and expedited clinical decision-making. Additional benefits cited were enhanced imaging and histopathological analysis,

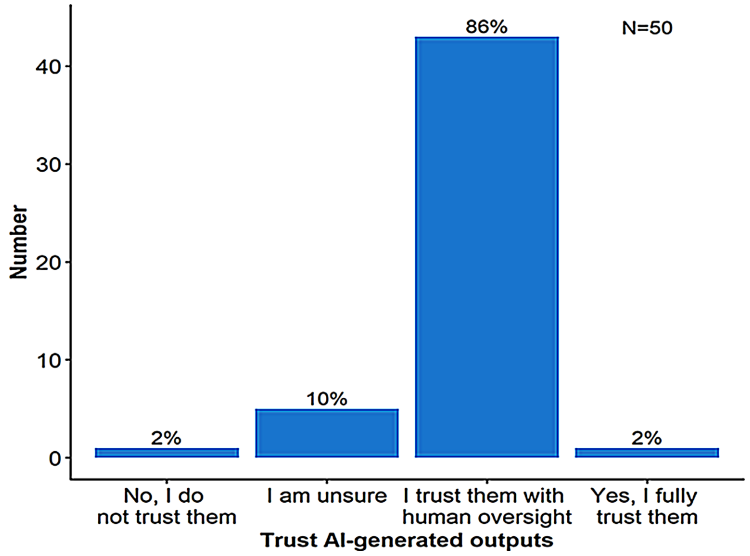


Figure 2. Proportion of respondents who trust AI-generated outputs.

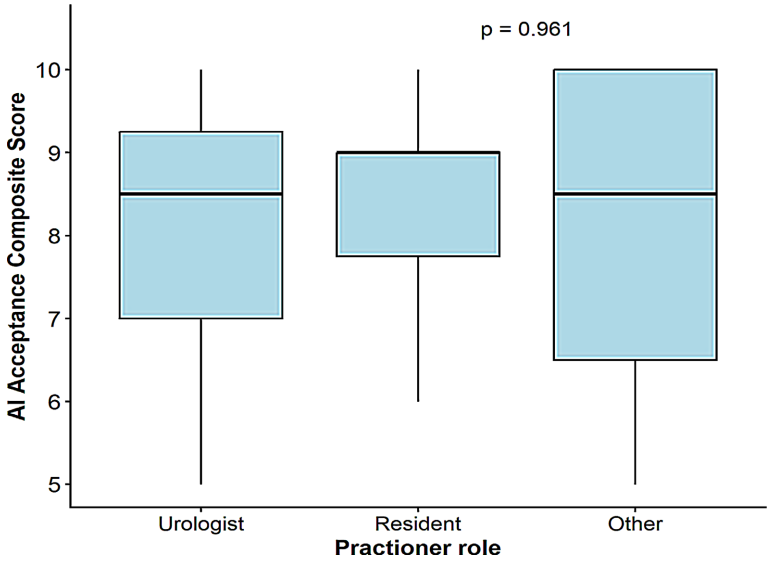


Figure 3. AI acceptance composite score for different cadres.


**Figure 4.** AI acceptance composite score based on respondents' years of experience.

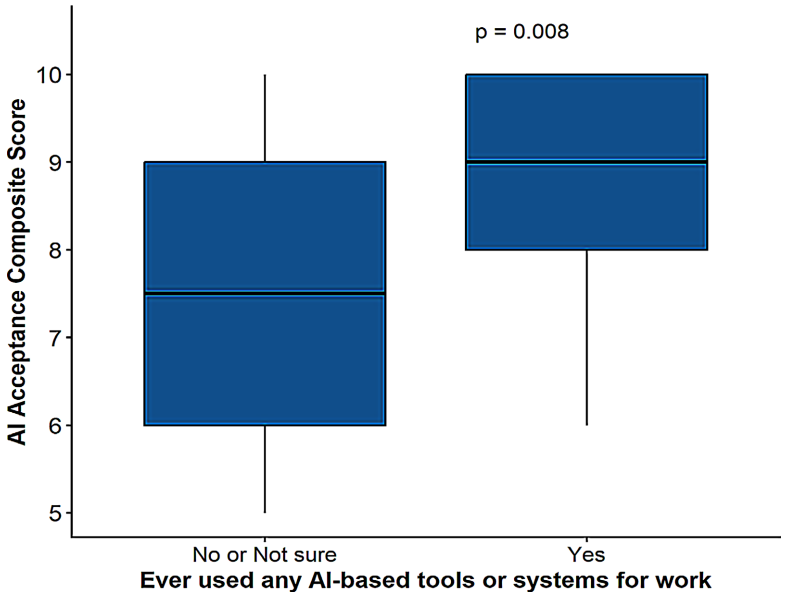


**Figure 5.** AI acceptance composite score based on prior use of AI-based tools or systems for work.

improved patient outcomes, greater surgical precision and potential cost savings (**Figure 6**).

