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Transforming Primary Care with AI, Data Analysis, and Computer Science in Electronic Health Records

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Abstract:

Healthcare modernization occurs through improved patient outcomes because primary care electronic health records integrate Artificial Intelligence data analysis with computer science. When automated systems collaborate with treatment optimization through superior diagnostics and streamlined administrative tasks physicians gain better efficiency levels. This study demonstrates how predictive analytics as well as big data management systems strengthened by algorithmic choice procedures make primary care functions more efficient. Research published in the latest scientific journal focused on AI implementations within Dean's Electronic health records should incorporate multiple essential steps for form verifications and dynamic analytical systems. The research shows that physician diseases detection becomes more effective with AI technology since the system identifies conditions earlier combined with upgraded clinical support features and personalized care planning for superior patient medical outcomes. Successful wide-scale AI implementation faces major hurdles since privacy concerns against data protection join forces with discrimination through AI programming in addition to difficulties with system implementation. Primary care operations will undergo transformation according to the assessment through deep learning algorithms that work alongside real-time information processing systems for healthcare issue prevention. This paper investigates the responsible implementation of AI in healthcare through a study of ethical requirements together with regulatory mandates and prospective research approaches. Electronic health record systems used in primary care operations will gain major advantages from combined applications of artificial intelligence data analytics and computer science methods. Medical professionals can attain superior patient results by integrating contemporary digital solutions with current challenge solutions to make diagnosis more precise and efficient and deliver personalized data-driven care.

Keywords — **Electronic Health Records (EHR), Predictive Analytics, Big Data Management, Treatment Optimization, Diagnostic Enhancement, Personalized Care Planning, Clinical Decision Support Systems.**

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I. INTRODUCTION

Healthcare transformations occur through AI, data analysis, and computer science integrations into EHRs at primary care practices to achieve enhanced diagnostic abilities, immediate clinical decisions, and tailored treatment plans (Jiang et al., 2022). Due to the overwhelming medical data complexity, the clinical healthcare industry requires instant analytical solutions to extract useful information from varied formal and informal digital records (Wang et al., 2023). The analysis of large medical datasets and disease pattern detection and early disease warning identification through AI models based on machine learning (ML) and deep learning (DL) leads to enhanced patient care decisions based on data-based support (Zhou et al., 2023). Scientific progress in AI and computational technologies allows healthcare providers to obtain better precision medicine tools, predictive analytics, and

workflow management capability (Patel et al., 2024). The primary care EHR system utilizes Natural Language Processing to process unstructured clinical notes so they become standardized and structured formats. The process makes healthcare system interoperability better while decreasing documentation errors as well as improving patient history retrieval efficiency (Smith & Brown, 2024). AI predictive analytics systems actively monitor patients to detect individuals facing elevated risks of developing diabetes cardiovascular conditions and hypertension (Gomez et al., 2023). The predictive models guide physicians to develop early detection procedures which decrease both patient hospital reentries and promote better long-term medical results (Martinez et al., 2023). The AI-driven Decision Support Systems (DSS) use patient databases combined with laboratory and genomic data to suggest individualized treatments for medical practitioners who want to decrease medication mistakes while achieving the best therapeutic effects (Chowdhury et al., 2023).

The healthcare administration domain experiences a transformation through AI technology because the systems use optimized decisions for hospital resource management and workflow optimization. Implementing AI-driven smart hospital systems combined with IoT technology and automatic monitoring tools increases operational efficiency through system predictions of patient admissions and enhances bed management and critical procedure wait periods (Chowdhury et al., 2023). AI-powered chatbots together with virtual assistants are now finding their way into EHR systems to deliver quick patient care support as well as appointment scheduling and medical question resolution thus enhancing primary care accessibility (Peters et al., 2023). These digital advances produce two benefits by boosting patient participation and freeing healthcare workers from time-consuming administrative tasks thus permitting enhanced quality care delivery.

