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| Book Name: | **Redefining Medical Education: Balancing Innovation, Expansion, and Excellence in the AI Era** |
| Manuscript Number: | **Ms\_BPR\_5942** |
| Title of the Manuscript:  | **Redefining Medical Education: Balancing Innovation, Expansion, and Excellence in the AI Era** |
| Type of the Article | **Monograph** |

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| PART 1: Comments |
|  | Reviewer’s comment**Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | The manuscript will enhance Medical Education through the use of technology. This manuscript will give medical professionals an insight into the diverse opportunities for them besides healthcare delivery. The manuscript will help in the effective and efficient delivery of healthcare making it accessible for all no matter the location. This manuscript will enable medical professionals to stay relevant in the healthcare landscape. The manuscript will bring about collaboration between **Clinicians, AI Developers and Biomedical Engineers in the delivery of healthcare.** |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | Yes |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | The abstract of the article is comprehensive. |  |
| **Is the manuscript scientifically, correct? Please write here.**  | The manuscript is scientifically correct because it meet the needs of Medical Education in an AI era. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | The references are sufficient but just that chapter 11 did not have the reference list.  |  |
| Is the language/English quality of the article suitable for scholarly communications? | The language/English quality of the article is suitable for scholarly communications. |  |
| Optional/General comments | Please can you do the following editing under IndexNB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. 1. Close the space between the last word Care and the full stop
2. Provide a space between 3. and From. Also close the space Graduate and the full stop
3. Provide a space between 4. and From. Also bring quotation mark infront of “Medical
4. Provide a space between 5. and From and bring quotation mark infront of “From
5. Bring quotation mark infront of “The
6. Provide space between 7. and Paging
7. Provide space between Medicine. and “Crafting
8. Close the space between Practice and the full stop. Also provide space between the full stop and Degrees. Close the space between Obsolete and the colon. Also provide space between the colon and Essential

Please can you do the following editing under Chapter 1NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. **Positive Effects on Doctors and Society*** + - 1. Addressing the Doctor Shortage should be bolding

**Way Forward: Preventing Negative Effects****3. How to Overcome the Issue of Doctor Unemployment****a) Expansion of PG Seats and Training Opportunities**Ensure Skilled Workforce: By improving the opportunities for postgraduates, India can produce a more skilled and specialized workforce that can cater for (instead of to) the complex medical needs of the population.Please can you do the following editing under Chapter 3NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****Conclusion: Turning the Tide in Favour of Doctors**** The need of the hour is a **mindset shift** – from seeing oversupply as a crisis to **viewing it as an expansion of opportunities (instead of possibilities).****NB: Even though possibilities is a synonym of opportunities but replacing possibilities with opportunities will make it clearer for the readers.**Please can you do the following editing under Chapter 6NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. **1. Introduction**Close the space between Change and the colon. Also remove the hyphe (-)2. The Importance of Continuous Learning and Development ***Need for Lifelong Learning in Medicine:*** Medical education doesn't stop after degrees; both students and faculty must engage in Continuous Professional Development (CPD) (instead of continuous professional development (CPD)).**4. Active Learning and Student-Centered Pedagogy*****From Passive Learning to Active Engagement:*** The shift from didactic lectures to active learning models—Problem-Based Learning (PBL) (instead of problem-based learning (PBL))***Faculty as Facilitators, Not Sole Authorities: (This should not be within the text but start on a fresh line)*****8. Faculty Mentorship and Role Modeling :** ***Mentorship Beyond Academia: (This should not be within the text but start on a fresh line)*****NB: Please let the subheadings, font style and font size under Chapter 6 be consistent**Please can you do the following editing under Chapter 8NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****Introduction****Medical education in India is at a crossroads, poised between traditional lecture-based pedagogy and an evolving digital landscape powered by Artificial Intelligence (AI) (instead of artificial intelligence (AI)).**4. Fear of Change: Time, Effort, and Innovation**However, **CBME guidelines mandate formative assessments, Case-Based Discussions (CBD) instead of case-based discussions (CBD), problem-based learning (PBL) instead of Problem-Based Learning (PBL), and Early Clinical Exposure (ECE)** instead of **early clinical exposure (ECE)** (5)Please can you do the following editing under Chapter 9NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****Introduction****The rapid pace of technological innovation, from Artificial Intelligence (AI) (instead artificial intelligence (AI)) to Virtual Reality (VR) (instead of virtual reality (VR))Please Chapter 10 is a repetition of Chapter 11. Please Chapter 10 heading is below, check and update the heading with it content accordingly.10. AI: “A Brush in Every Hand, But Only Artists Create Masterpieces". "Technology Empowers, But Human Intelligence Guides the Future"Please can you do the following editing under Chapter 11NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. Enhance Assessment Techniques: Use Objective Structured Clinical Examinations (OSCEs) (instead of objective structured clinical examinations (OSCEs)) and scenario-based assessments to evaluate both knowledge and practical skills (Harden & Laidlaw, 2016). Please you did not provide the compilation of the references from the cited works for Chapter 11.Please can you do the following editing under Chapter 12NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****Abstract****This technology, driven by advances in bioengineering, stem cell science, and Artificial Intelligence (AI) (instead of artificial intelligence (AI))****Conclusion: The Bioprinted Tomorrow—An Invitation to Innovate****Will you be ready?. Please remove the full stop after the question markPlease can you do the following editing under Chapter 13NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. AI and ML in Paediatric and Neonatal AcademicsVirtual Reality and Simulation-Based Training : Please close the space between Training and the colonAI and ML in Paediatric and Neonatal Clinical PracticeSmart Monitoring and Early Warning SystemsML-based alarm systems in Neonatal Intensive Care Units (NICUs) (instead of neonatal intensive care units (NICUs))Future Perspectives and the Need for Professional Upgradation (instead of Up gradation)Please can you do the following editing under Chapter 14NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****AI in Orthopaedic Education and Academics***** + - 1. **Personalized Learning and Simulation**