### 3.4. Barriers to Implementation

Primary challenges were limited AI training and technical expertise, inadequate digital infrastructure, high implementation costs, and data privacy concerns. Close to half raised ethical concerns about data privacy, algorithmic bias, and accountability. Job displacement fears were low (**Figure 7**).

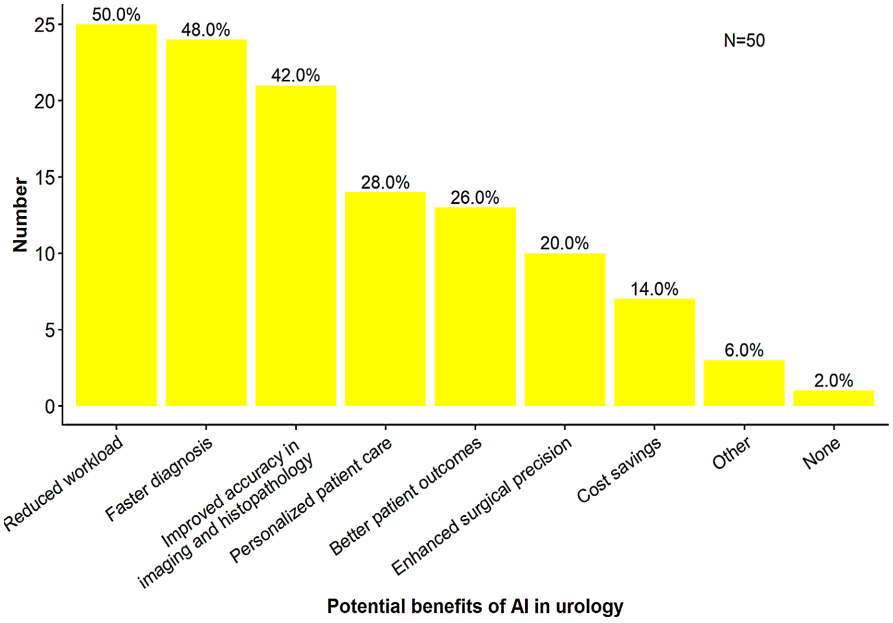


**Figure 6.** Perceived benefits of AI in urology.

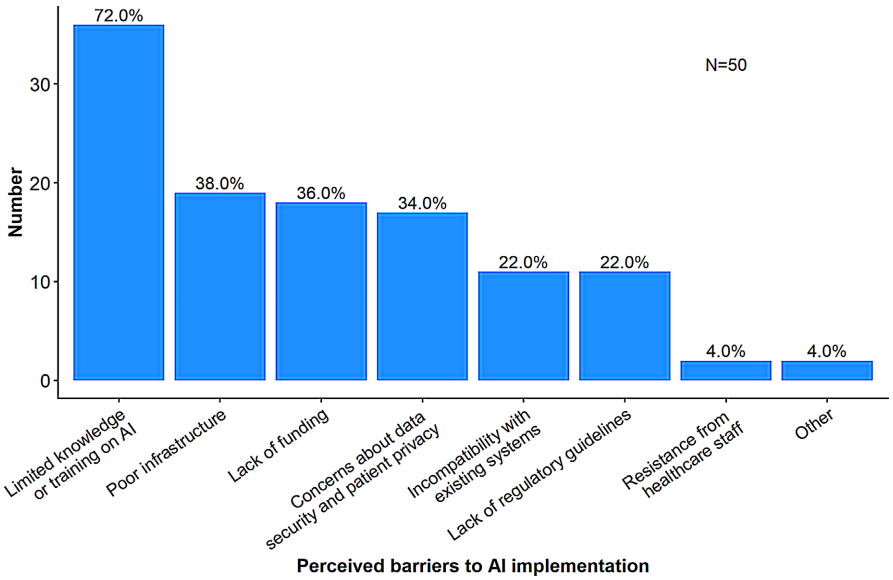


**Figure 7.** Perceived barriers to AI implementation

### 3.5. Future AI Adoption

Respondents (n = 31) expressed optimism, with 25.8% considering AI integration in urology within five to ten years as very likely, and 64.5% somewhat likely. Few were uncertain or pessimistic.