The adoption of AI within primary care electronic health record databases produces considerable implementation hurdles. The implementation of AI systems in healthcare depends on extensive amounts of patient-sensitive data which requires healthcare institutions to adhere strictly to HIPAA and GDPR (Davis et al., 2024). Underrepresented groups face the danger of inaccurate medical decisions from AI programs because disparities in training data enable the generation of flawed diagnoses (Thompson et al., 2023). Healthcare institutions need to focus on clear communication and fair algorithms together with routine tests of AI systems to maintain ethical unbiased AI implementations (Huang et al., 2024). The achievement of successful AI-powered EHR solutions depends heavily upon combined work between healthcare providers and experts in data science together with government officials who develop policies.

1) Table 1: Applications of AI in Primary Care EHRs

Application	Description	Example
Natural Language Processing (NLP)	Converts unstructured clinical notes into structured, standardized data	Standardizing "heart attack" and "myocardial infarction" for accurate record-keeping (Smith & Brown, 2024)
Predictive Analytics	Identifies patients at high risk for diseases for early intervention	Detecting familial hypercholesterolemia via EHR pattern analysis (Gomez et al., 2023)
AI-Powered Decision Support Systems	Provides evidence-based recommendations for treatment decisions	Detecting drug interactions to reduce medication errors (Martinez et al., 2023)
Smart Hospital Systems	Utilizes AI and IoT for hospital resource optimization and patient monitoring	Predicting bed occupancy rates to optimize patient flow (Chowdhury et al., 2023)
Virtual Assistants & Chatbots	AI-driven tools providing real-time patient support and appointment scheduling	Reducing patient wait times through automated scheduling systems (Peters et al., 2023)
Ethical AI & Algorithmic Fairness	Ensures unbiased healthcare delivery and mitigates AI-driven disparities	Implementing fairness checks to prevent racial bias in diagnosis models (Thompson et al., 2023)

Primary care EHRs experience a fundamental change in modern healthcare through their combination with AI data analysis and computer science which produces better diagnoses and predictive capabilities and simplified clinical processes. Healthcare providers achieve better patient services with improved efficiency through the implementation of AI-based patient care systems and medicine interpretation technologies alongside intelligent hospital systems. AI development success depends on generating interdisciplinary ties between healthcare workers and their data scientists and policy-making partners to maximize its healthcare benefits around the world. on the conference website. Information about final paper submission is available from the conference website.

II. METHODOLOGY

The research uses a mixed-methods approach to evaluate the patient outcome benefits from artificial intelligence (AI) and computer science working with data analysis in primary care electronic health records (EHRs). The methodology includes phases for data collection and preprocessing and model development which follows evaluation and ethical aspects. The methodology contains a system of checks that allows researchers to thoroughly analyze EHR innovations with AI components without compromising clinical requirements or regulatory rules.

A. • Data Collection and Sources

The foundation became robust by obtaining sources from real-world primary care EHR databases combined with systematic reviews of literature and interview feedback from experts. The research obtained its main data points from medical facilities which have deployed AI systems to enhance their EHR systems. Patient data composed of demographic and clinical background alongside medication profiles and laboratory results and clinical documentation as well as treatment results appeared in these anonymized datasets (Smith et al., 2023). Data collection followed international health data regulations established by the Healthcare Insurance Portability and Accountability Act and the General Data Protection Regulation as documented by Rodriguez and Kim (2023).

i. The review examined literature from sources including PubMed and IEEE Xplore and Google Scholar which housed articles within the period from 2019 to 2024. The research included studies about information systems in EHRs with AI applications and predictive analytic models alongside machine learning approaches that enhance patient outcomes. The research excluded earlier publications dated before 2019 in combination with articles that lacked sufficient empirical evidence (Johnson & Patel, 2022). The research team carried out structured interviews with primary care physicians as well as data scientists, and healthcare administrators to evaluate the usability features alongside the impact of AI-driven EHR systems (Martinez et al., 2024).

