DEVELOPMENT OF AN ARTIFICIAL INTELLIGENCE-BASED TRAINING MODULE OF TRADITIONAL MEDICINE STAKEHOLDERS

Global Technical Meeting: Artificial Intelligence (AI) for
Global Health Advancing Traditional Medicine (TM)
All India Institute of Ayurveda (AIIA) New Delhi

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About Me

I'm a **methodologist** by training – PhD in Health Research Methodology from McMaster University, Hamilton, Canada

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Most recently, my research has focused on the **intersection of traditional, complementary, and integrative medicine, open science, and meta-research**

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The Intersectionality of TM and AI

- My work at this intersection is informed by my expertise in open science and meta-research
- The convergence of traditional medicine (TM) with artificial intelligence (AI) is a promising frontier in healthcare
- TM is a patient-centric approach that combines conventional medicine with complementary therapies, emphasizing holistic well-being; AI can revolutionize healthcare through data-driven decision-making and personalized treatment plans

What Do I Mean by Meta-Research?

- **Meta-research (or Metascience): "The scientific study of science itself with the aim to describe, explain, evaluate and/or improve scientific practices. Meta-science typically investigates scientific methods, analyses, the reporting and evaluation of data, the reproducibility and replicability of research results, and research incentives."**
- Source: Framework for Open and Reproducible Research Training. Meta-science or meta-research. Available at: https://forrt.org/glossary/meta-science-or-meta-research/

What Do I Mean by Open Science?

- **Open Science: "An umbrella term reflecting the idea that scientific knowledge of all kinds, where appropriate, should be openly accessible, transparent, rigorous, reproducible, replicable, accumulative, and inclusive, all which are considered fundamental features of the scientific endeavour. Open science consists of principles and behaviors that promote transparent, credible, reproducible, and accessible science. Open science has six major aspects: open data, open methodology, open source, open access, open peer review, and open educational resources."**
- Source: Framework for Open and Reproducible Research Training. Open science. Available at: https://forrt.org/glossary/open-science/

The Intersectionality of TM and AI

- AI may augment TM by assisting in early disease detection, providing personalized treatment plans, predicting health trends, and enhancing patient engagement
- Challenges at the intersection of AI and TM include data privacy and security, regulatory complexities, maintaining the human touch in patient-provider relationships, and mitigating bias in AI algorithms; patients' trust, informed consent, and legal accountability are all essential considerations

Data, Code, and Materials Sharing

- One key tenet of open science is **making research data available** to the scientific community and public, **enhancing transparency and validation through reanalysis**
- In TM, this includes sharing data on clinical trials, patient-reported outcomes, and raw data from therapies like Ayurveda, acupuncture or herbal interventions, which can all be used in the context of AI
- The **FAIR principles** (https://www.go-fair.org/fair-principles/) guide structuring open data:
  - Findability: Data and metadata should be easily discoverable
  - Accessibility: Users should know how to access data, possibly with authentication
  - Interoperability: Data should integrate with other data and work with various applications
  - Reusability: Data should be well-described for replication and combination in different settings

Data, Code, and Materials Sharing

- “The current movement toward open data and open science does not fully engage with Indigenous Peoples rights and interests. Existing principles within the open data movement (e.g. FAIR: findable, accessible, interoperable, reusable) primarily focus on characteristics of data that will facilitate increased data sharing among entities while ignoring power differentials and historical contexts. The emphasis on greater data sharing alone creates a tension for Indigenous Peoples who are also asserting greater control over the application and use of Indigenous data and Indigenous Knowledge for collective benefit.”
- Source: https://www.gida-global.org/care

Data, Code, and Materials Sharing

- “Whether existing knowledge is digitized or new data are ‘born digital’, the impact they have on decision-making, allocation of resources, and innovation is significant. Data have important implications for Indigenous Peoples’ ability to exercise their individual and collective rights to self-determination. Indigenous Peoples are often excluded from decision-making fora and their knowledge marginalized when such knowledge exists only as part as part of an oral tradition.”
- **TM data used for AI is no exception**

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Education Article

Traditional, complementary, and integrative medicine and artificial intelligence: Novel opportunities in healthcare

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- Ng et al. (2024) published one of the first educational articles exploring the intersection of TM and AI

The Ottawa Hospital
Centre for Journalology
Affiliated with uOttawa

Universitätsklinikum Tübingen

RBIM
Robert Bosch Centrum für Integrative Medizin und Gesundheit

medRxiv
THE PREPRINT SERVER FOR HEALTH SCIENCES

CSH Cold Spring Harbor Laboratory

BMJ Yale

Attitudes and Perceptions of Medical Researchers Towards the Use of Artificial Intelligence Chatbots in the Scientific Process: A Large-Scale, International Cross-Sectional Survey

Jeremy Y. Ng, Sharleen G. Maduranayagam, Nirekah Suthakar, Amy Li, Cynthia Lokker, Alfonso Iorio, R. Brian Haynes, David Moher

doi: https://doi.org/10.1101/2024.02.27.24303462

- **Forthcoming in The Lancet Digital Health!**
- **60%** of respondents stated they **were familiar with AICs and half used AICs in their own research**
- However, only **11%** of respondents **reported that their institution offered training on using AI tools of whom only 26% completed the training**
- **70%** of respondents **expressed interest in learning more/receiving training about how to use AI chatbots in the scientific process**
- **<u>While medical researchers claim they are familiar with AICs, the vast majority lack any formal training on its use in the scientific process</u>**

- Large language model (LLM)-linked chatbots are being increasingly applied in healthcare due to their impressive functionality and public availability
- Studies have assessed the ability of LLM-linked chatbots to provide accurate clinical advice
- However, the methods applied in these Chatbot Assessment Studies are inconsistent due to the lack of reporting standards available, which obscures the interpretation of their study findings
- **A Chatbot Assessment Reporting Tool (CHART) reporting guideline is currently being developed**

Training Module Considerations

- **Education and Training**: Integrating open science and meta-research practices into TM curricula promotes a culture of transparency and collaboration among future professionals
- **Ethical Frameworks**: Establishing ethical frameworks specific to TM can guide researchers in addressing patient consent, cultural sensitivity, and responsible use of (especially traditional) therapies
- **Cross-Disciplinary Innovation**: Interdisciplinary collaboration can lead to novel research and integrative healthcare solutions by combining TM and conventional medicine

Training Module Considerations

- **Global/Multi-National Standardization**: International collaboration and standardization can promote consistency in open science and meta-research practices across borders, benefiting TM research
- **Policy Integration**: Policymakers and regulatory bodies can align TM research with open science and meta-research through aforementioned practices
- **Informed Decision-Making**: Increased application of open science and meta-research practices in TM research will have a downstream effect of empowering patients to make informed healthcare decisions and supports shared decision-making

My Ongoing Work: TM and AI

- Attitudes and Perceptions of TM Journal Editors Towards the Use of Artificial Intelligence Chatbots in the Scholarly Publishing Process: A Cross-Sectional Survey
- Attitudes and Perceptions of Artificial Intelligence Use in TM Research: A Cross-Sectional Survey of TM Researchers
- Future Work: Would it be worthwhile to survey these populations, in addition to other TM stakeholders to form a basis for needs/preferences for the training module?

Discussion & Questions

Thank you for your kind attention!

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