Virtual Reality (VR) (instead of Virtual reality (VR)) and Augmented Reality (AR) (instead of augmented reality (AR))****Call to Action: Embracing AI for Future-Proof Orthopaedic Practice****Continuing Medical Education (CME) (instead of Continuing medical education (CME))Please can you do the following editing under Chapter 15NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. AI-Driven Simulation Models for Training Radiologists and Interventionalists* For example, AI-powered Virtual Reality (VR) (instead of virtual reality (VR)) and Augmented Reality (AR) (instead of Augmented Reality (AR))

Automated Assessment and Feedback Mechanisms in Radiology Learning* Moreover, Natural Language Processing (NLP) (instead of natural language processing (NLP))

Integration of AI in Medical Curricula to Enhance Learning Efficiency* AI-integrated curricula include interactive learning platforms that adapt to students’ progress and comprehension levels. For example, AI-driven Intelligent Tutoring Systems (ITS) (instead of intelligent tutoring systems (ITS))

**AI Applications in Clinical Radiology**1. **Deep Learning Algorithms for Automated Image Analysis and Anomaly Detection**
* Convolutional Neural Networks (CNNs) (instead of Convolutional neural networks (CNNs))
1. **AI-powered Tools for Enhancing Diagnostic Accuracy in X-ray, CT, MRI, and PET Scans**
* Computer-Aided Detection (CAD) (instead of Computer-aided detection (CAD))

**AI in Interventional Radiology**Augmented reality and AI-driven guidance in minimally invasive procedures: Augmented Reality (AR) (instead of Augmented reality (AR))**The Future of AI in Radiology: Opportunities and Challenges**The necessity of continuous education and skills upgradation (instead of up gradation) for radiologists:Please can you do the following editing under Chapter 16NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located. ****2. Virtual Simulations: Enhancing Surgical and Procedural Skills****AI-powered Virtual Reality (VR) (instead of virtual reality (VR)) and Augmented Reality (AR) (instead of augmented reality (AR))****1. AI-Driven Large-Scale Data Analysis in Reproductive Health and Oncology********Applications in Reproductive Health:***** **Genomic Research:** AI-driven genomic sequencing has enhanced our understanding of conditions such as Polycystic Ovary Syndrome (PCOS) (instead of polycystic ovary syndrome (PCOS))
* **Infertility Studies:** AI models analyze patient history, hormone levels, and embryonic development data to predict the success rates of Assisted Reproductive Techniques (ART) (instead of assisted reproductive techniques (ART)) such as In Vitro Fertilization (IVF) (instead of in vitro fertilization (IVF)).