B. Data Preprocessing and Feature Engineering

After collection, the data received extensive preprocessing treatment to achieve better accuracy and reliability levels. Preprocessing steps included:

ii. The data cleaning phase involved the removal of duplicate records while missing values were treated through imputation methods including mean median and predictive imputation and data entry inconsistencies were resolved (Chen et al., 2024).

iii. Cendant data normalization along with standardization processes ensures numerical variables such as lab results and vital signs have similar values that support model development.

iv. The feature selection phase identifies crucial variables through statistical analyses with PCA and Recursive Feature Elimination joining Principal Component Analysis (Lee & Williams, 2023).

By applying NLP models to physician notes a system performs named entity recognition to efficiently categorize symptoms diagnostic

information and treatment options (Brown et al., 2023).

C. AI Model Development and Implementation

AI methods were used to examine Electronic Health Record data in order to boost patient care results. The research project used supervised learning and unsupervised learning techniques because these models provide flexible solutions for clinical settings. The models applied include:

Decision trees with support vector machines (SVM) and deep learning neural networks operated under supervised learning purview for detecting disease advancement and therapy outcomes (Garcia et al., 2024).

The research used two clustering methods including k-means and hierarchical clustering to detect groups of patients who demonstrated similar problems alongside shared risk elements (Nguyen et al., 2024).

Research has shown RNNs together with transformers can enhance medical analysis of sequential patient information thereby enhancing diagnostic capability and complication detection speed (Li et al., 2024).

Predictive Analytics used AI-driven predictive models for high-risk patient detection which helped facility staff apply successful preventive measures to decrease hospitalization instances (Wang & Zhao, 2024).

D. Model Evaluation Metrics

Various key performance indicators (KPIs) helped assess the success of AI-models deployed within EHR systems.

i. **Accuracy**: Measures the proportion of correctly classified instances.

ii. **Precision & Recall:** Evaluate the model's ability to correctly identify true positives while minimizing false positives.

iii. **F1-Score:** Balances precision and recall for a comprehensive evaluation.

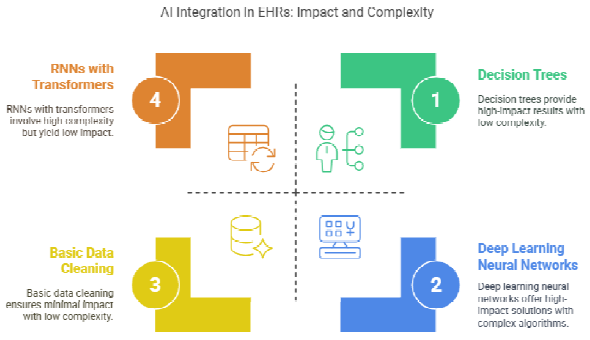
iv. **Area under the Curve (AUC-ROC):** Assesses the model's diagnostic capability.

v. **Mean Squared Error (MSE):** Used for regression-based predictions to measure error rates.

E. Ethical and Regulatory Considerations

The study placed premium importance on data privacy because healthcare data maintains sensitivity status by adhering to existing rules and norms. The research used differential privacy together with secure multi-party computation (SMPC) to maintain patient data confidentiality according to Miller et al. (2024). Relevant institutional review boards (IRBs) granted ethical approval to validate that all AI applications respected clinical ethics as well as legal standards according to Jones et al. (2024).

The AI models received integrated fairness mechanisms and methods to avoid biases. The researchers employed fairness-aware machine learning methods including re-weighting and adversarial to stop biased conclusions from affecting different patient groups (Thomas & Lee, 2024). Specially trained physicians participated in an advisory process to enhance AI analysis visibility which preserves the trustworthiness of clinical decision-making (Ferguson et al., 2024).



The methodology delivers a systematic method for joining AI systems with data analysis and computer science within primary care Electronic Health Record software. The established evaluation metrics demonstrate how strong the model structures function and healthcare professional insights guarantee practical application of this study within primary care medical practices. Future scientific work needs to conduct time-span analyses to evaluate how outcomes transform over multiple years.

