

# *AI and Mental Health: Revolutionizing Access and Support*

LATEST ADVANCES, BENEFITS, AND CANADIAN INNOVATIONS

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Mood Disorders Society of Canada

La Société Pour Les Troubles de L'Humeur du Canada

# The Mental Health Crisis: A Statistical Overview



- ▶ 1 in 3 Canadians will experience a substance use or mental health disorder in their lifetime.
- ▶ Many Canadians do not feel their mental health needs are being met.
- ▶ "While approximately 5.3 million Canadians may have expressed a need for mental health services in 12 months (Statistics Canada), it is estimated that up to a third of Canadians over the age of 15 years do not feel their mental health needs are being adequately met. For individuals experiencing depression, that figure is estimated to be as high as 50%".
- ▶ 500,000 people in Canada miss work each week due to mental health concerns, costing the Canadian economy ~\$52 billion annually.
- ▶ Average wait times for mental health care in Canada vary from 42 days to 2.5 years.
- ▶ Stigma is a significant barrier to contact and engagement with the mental healthcare system.





# The Promise of AI in Mental Health

- ▶ AI can enhance mental health services, improve mental health literacy, and facilitate the integration of health and social systems.
- ▶ It can improve efficiency, patient navigation, satisfaction, and overall health outcomes by bridging service gaps and increasing knowledge access.
- ▶ AI can reduce healthcare costs and bypass barriers in traditional health systems by providing confidential, personalized support to individuals, regardless of their location.
- ▶ AI can tackle social stigmatization, which otherwise, can prevent individuals from seeking support and deter them from pursuing care.
- ▶ Digital technologies provide an opportunity to potentially bridge service gaps and increase points of access to the healthcare system.
- ▶ AI facilitates system health integration, which could improve system coordination, efficiency, patient navigation, satisfaction, and overall health outcomes.





# How AI is Being Used in Mental Health

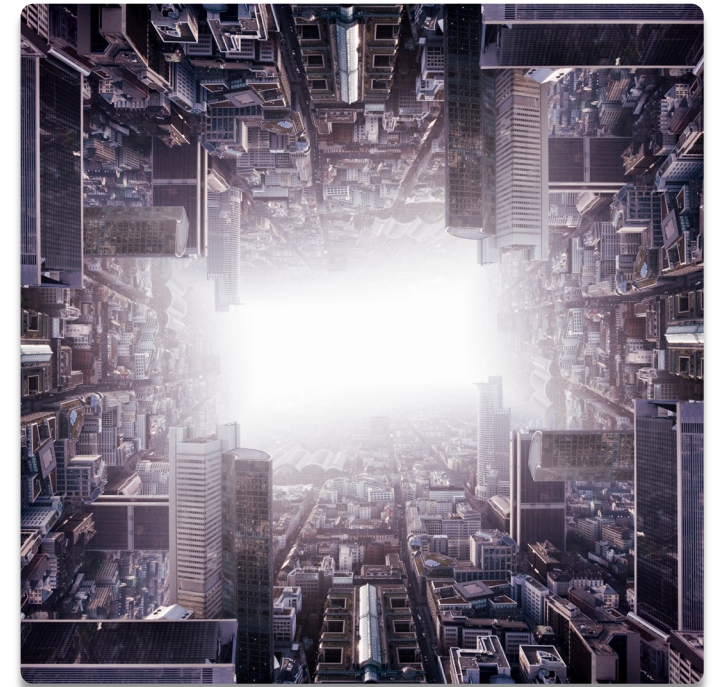
## CORE AI APPLICATIONS IN MENTAL HEALTH

### Diagnostic Support & Screening

- **Pattern recognition** in speech, text, and facial expressions to identify signs of depression, anxiety, or other conditions
- **Risk assessment algorithms** that identify suicidal ideation or self-harm risks from user interactions
- **Digital phenotyping** that tracks behavioural patterns through smartphone usage to detect changes in mental state

### Treatment & Intervention

- **Therapeutic chatbots** delivering evidence-based approaches like Cognitive Behavioral Therapy (CBT)
- **Personalized treatment recommendation systems** matching users with appropriate therapeutic approaches
- **Virtual reality therapy** using AI to create adaptive exposure therapy environments
- **Smart medication management** systems tracking adherence and monitoring outcomes



# How AI is Being Used in Mental Health

## AI INTEGRATION IN MENTAL HEALTH CARE SYSTEMS



### Clinical Support

- Decision support tools for clinicians that suggest potential diagnoses or treatment options
- Predictive analytics forecasting patient outcomes or identifying potential crises
- Documentation automation reducing clinician administrative burden
- Treatment progress monitoring through continuous data analysis