## 4. Discussion

This study demonstrates a generally positive attitude toward artificial intelligence (AI) adoption among healthcare professionals involved in urological care in Kenya.

Respondents with prior exposure to AI-based tools demonstrated higher mean AI acceptance scores compared with those without prior exposure ($p < 0.05$). However, no statistically significant differences in acceptance scores were observed across professional cadres or years of experience ($p > 0.05$ for both comparisons).

Trust in AI was largely dependent on clinician oversight, with very few respondents supporting fully autonomous AI systems. Similar findings have been reported in Finland, where clinicians demonstrate greater acceptance of AI-assisted decision-making than independent AI-driven clinical management [8]. This reflects the continued importance of clinical accountability, interpretability of AI systems, and the need for human validation in patient care. The lower reliability observed when trust was included in the acceptance scale further suggests that trust may represent a distinct dimension of AI perception.

Most respondents believed AI could improve the quality of urological care, particularly through improved diagnostic accuracy, reduced clinician workload, and faster clinical decision-making. These findings are consistent with international studies from USA, China and Australia showing growing optimism toward AI integration across medical specialties, where AI is increasingly viewed as a tool to augment rather than replace clinical expertise [9]-[11]. Concerns regarding job displacement were relatively low, suggesting that most respondents viewed AI as complementary to clinical practice rather than a replacement for healthcare professionals. Similar attitudes have been observed in studies across multiple medical disciplines in Saudi Arabia [12].

The barriers identified in this study, including limited AI training, inadequate digital infrastructure, implementation costs, and ethical concerns, are comparable to those reported in both high-income countries and low- and middle-income settings [11] [13]. However, infrastructure and workforce limitations may have greater impact in resource-constrained healthcare systems such as Kenya. In particular, inadequate AI training and technical expertise emerged as the most significant barriers, highlighting the importance of targeted educational and institutional capacity-building initiatives.

Overall, the findings suggest that healthcare professionals involved in urological care in Kenya are receptive to AI integration. Successful implementation will, however, require investment in workforce training, digital infrastructure, and appropriate ethical and regulatory frameworks to support safe, equitable, and sustainable adoption of AI technologies in clinical practice [10].

## 5. Limitations

This study is limited by a modest sample size. Furthermore, the use of purposive and snowball sampling may have introduced selection bias toward clinicians with greater interest in digital health and AI. We also note that the predominance of respondents from urban public and teaching hospitals may limit the generalizability of findings to rural or resource-limited settings.

Despite these limitations, the findings provide important preliminary insights into clinician readiness for AI integration in an African urological context.

## 6. Conclusion

This study provided the first detailed assessment of Kenyan urology professionals' perspectives on AI. It demonstrated substantial clinician openness to AI-assisted urological practice in Kenya, particularly when used alongside clinician oversight. Addressing key barriers including infrastructure, training, cost, and regulatory frameworks will be essential to enable safe, effective, and equitable integration of AI into urological care.

### 6.1. What Is Already Known on This Topic

Artificial intelligence is increasingly being applied in urology for diagnosis, clinical decision support, and surgical assistance.

Healthcare professionals' acceptance and trust strongly influence successful AI adoption in clinical practice.

Most studies evaluating AI adoption in urology originate from high-income countries, with limited data from African settings.

### 6.2. What This Study Adds

This study provides one of the first assessments of AI readiness among healthcare professionals involved in urological care in Kenya.

Kenyan healthcare professionals demonstrated generally positive attitudes toward AI, particularly when used under clinician supervision.

Limited AI training, inadequate infrastructure, and implementation costs were identified as the main barriers to AI integration in Kenyan urological practice.

## Policy and Practice Implications

To foster responsible AI adoption in urology and broader healthcare, we recommend:

Integrating AI and digital health literacy into undergraduate and postgraduate medical curricula.

Expanding continuing professional development on AI clinical applications.

Strengthening healthcare digital infrastructure, including reliable internet and interoperable health records.

Developing national regulatory frameworks ensuring data privacy, algorithmic transparency, and accountability.

Promoting collaboration among clinicians, policymakers, and technology developers to create contextually appropriate AI solutions tailored for LMICs.

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## Author Contributions

SAM conceived the study, designed the questionnaire, and drafted the manuscript.

FAO and JIA supervised the study design, methodology, and manuscript development.

JM provided biostatistical support and contributed to data analysis and interpretation.

