



Innovative application of AI in obstetrics nursing

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Abstract

The potential implications of artificial intelligence in healthcare are truly remarkable AI in health care is expected to play a major role in redefining the way to process healthcare data, diagnose diseases, develop treatments and even prevent them altogether, Artificial Intelligence comprises many healthcare technologies, transforming nurses roles and enhancing patient care. Nursing AI tools include clinical decision support, mobile health and sensor- based technologies and voice assistance and robotics. A common adverse event in maternity care is hypoxia induced encephalopathy which in 2015 had an overall incidence rate of 5.14 per 1000 live births. This can occasionally be attributed to misinterpretation of intrapartum fetal monitoring and it is generally agreed that 50% such cases are preventable.

Keywords: Innovative application, intrapartum fetal, obstetrics nursing, preventable, artificial intelligence

Introduction

The “Knowledge Pyramid” model explain the progress of collecting data which is analysed to get information that will increase the knowledge and finally our wisdom. These developments led to the thrive of “Artificial Intelligence”. The field of Obstetrics and Gynecology (OB-GYN) is dedicated to the comprehensive care of women’s health, particularly during pregnancy, childbirth and the diagnosis and treatment of disease related to the female reproductive system (Desai GS, 2023) ^[1].

AI can streamline the workflow in the obstetrics and gynaecological department improving overall efficiency. There have been major developments of data collection storage and analysis over the last five decades including health informatics. Over the past few decades, this medical speciality has witnessed remarkable technological advancements that have revolutionized the way health care is delivered. (Iftikhar P, Kuijpers MV, 2024) ^[5].

Review of Literature

A recent study on women having ovarian endometriosis should that an AI algorithm using the MRI images significantly improved the diagnostic accuracy.

Eliz ilria emin, *et al.* In this study sensitivity and specificity of correct CTG where calculated based on the complex ‘Aggregated confusion matrix model’ where CTG data, age of mother, pH of umbilical artery, Apgar score, base excess and deficit were used to classify normal vaginal and caesarean section delivery.

Benefits of AI

- The potential implications of artificial intelligence in healthcare are truly remarkable.

- AI in healthcare is expected to play a major role in redefining the way to process healthcare data, diagnose diseases develop treatments and even prevent the altogether.
- By using artificial intelligence in healthcare, medical professionals can make more informed decisions based on more accurate information based on more accurate information- saving time, reducing costs and improving medical records management overall.
- From identifying new cancer treatments to improving patient experiences AI in healthcare promises to be a game changer.

Future of AI in OBG Nursing

- Advances in explainable AI.
- Integration of AI ethics.
- Continued research in general AI.
- Data qualify and diversity.
- Sustainable AI development.
- Human AI collaboration.

Limitation

- Lack of understanding and common sense.
- Absence of creativity and originality.
- Ethical and moral decision making.
- Interpretability and explain ability.
- Data dependency and quality.
- Resource intensiveness.
- Limited transfer learning.
- Emotional intelligence and empathy.
- Real time learning and adaptability.

AI Advanced Tool in OBG

In medicine, Many AI methods have been used to improve the diagnostic process and to diagnose certain disease, which humans have been doing for a long time although some AI technologies have been utilized in obstetrics. Improvements in AI are closely related the amount of available data which currently is linked to the frequency of imaging women.

Automated Interpretation of Cardiotocograph

A recent meta-analysis indicate that a 50% reduction in neonatal seizure was associated with the continuous CTG monitoring. CTG is most important device evaluating fetal wellbeing through measurement of the fetal heart rate and uterine contraction.



AI in Fetal Ultrasound

AI can assist in early pregnancy risk stratification by analysing ultrasound images from the first trimester. AI ultrasound helps health workers monitor pregnancy and identify high- risk pregnancies in low-resources settings by using AI algorithms.



AI in Nuchal Translucency (NT) Scan

To assist with identifying the fetal sagittal plane and measuring the NT thickness. AI methodology has been used to assist with identification of optimal image acquisition, and to automate fetal biometric measurement.



Cardiac Images

Fetal eco cardiography is recognized as a main prenatal screening and diagnostic tool that can accurately direct approximately 85% of fetal cardiac abnormality.

Virtual Assistant (Education)

AI powered virtual assistant can offer personalized support and education throughout the patient pregnancy journey, providing essential information about prenatal care, nutrition and can offer proactive intervention and personalized counselling.



Home Monitoring in AI

AI home monitoring in OBG utilize artificial intelligence algorithms to analyse the data from wearable device, smartphone, apps to monitor the maternal & fetal health parameters remotely.

Conclusion

The use of AI in gynaecologic and obstetric emergencies is promising when appropriate input data are provide and human expert oversight is available AI can assist in critical decision making and predict outcome in emergency situation. This can save time and prevent delays in management. Because gynaecologist and obstetricians are unfamiliar with AI principles and terminology they may be skeptical about its value.

Conflict of Interest

Not available

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