### Accessibility Enhancements

- 24/7 support systems providing immediate response when human providers are unavailable
- Language translation and cultural adaptation making mental health support more inclusive
- Scalable solutions reaching underserved populations and remote areas
- Reduced stigma entry points allowing anonymous initial engagement

### Emerging Trends

- Multimodal AI combining speech, text, and visual analysis for more comprehensive assessment
- Emotion AI detecting subtle emotional cues for more responsive interventions
- Collaborative AI-human care models where technology augments rather than replaces human providers





# Benefits of AI in Mental Health

## Improved Access & Availability

- 24/7 Support:** Immediate assistance regardless of time or location
- **Reduced Geographic Barriers:** Reaching remote and underserved communities
- **Scalability:** Ability to support millions of users simultaneously
- **Affordability:** Lower-cost alternatives to traditional therapy

## Enhanced Quality of Care

- **Personalization:** Tailored interventions based on individual needs and preferences
- **Consistency:** Delivering evidence-based approaches without variation
- **Early Detection:** Identifying warning signs before crisis points
- **Objective Monitoring:** Tracking progress through quantifiable metrics

## Clinical Advancements

- **Decision Support:** Augmenting clinician capabilities with data-driven insights
- **Reduced Administrative Burden:** Automating documentation and routine tasks
- **Treatment Optimization:** Continuously adapting approaches based on outcomes
- **Research Acceleration:** Analyzing patterns across large populations

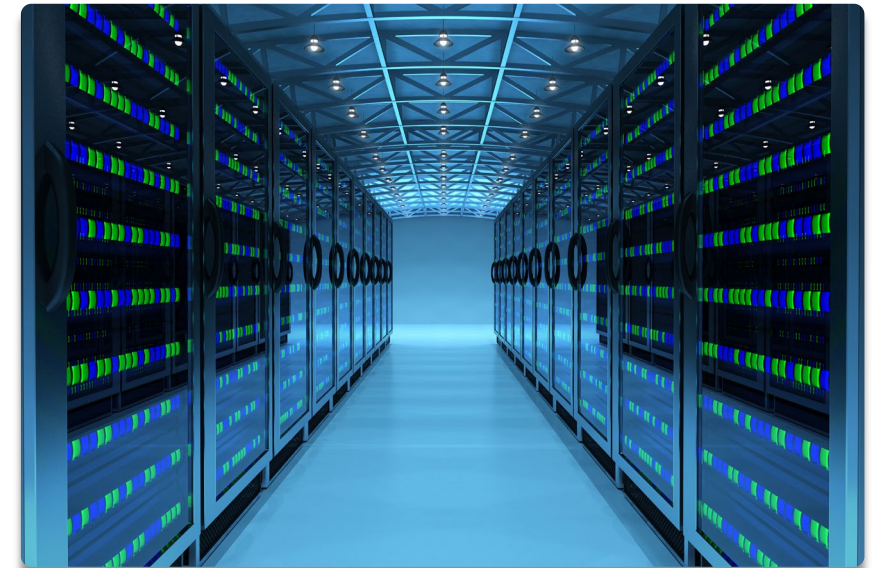
## Patient Experience Improvements

- **Reduced Stigma:** Anonymous access points for those uncomfortable seeking traditional help
- **Self-Paced Engagement:** User control over timing and intensity of interaction
- **Multimodal Options:** Text, voice, or visual interfaces based on preference
- **Cultural Adaptability:** Customization for diverse languages and cultural contexts



# Potential Downsides and Challenges

- ▶ **Data Privacy and Security:** Ensuring the privacy and security of sensitive mental health data is crucial.
- ▶ **Bias in AI:** AI models can perpetuate societal biases if trained on biased data sets.
- ▶ **Lack of Empathy:** Over-reliance on AI may overshadow the need for human empathy and understanding in mental health care.
- ▶ **Technical Adaptability:** There's a risk that AI may become outdated or incompatible with newer systems and data formats.
- ▶ **Regulatory Changes:** Changes to health data protection laws, AI regulations, or ethical guidelines could impact AI.