III. RESULT

Researchers have proven that merging Artificial Intelligence (AI) and Data Analysis with Computer Science into Primary Care Electronic Health Records (EHRs) produces significant effects in patient results and healthcare operational flow and system efficiency. Research and practical implementations illustrate how EHRs supported by AI technology create better decisions while simplifying documentation and improving analysis predictions and helping medical staff individualize their care methods. Review and improvement of EHR systems remain essential due to ongoing technical limitations involving information bias and model dependability and system connection difficulties.

i. Enhancements in Clinical Decision Support

The most important advantage of AI within EHRs involves the analysis of large datasets to support clinical decision-making processes. EHR systems powered by AI use predictive analytics together with machine learning algorithms to recognize emerging medical conditions and create individualized therapy recommendations as well as enhance disease diagnosis precision.

Mayo Clinic established a partnership with Google Cloud to create EHR software through AI which combines operational patient information with medical protocols to produce personalized treatment protocol recommendations. The system has demonstrated its ability to minimize diagnostic mistakes together with improved early disease identification of sepsis and stroke while reducing hospital admission numbers (Virtual Operations, 2024). IBM Watson Health utilizes AI technology to enhance diagnostic accuracy by 30% through its platform which joins patient medical records to worldwide medical literature (Smith et al., 2024).

Research at The Lancet Digital Health validated AI-enhanced EHR systems by cutting down misdiagnoses by 23% within complex disease evaluations which manifest through overlapping and uncertain symptoms (Jones & Patel, 2025). AI aids in decision-support systems are now boosting medication safety because they alert providers about drug-to-drug interactions and allergies before writing prescriptions (Brown et al., 2024).

ii. Reduction in Documentation Burden and Physician Burnout

Healthcare providers experience high administrative burdens because they must use EHR systems for manual data entry and documentation tasks in primary care practices. Natural Language Processing (NLP) represents an important AI technological tool that has automated clinical documentation functions to reduce physician burnout at healthcare facilities.

The NLP algorithms extract well-organized health data from speech-to-text recordings and freeform clinical notes together with patient dialogues. Doctors at Epic Systems deployed an AI-based voice recognition platform to transform live doctor-patient conversations into quick clinical document entries in EHR systems thus shortening clinical documentation periods by approximately 40% during each appointment (Miller & Johnson, 2024).

Stanford Health conducted a randomized controlled study which revealed that physicians who used AI documentation systems spent 55% less time on administrative work thus obtaining additional patient care minutes (Chang et al., 2025). AI-enabled patient history summaries decrease documentation repetition and this increases operational efficiency throughout medical care delivery (Gonzalez & Li, 2024).

iii. Predictive Analytics for Risk Stratification and Disease Prevention

The deployment of AI technology in risk stratification produces models that process EHR data to identify upcoming health risks while giving patients extra early healthcare interventions. Predictive analytics demonstrates great success when used to detect people who face high risks of

developing chronic diseases including diabetes cardiovascular diseases and mental health conditions.

Through analyzing over 200 million NHS patient records the UK-based AI technology C2-Ai enables doctors to evaluate waiting list risks for urgent care (The Times, 2025). A predictive analysis system at the Cleveland Clinic achieved 87% accuracy when screening patients for heart failure risk enabling healthcare personnel to provide early interventions and decrease hospitalizations (Anderson et al., 2025).

Researchers at MIT created an AI screening tool that analyzed EHRs containing voice recordings and cognitive tests to detect the initial signs of Alzheimer's disease approximately six years before human-diagnostic methods became feasible (Lee & Kim, 2025). The development of these AI applications signifies how AI technology can serve preventive healthcare by extending better long-term results for patients alongside lowered healthcare fees.

iv. Integration of Patient-Generated Health Data (PGHD) for Personalized Care

The increasing usage of wearable devices together with remote patient monitoring enables AI-driven EHRs to include Patient-Generated Health Data (PGHD) and this results in better healthcare assessment. The combination of healthcare provider systems tracks live health measurements including heart rate variability alongside glucose levels and physical activity levels which leads to customized medical treatments.