AI in Clinical PracticeTreatment Optimization* Personalized treatment plans based on AI-driven risk stratification improve patient outcomes in conditions such as endometriosis and Polycystic Ovary Syndrome (PCOS) (instead of polycystic ovary syndrome (PCOS)).

AI in Fertility Treatment* AI-enhanced embryo selection optimizes In Vitro Fertilization (IVF) (instead of in vitro fertilization (IVF)) success rates.
* Predictive modeling in Assisted Reproductive Techniques (ART) (instead of assisted reproductive techniques (ART)) improves patient counselling and treatment customization.
	+ - 1. **Diagnostic Applications of AI in Gynaecology**

****AI-Powered Imaging for Cervical Cancer Screening and Fetal Anomaly Detection***** **Fetal Anomaly Detection:**
* AI models analyze fetal movement patterns and Doppler ultrasound data to assess fetal well-being and detect Intrauterine Growth Restriction (IUGR) (instead of intrauterine growth restriction (IUGR)) early.

****Machine Learning in Predicting High-Risk Pregnancies and Preterm Labor***** **EHR Integration:** Machine learning models extract insights from Electronic Health Records (EHRs) (instead of electronic health records (EHRs))

****3. AI in Fertility Treatment********Predictive Modeling in Assisted Reproductive Technology (ART)***** **Automated Sperm Selection:**
* AI-enhanced sperm analysis helps embryologists select the most motile and morphologically normal sperm for Intracytoplasmic Sperm Injection (ICSI) (instead of intracytoplasmic sperm injection (ICSI)), increasing fertilization success.
	+ - 1. **Data Security and Patient Confidentiality in AI Implementation**

****Key Data Security Concerns***** **Patient Data Privacy:** AI-driven healthcare systems require access to Electronic Health Records (EHRs) (instead of electronic health records (EHRs)),
1. **The Evolving Role of Gynaecologists in AI-Assisted Healthcare**

****Balancing AI and Human Expertise***** **AI as a Support Tool, Not a Replacement:** While AI can enhance diagnostic precision and streamline treatment decisions, (Please use semi-colon rather than comma)

****AI’s Potential in Revolutionizing Personalized Medicine and Telemedicine in Gynaecology********Personalized Medicine in Gynaecology********Key Developments in AI-Driven Personalized Medicine***** **Genomic-Based Risk Stratification:** AI algorithms can analyze genetic and epigenetic data to predict susceptibility to conditions like ovarian cancer, endometriosis, and Polycystic Ovary Syndrome (PCOS) (instead of polycystic ovary syndrome (PCOS)),
* **AI-Guided Hormonal Therapy:** Machine learning models can optimize Hormone Replacement Therapy (HRT) (instead of optimize hormone replacement therapy (HRT))

****The Need for Continuous Upskilling of Professionals to Integrate AI into Routine Practice********Educational Initiatives for AI Integration***** **Simulation-Based Training:** AI-powered Virtual Reality (VR) (instead of virtual reality (VR)) and Augmented Reality (AR) (instead of augmented reality (AR))

****Collaborative Efforts Between AI Developers and Medical Professionals to Refine AI Applications in Gynaecology********Key Areas for Collaboration******3. Integrating AI into Clinical Workflow*** **User-Friendly AI Interfaces:** Developers should design AI tools with intuitive interfaces that seamlessly integrate into existing Electronic Health Records (EHRs) (instead of electronic health record (EHR)) systems.

Please can you do the following editing under Chapter 17NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.**"Artificial Intelligence and Machine Learning in Obstetrics and Neonatal Resuscitation: Transforming Practice and Shaping the Future"******Abstract****The integration of Artificial Intelligence (AI) (instead of artificial intelligence (AI)) and Machine Learning (ML) (instead of machine learning (ML))****AI and ML in Obstetrics********2.1 Predictive Analytics for Pregnancy Monitoring***** **Preterm Birth Prediction**: Natural Language Processing (NLP) (instead of Natural language processing (NLP)) and ML techniques identify risk factors from Electronic Health Records (EHRs) (instead of electronic health records (EHRs)), allowing for early preventive measures [3].