# Introducing MIRA

The Mental Health Virtual Assistant



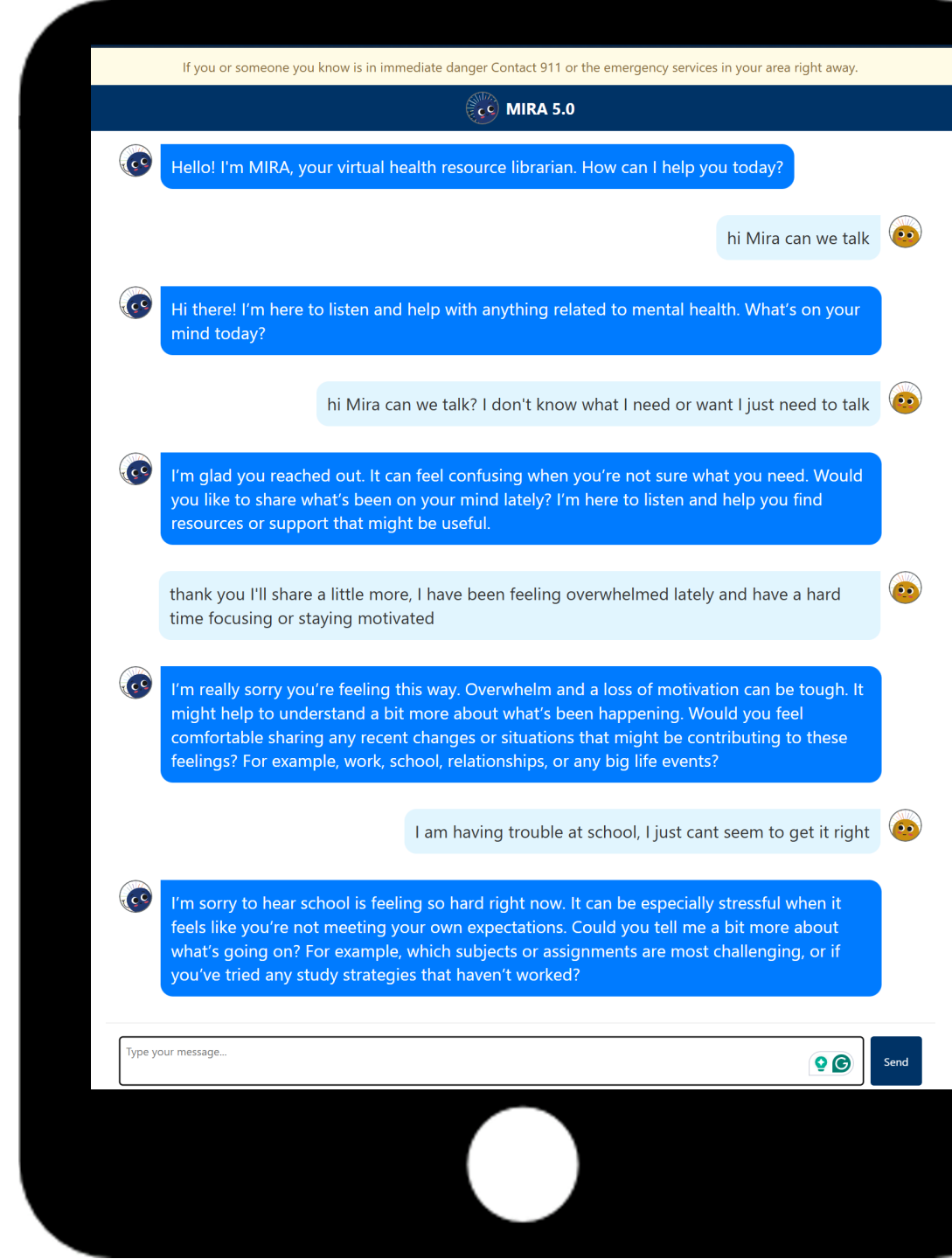
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- ▶ MIRA is a friendly conversational agent (i.e., Chatbot) for users to chat anonymously about their mental health concern(s).
- ▶ MIRA is an expansive database of mental health resources—all of which have been appraised by mental health experts and individuals with lived experience.
- ▶ MIRA uses AI to recommend the most appropriate mental health resources based on its conversation with the user.
- ▶ MIRA provides a safe and de-stigmatized space to support individuals with mental health system navigation.
- ▶ "MIRA's vision is to improve lives through a patient-centered, integrated, accessible and efficient mental health navigation system that can support all Canadians regardless of where they are on the continuum of care".
- ▶ MIRA is intended to provide end users with a safe and accessible virtual tool to assist with mental health system navigation and support.



# MIRA Highlights

- ▶ **Made-in-Canada** virtual mental health assistant
- ▶ Developed through a collaboration between MDSC, researchers and AI specialists
- ▶ Evidence-based approach integrating clinical expertise with machine learning
- ▶ Bilingual capabilities (English and French) reflecting Canada's official languages
- ▶ Core Functionalities
  - ▶ Personalized mental health screening and assessment
  - ▶ Customized therapeutic dialogue based on user needs
  - ▶ Progress tracking with actionable insights
  - ▶ Resource recommendation based on conversation
  - ▶ Crisis detection with appropriate escalation protocols



MyMIRA.ca





# What Makes MIRA Unique



Indigenous cultural sensitivity with specific programming for First Nations, Inuit, and Métis users



Northern and remote community focus for underserved populations



Integration of social determinants of health in assessment and recommendations



Transparent AI design with user control over data and recommendations



Privacy-first approach



Adaptive learning from Canadian population-specific mental health patterns



# Q & A

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