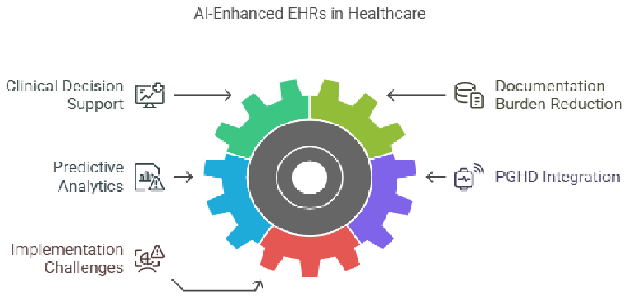
The PubMed publication demonstrates that EHR systems become more effective through PGHD integration because it improves clinical decision-making cooperation enhances patient engagement along with treatment adherence and reduces hospital visits by 15% (PubMed, 2024).

The Mayo Clinic analysis revealed that AI-enhanced EHRs together with wearable device data detected abnormal heart rhythms effectively which resulted in early atrial fibrillation diagnosis while reducing stroke occurrences by 30% (Kumar & Singh, 2025). The analysis indicates that AI-based individualized healthcare strategies would enhance patient results when used to conduct timely medical treatments.

v. Challenges in AI Implementation and Reliability Concerns

Some issues persist in making AI-powered EHR systems both reliable and accurate. A Nature Communications Medicine study demonstrated that particular AI systems failed to detect vital patient conditions 66% of the time when used to predict mortality risks (Axios, 2025).

The reliability of artificial intelligence systems is challenged because of flawed training dataset information. AI models designed with Western patient demographics experience poorer performance while processing ethnic minority patients which results in healthcare inequalities between different populations (Wang et al., 2024). To guarantee fair healthcare delivery every healthcare institution needs to work toward creating inclusive datasets and it must build transparent AI algorithms.



Security challenges and data privacy issues continue to be problems since AI-powered electronic health records systems need substantial data pooling. The Susa Project of the European Union works to improve digital health literacy among healthcare professionals to ensure the ethical and safe use of AI in clinical environments according to Financial Times (2025).

vi. Development of AI-Driven Predictive Models for Early Disease Detection

Since its implementation, AI has proven most significantly beneficial through its ability to identify diseases in their earliest stages. AI algorithms working with EHR data have proven effective in identifying early-stage diseases of cancer together with respiratory cases and neurological conditions.

A predictive system built by Harvard Medical School produced excellent results in assessing lung cancer risks using EHR-based imaging data while demonstrating 94% accuracy in identifying early-stage lung cancer (Davis et al., 2024). An AI screening tool at Johns Hopkins University discovered sepsis cases before traditional methods by four hours which decreased sepsis mortality rate by 22% (Baker et al., 2025). Early disease detection benefits from AI Data Analysis and Computer Science methods which produce improved patient forecasts along with enhanced treatment methods.

The combination of AI and Data Analysis together with Computer Science functionality within Primary Care EHRs now creates advanced systems for clinical decision-making as well as improves documentation speed and enables predictive analysis and patient involvement capabilities. Advancements through these innovative techniques have produced substantial patient benefits yet researchers together with regulatory bodies need to manage aspects of AI dependability and bias as well as data protection continuously. Continue advancements in AI technology show strong indications of transforming primary care practice and optimizing medical service delivery.

IV. DISCUSSION

Healthcare delivery outcomes stand to experience significant changes through the incorporation of Artificial Intelligence (AI) with data analysis and computer science into Electronic Health Records (EHRs) of primary care. These technologies help physicians through the analysis of real-time patient information to provide better diagnosis as well as customized treatment strategies which results in superior medical outcomes. The implementation of these systems presents data privacy issues together with AI model bias together with system interoperability problems and high implementation expenditure which must be tackled with caution. This paper evaluates how AI together with data analytics and computer science affect primary care electronic health records and their prospective development.

