The Future of Artificial Intelligence (AI) in Psychiatry

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What is Artificial Intelligence?

- “The science and engineering of creating intelligent machines¹”
  
  - John McCarthy (Artificial Intelligence founder)

- Use of technology to mimic intelligent behavior and thought⁵

- Enables machines to learn and recognize patterns and relationships from large representative examples
How is this relevant to psychiatry?

- The world is in a mental health crisis
  - Psychiatric disorders = 4.9% of global disease burden
  - Patients: increased physical morbidity and premature mortality
- Large disease burden → need for:
  - Accurate diagnosis at early stage
  - Personalized treatment
- Potential solution?
  - AI (even though still controversial)

Artificial Intelligence in Medicine

- Faster disease detection
- Better understanding of disease progression
- Discover innovative treatments
- Precision medicine
- Patient education

AI

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What other specialties have used AI?

Orthopedics (i.e. answering patient questions)

Surgery (i.e. Da Vinci robot)

Cardiology (i.e. EKG analysis)

Opinions on AI in Psychiatry

AI in Psychiatry APA webinar - August 2023
- With survey after webinar - n = 138

40% Have used ChatGPT for clinical questions

70% Think documentation will be more efficient

80% Need more training with AI tools

Pros: Strengthen patient safety, access, and quality of care
Cons: Fabrication of info, embedded bias
AI in Psychiatry

General term that implies the use of computerized techniques and algorithms for the diagnosis, prevention, and treatment of mental illnesses.

What are potential roles of AI in Psychiatry?

- Biomarker identification
- Monitoring symptoms
- Screening tools
- Risk Models
Example of AI-based Interventions in Psychiatry

Meet Woebot
Your mental health ally
Woebot can help you live better with symptoms of depression and anxiety
Woebot listens, learns, and offers tools based on what you're experiencing
Woebot forms a lasting relationship with you, similar to humans and their therapists
Example of AI-based Interventions in Psychiatry

- How do you access to the application?
- How does it work?
  - Select category → Learning modules → tools
- What happens if someone is in a crisis?
  - Programmed to recognize suicidal language
- How is this regulated?

Potential benefits? Challenges?

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<tr>
<th>Challenges</th>
<th>Benefits</th>
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| Translating AI to mental health  
  More applicable to physical health and objective data | Minimize bias  
  Eliminate individual-level inconsistencies |
| “black box”  
  Do not know how or why a particular decision was made | Optimize therapeutic strategies  
  Monitor change in symptoms, treatment progress and drug compliance |
| Ethical issues  
  Personal privacy and medical data disclosure | Accessibility  
  Deliver services to patients in remote geographical areas. Alleviate shortage. |
Epistemic injustice
- “Harm done to individuals or groups regarding their ability to \textbf{contribute to} and \textbf{benefit from} knowledge”\textsuperscript{7}

- Technological Redlining\textsuperscript{8}
  - Unrepresentative or incomplete data for training
    - Algorithmic bias $\rightarrow$ reinforced racism
      $\downarrow$ biased algorithms / treatment pathways
      $\downarrow$ widened inequities in access & quality of care

Ethical Considerations

- Premature optimism for AI in medicine
- Implementation before addressing issues of bias\textsuperscript{9}
- \textsuperscript{$\uparrow$} structural vulnerabilities of at-risk populations
  i.e. patients with mental health illness
Ethical Considerations

AI can synthesize massive amounts of data in a second

 Feeling obligated to agree with AI’s clinical recommendations

What if clinicians go against the recommendations?

 Concern for liability?

 Which is superior - clinician judgment or AI output?

How can we do this well?

Critical reflection - limitations of AI systems and clinicians

Epistemic humility

Individual experiences, values, and preferences > AI

Caution - address the potential for unintended consequences
References