Please can you do the following editing under Chapter 18NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.**AI and Machine Learning in General Surgery and Surgical Superspecialities :(Please close the space between Superspecialities and the colon) Transforming Practice and Shaping the Future.******AI-Driven Learning Modules in Surgical Education****The integration of Artificial Intelligence (AI) (instead of artificial intelligence (AI))****2. Virtual and Augmented Reality Simulations****AI-enhanced simulations in Virtual Reality (VR) (instead of virtual reality (VR)) and Augmented Reality (AR) (instead of augmented reality (AR))Example: **Osso VR** and **Fundamental VR (instead of FundamentalVR)**Please can you do the following editing under Chapter 19NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.****AI in Emergency Medicine: Rapid Decision-Making and Triage Optimization***** **Automated ECG and Imaging Interpretation:** AI enhances rapid stroke and Myocardial Infarction (MI) (instead of myocardial infarction (MI)) diagnosis.

****AI in Medical Superspecialties******Gastroenterology: AI in Endoscopy and Hepatology*** **AI-Assisted Endoscopic Diagnosis:** Convolutional Neural Networks (CNNs) (instead of Convolutional neural networks (CNNs)) detect polyps, early gastric cancer, and Barrett’s esophagus.

****Future Perspectives: The Need for Continuous Learning***** **Lifelong Learning for Physicians:** Continuous Medical Education (CME) (instead of Continuous medical education (CME))

Please can you do the following editing under Chapter 20NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.****1. The Role of Clinicians in AI Development******a. Defining Clinical Problems for AI Solutions*** Ensuring AI tools integrate seamlessly into existing Clinical Decision Support Systems (CDSS) (instead of clinical decision support systems (CDSS)).

**b. Validating AI Algorithms and Ensuring Clinical Accuracy**Participating in AI model training by annotating medical data (e.g.,(Please remove the comma) radiological**c. Enhancing AI Adoption in Medical Practice*** Training healthcare professionals in AI literacy through Continuous Medical Education (CME) (instead of continuous medical education (CME)) programs.

****2. The Role of AI Developers in Healthcare Innovation******a. Developing Clinically Relevant AI Algorithms*** Integrating AI solutions with Electronic Health Records (EHRs) (instead of electronic health records (EHRs))

****3. The Role of Biomedical Engineers in AI-Driven Medical Technologies******c. AI-Driven Prosthetics and Rehabilitation Technologies*** Developing Brain-Computer Interfaces (BCIs) (instead of brain-computer interfaces (BCIs)) for neuroprosthetics.

****5. Future Perspectives: The Need for Continuous Learning and Adaptation******a. AI in Medical Education and Training*** Developing AI-powered Virtual Reality (VR) (instead of virtual reality (VR)) and Augmented Reality (AR) (instead of augmented reality (AR)) simulations for surgical training.

Please can you do the following editing under Chapter 21NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.****Strategies for Integrating AI into Medical Education******6. Implementing AI-Based Learning Tools in Medical Education*** Virtual and Augmented Reality (VR/AR) (instead of Virtual and augmented reality (VR/AR))

Please can you do the following editing under Chapter 23NB: Please only the words in red need editing but the rest serves as a guide for you to identify  where it is located.IntroductionThe rapid advancement of Artificial Intelligence (AI) (instead of artificial intelligence (AI)) and Machine Learning (ML) (instead of machine learning (ML))**The Role of AI in Professional Practice*** **Administrative Efficiency:** AI optimizes hospital workflow, appointment scheduling, and Electronic Health Records (EHRs) (instead of electronic health record (EHR)) management

CONCLUDING GENERAL COMMENTS1. Please let the language style be uniform either British English or American English.
2. Please let the Font Style, Font Size and Spacing be uniform.
3. Please let the arrangement of the Headings and Subheadings be uniform.
4. Please let the Referencing Style be uniform.
5. Please start each Chapter on a fresh page.
6. Please number the pages.
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| **PART 2:**  |
|  | Reviewer’s comment | Author’s comment *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?**  | *(If yes, Kindly please write down the ethical issues here in detail)* |  |

**Reviewer details:**

**Francis Akwasi Manu, Ghana**