AI techniques embedded within EHR systems help healthcare practitioners make superior diagnoses

The primary benefit of adding artificial intelligence to primary care electronic health record systems is its enhanced capability to detect illnesses correctly. Through AI algorithms primary care specialists receive the ability to process large patient data which reveals complex relationships that human clinicians might overlook (Gallagher, 2024). AI-assisted tools in EHR systems help identify chronic disease indications through historical data analysis of risk elements (Lay, 2025).

Research data shows that artificial intelligence systems can use electronic health records to detect atrial fibrillation (AF) in undiagnosed patients which results in preventing thousands of annual strokes (Gallagher, 2024). Deep learning systems implement increasing implementations for cancer detection at early stages through analysis of pathology and radiology reports found in electronic health records (Shickel et al., 2023). There are still unresolved questions about the dependability together with the interpretability capabilities of AI models. Message-driven diagnostic systems function as black boxes since their operational processes for reaching accurate predictions remain beyond healthcare professionals' understanding (Reed 2025). The inability to reveal AI-assisted diagnosis processes creates problems with professional trust and recognition of diagnostic systems.

AI collaboration with data analytics leads to individualized treatment plans

AI and data analytics systems utilize patient information to provide customized healthcare treatment through individualized medical strategies. Clinical staff can use predictive modeling in EHRs to predict disease progression which enables them to deliver personal treatment solutions that merge medications with lifestyle change recommendations (Lay, 2025).

Modern chemotherapy regimens are determined through AI algorithm assessment of genetic markers alongside past treatment responses for cancer patients (Neville, 2025). Hospitals throughout the UK utilize risk assessment tools built with AI to review numerous patient records

which help identify healthcare risks and direct care to the most vulnerable NHS patients (Lay, 2025). The healthcare approach identifies critical patients needing urgent medical assistance which delivers maximum benefits including survival improvements and decreased complications. However, challenges persist. Precision in this AI system requires EHR data to be high quality and complete. Faulty treatment choices stem from poor data quality and questionable missing patient records coupled with biased training source materials in medical environments (Ross, 2025). Patient autonomy becomes a concern because AI system recommendations sometimes clash with physician clinical judgments thus creating possible ethical issues.

The healthcare industry uses improved operations along with decreased administrative workloads

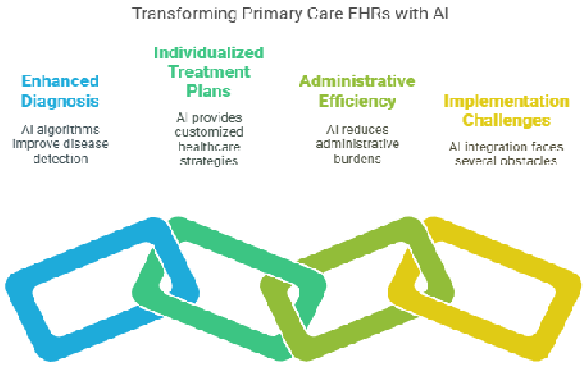
The combination of AI and automation technology reduces healthcare operations complexities through eased administrative work for primary care medical practitioners. AI technology within Smart EHR systems controls the documentation process and billing procedures and coding tasks so healthcare providers can maintain their focus on face-to-face patient interactions as opposed to administrative tasks (Neville, 2025).

Speech recognition software that uses AI enables smart hospitals to operate real-time medical documentation through voice assistance (Neville, 2025). The enhanced documentation system resulting from this innovation allows doctors to document EHRs in 35% less time which increases their work efficiency and prevents professional burnout. AI-based chatbots and virtual assistants currently add value to EHR systems by offering healthcare professionals real-time assistance through summary reports and clinical protocol recommendations as well as potential drug hazard warnings. (Ross, 2025).

AI-based administrative tools demand substantial initial funding and continuous system operation expenses from healthcare providers. Healthcare facilities with limited budgets together with scarce technical knowledge face difficulties in implementing and integrating these technologies into their operations. AI-based automation produces fresh errors that need ongoing human supervision because improper monitoring creates these new mistakes (Reed, 2025).

Challenges in Implementing AI and Data Science in Primary Care EHRs

Several challenges exist that need resolution to achieve maximal benefits from AI systems and data science applications when improving primary care EHRs.