GGN coordinated data collection and manuscript revision.

All authors reviewed and approved the final manuscript.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

[1] Bajwa, J., Munir, U., Nori, A. and Williams, B. (2021) Artificial Intelligence in Healthcare: Transforming the Practice of Medicine. *Future Healthcare Journal*, **8**, e188-e194. https://doi.org/10.7861/fhj.2021-0095

[2] Hameed, B.M.Z., S. Dhavileswarapu, A.V.L., Raza, S.Z., Karimi, H., Khanuja, H.S., Shetty, D.K., *et al.* (2021) Artificial Intelligence and Its Impact on Urological Diseases and Management: A Comprehensive Review of the Literature. *Journal of Clinical Medicine*, **10**, Article 1864. https://doi.org/10.3390/jcm10091864

[3] Agboryah, B.N.M., Ndip, V.A., Ngomba, A.V., Tazinya, A.A. and Adiogo, D. (2024) Factors Associated with the Use of Digital Health among Healthcare Workers in the Buea and Tiko Health Districts of Cameroon: A Cross-Sectional Study. *The Pan African Medical Journal*, **47**, Article No. 51. https://doi.org/10.11604/pamj.2024.47.51.35531

[4] Shah, M., Naik, N., Somani, B.K. and Hameed, B.Z. (2020) Artificial Intelligence (AI) in Urology-Current Use and Future Directions: An Itrue Study. *Urology Research and Practice*, **46**, S27-S39. https://doi.org/10.5152/tud.2020.20117

[5] Chen, A.B., Haque, T., Roberts, S., Rambhatla, S., Cacciamani, G., Dasgupta, P., *et al.* (2022) Artificial Intelligence Applications in Urology. *Urologic Clinics of North America*, **49**, 65-117. https://doi.org/10.1016/j.ucl.2021.07.009

[6] Akingbola, A., Adegbesan, A., Ojo, O., Otumara, J.U. and Alao, U.H. (2024) Artificial Intelligence and Cancer Care in Africa. *Journal of Medicine, Surgery, and Public Health*, **3**, Article 100132. https://doi.org/10.1016/j.glmedi.2024.100132

[7] Mope, S.A., Patrick, N., M, F.J.V., Jude, M.S. and Steven, K.Y. (2026) Utilisation of Digital Health Technologies for Medical Communication and Healthcare Delivery in Cameroon: Current Use and Evidence Gaps. *American Journal of Medical and Clinical Sciences*, **11**, 1-5. https://doi.org/10.33425/2832-4226/26003

[8] Kauttonen, J., Rousi, R. and Alamäki, A. (2025) Trust and Acceptance Challenges in the Adoption of AI Applications in Health Care: Quantitative Survey Analysis. *Journal of Medical Internet Research*, **27**, e65567. https://doi.org/10.2196/65567

[9] Bonney, K., Breaux, C., Buffington, C., Dinlersoz, E., Foster, L., Goldschlag, N., *et al.* (2024) The Impact of AI on the Workforce: Tasks versus Jobs? *Economics Letters*, **244**, Article 111971. https://doi.org/10.1016/j.econlet.2024.111971

[10] Dai, Q., Li, M., Yang, M., Shi, S., Wang, Z., Liao, J., *et al.* (2025) Attitudes, Perceptions, and Factors Influencing the Adoption of AI in Health Care among Medical Staff: Nationwide Cross-Sectional Survey Study. *Journal of Medical Internet Research*, **27**, e75343. https://doi.org/10.2196/75343

[11] Hoffman, J., Wenke, R., Angus, R.L., Shinners, L., Richards, B. and Hattingh, L. (2025) Overcoming Barriers and Enabling Artificial Intelligence Adoption in Allied Health Clinical Practice: A Qualitative Study. *Digital Health*, **11**, 1-14.

[12] Aldhahi, M.I., Alorainy, A.I., Abuzaid, M.M., Gareeballah, A., Alsubaie, N.F., Alshamary, A.S., *et al.* (2025) Adoption of Artificial Intelligence in Rehabilitation: Perceptions, Knowledge, and Challenges among Healthcare Providers. *Healthcare*, **13**, Article 350. https://doi.org/10.3390/healthcare13040350

[13] Alkhatieb, M. and Subke, A.A. (2024) Artificial Intelligence in Healthcare: A Study of Physician Attitudes and Perceptions in Jeddah, Saudi Arabia. *Cureus*, **16**, e57256. https://doi.org/10.7759/cureus.57256