# MindPulse.ai

## Overview

MindPulse.ai is a comprehensive mental health analytics platform built using Streamlit. The application combines physical health monitoring with depression screening (PHQ-9) to provide holistic mental wellness assessment. It features an intuitive interface with real-time visualization of wellness metrics and automated risk assessment capabilities.

## Features

* Integrated physical health tracking with metrics like heart rate, sleep quality, and activity levels
* rofessional grade depression screening using PHQ-9, with automated severity assessment and personalized recommendations

## Variables

### [A] Physical Health Metrics

#### Average Heart Rate (bpm)

# Range: 40-200 bpm

# Clinical significance: Primary indicator of cardiovascular health and stress response

# Purpose: Monitors baseline cardiac function and identifies potential anomalies

# Impact: Directly correlates with mental state and anxiety levels

#### Heart Rate Variability (ms)

# Range: 0-200 ms

# Clinical significance: Measures autonomic nervous system adaptability

# Purpose: Indicates stress resilience and recovery capacity

# Impact: Higher values generally indicate better stress management ability

#### Sleep Duration (hours)

# Range: 0-24 hours

# Clinical significance: Essential for mental health restoration

# Purpose: Quantifies total rest period for recovery assessment

# Impact: Directly affects cognitive function and emotional regulation

#### Sleep Quality (1-10)

# Range: Scale of 1-10

# Clinical significance: Measures restorative value of sleep

# Purpose: Assesses subjective sleep experience and effectiveness

# Impact: Influences daily functioning and mood regulation

#### Daily Activity Level (steps)

# Range: 0-50,000 steps

# Clinical significance: Indicates physical engagement and mobility

# Purpose: Quantifies daily movement and exercise patterns

# Impact: Correlates with mental well-being and stress reduction

#### Stress Level (1-10)

# Range: Scale of 1-10

# Clinical significance: Direct measure of psychological burden

# Purpose: Captures perceived mental pressure and tension

# Impact: Key indicator for intervention necessity

### [B] PHQ-9 Assessment Variables

#### Interest/Pleasure in Activities

# Clinical significance: Core symptom of depression (anhedonia)

# Assessment focus: Evaluates motivation and enjoyment capacity

# Impact: Primary indicator of depression severity

# Scoring weight: Critical for overall depression assessment

#### Depression/Hopelessness

# Clinical significance: Fundamental depressive symptom

# Assessment focus: Measures persistent low mood patterns

# Impact: Direct indicator of clinical depression

# Intervention trigger: Key factor for treatment decisions

#### Sleep Issues

# Clinical significance: Common manifestation of mental health issues

# Assessment focus: Evaluates both insomnia and hypersomnia

# Impact: Affects daily functioning and recovery

# Treatment relevance: Essential for intervention planning

#### Energy Levels

# Clinical significance: Physical manifestation of depression

# Assessment focus: Measures fatigue and vitality patterns

# Impact: Affects daily functionality and engagement

# Treatment indicator: Guides physical health interventions

#### Appetite Changes

# Clinical significance: Physiological depression marker

# Assessment focus: Identifies significant eating pattern changes

# Impact: Indicates severity of neurovegetative symptoms

# Health correlation: Links mental state to physical health

#### Self#Worth

# Clinical significance: Core cognitive depression symptom

# Assessment focus: Evaluates self-esteem and guilt patterns

# Impact: Influences treatment approach and risk assessment

# Intervention focus: Key target for therapeutic intervention

#### Concentration

# Clinical significance: Cognitive function indicator

# Assessment focus: Measures attention and focus capacity

# Impact: Affects daily performance and functionality

# Treatment relevance: Guides cognitive intervention strategies

#### Psychomotor Changes

# Clinical significance: Observable depression manifestation

# Assessment focus: Evaluates physical activity changes

# Impact: Indicates severity and type of depression

# Treatment significance: Influences medication decisions

#### Self-Harm Thoughts

# Clinical significance: Critical risk assessment factor

# Assessment focus: Evaluates suicide risk level

# Impact: Determines urgency of intervention

# Safety protocol: Triggers immediate response procedures

**Reference for the PHQ-9 Assessment:**

Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: Validity of a brief depression severity measure. Journal of General Internal Medicine, 16(9), 606-613.