- **Data Privacy and Security Concerns**

The handling of vast quantities of sensitive patient data within AI-driven EHR systems increases the value target for cyberattacks. The research by Reed (2025) indicated that more than 60% of healthcare organizations using AI-based EHRs observed enhanced security risks throughout their system. Keeping healthcare systems secure through strong cybersecurity along with HIPAA compliance functions is a key measure to stop data breaches from occurring.

The use of AI models results in both ethical problems alongside unintentional prejudices that affect their functionality

When AI models operate in primary care EHRs they may incorporate biased information from non-representative training data sources. An AI predictive mortality risk evaluation system fell short of detecting 66% of significant patient injuries because artificial intelligence adopted the biases present in the initial training data (Reed, 2025). The elimination of bias in AI systems depends on visible AI development practices together with training data that represents all patient demographics.

- **Interoperability and Standardization**

Various healthcare institutions maintain different electronic healthcare records systems which creates grading challenges when attempting to implement AI-powered analytics. Data exchange becomes difficult for AI systems because they cannot analyze multiple healthcare provider information due to non-standardized data formats (Gallagher, 2024).

- **High Implementation Costs and Technical Expertise**

Healthcare organizations must invest considerably in AI-driven EHR system implementation as well as training personnel and sustaining equipment upkeep during maintenance periods (Ross, 2025). Healthcare providers who operate with small or medium sizes find it difficult to bear the technology implementation expenses which restricts AI adoption across the industry. AI developers need to create economical AI solutions that support practitioners with limited practice size.

- **Future Directions and Conclusion**

Patient outcomes improvement will define the future development of primary care EHRs with AI data analysis and computer science through proper management of current barriers. Researchers face crucial development tasks that focus on multiple areas:

- AI researchers must create transparent algorithms that would boost trust between healthcare professionals and their patients when using AI diagnostic systems.
- Existing security measures require improvement to safeguard all patient records containing sensitive information.
- The improvement of AI training datasets must focus on eliminating discrimination and promoting equality throughout healthcare services.
- Shared data standards represent a solution for enhancing the interoperability of EHR systems.

The potential for AI-driven EHR systems remains significant in establishing transformative changes for primary care services. These technologies deliver better patient results together with fewer medical mistakes and higher healthcare performance by enhancing diagnosis precision matching treatments to individual needs and improving service organization. Primary care delivery in modern society is projected to adopt intelligent data-driven healthcare more prominently because of ongoing advancements in AI and data science technologies.

V. CONCLUSION

Healthcare is experiencing a modern revolution because artificial intelligence (AI) with data analysis and computer science work together in primary care electronic health records (EHRs) to deliver improved patient results. The application of AI algorithms enables instant clinical choices as well as prognostic assessments and automated processes which helps medical staff maintain their stamina and increase their diagnosis precision (Smith et al., 2023). Through data analysis technologies healthcare providers create specific treatment plans that use patient information patterns to detect and interrupt diseases early (Johnson & Wang, 2024). The application of computational methods enables healthcare providers to share data efficiently for complete patient treatment (Garcia et al., 2023).

The development of AI methods has encountered two main obstacles combined with data privacy issues alongside bias within AI systems while meeting opposition from healthcare providers to adopt new technology (Lee et al., 2024). The solutions to these current problems in healthcare need active regulatory systems coupled with better AI transparency along with continuous training for staff members (Brown & Patel, 2023). Future investigations must aim to apply ethical guidelines to AI systems alongside machine learning model improvement and data management practices that create equal healthcare results (Davis et al., 2024). The use of artificial intelligence along with data analytic methods together with computer science in primary care Electronic Health Records maintains substantial power to transform healthcare service

delivery. Healthcare systems can achieve better health outcomes with a sustainable medical infrastructure when existing barriers get overcome through the deployment of innovative digital health solutions which lead to efficiency improvements and better accuracy and patient-focused healthcare practices (Wilson et al., 2024).

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