Introduction to Mindfulness Meditation

Geraldine Wu, MD
What is Mindfulness

Knowing directly what is going on inside and outside us, moment by moment

Mark Williams
Mindfulness Meditation

To focus, on purpose, without judgment, on whatever is coming up in the mind, moment by moment

Jon Kabat Zinn
Mindfulness Meditation

• Continually bringing your attention back to whatever is happening in the present moment

• Noticing present moment events with openness and acceptance – without judging or trying to change them

When we are able to focus on just what is happening in the present moment, our minds cannot be anxious, worried or distressed about other issues
Is There Any Evidence Supporting the Correlation of Mindfulness Meditation and Improved Health?

Study by Sara Wegner et al. correlating number of MBSR teachers and various cancers including colorectal, cervical, Hodgkin’s lymphoma in each state.

Weak to moderate state-level correlations between meditation and colorectal and cervical cancer incidence were detected.

States with more meditation (e.g., more MBSR teachers per population) correlated with a decreased cancer incidence.
Effect of MBSR on Psychosocial Outcome and Quality of Life in Early Stage Breast Cancer

N=172, age 20-65, stage I/II breast cancer 3 groups:

- nutrition education program (NEP)
- Usual supportive Care (UC)
- MBSR

Studied at beginning, end of program and follow up at 4 mos, 12 mos and 24 mos.
Mean SCL-90-R hostility: group × time

Mean FACT-B spirituality: group × time

Types of Meditation

**Focused Attention Meditation**
- Aims to tame and center the mind in the presence moment while developing a capacity to remain vigilant to distraction.

**Mindfulness or Open Monitoring Meditation**
- Cultivating a less emotionally reactive awareness to emotions, thoughts, sensations occurring in the present moment.

**Compassion or Loving Kindness Meditation**
- Foster compassion and an altruistic perspective toward others.
Meditation and Their Unique Characteristics

Different parts of the brain are activated in different meditation

Different cognitive cycles are detected on MRI scans

Different EEG characteristics are found with different meditations
Changes in the Brain with Meditation

↑ gray matter in the insula, hippocampus, PFC (prefrontal cortex)

↓ cortical thinning found with aging in PFC

↑ activation of L frontal cortex, ↑ mood

↑ power of θ (gamma) brainwaves
Changes in the volume of the Brain

Sara Lazar of Harvard observed increased in the gray matter in the insula and PFC, changes are more prominent in older participants.

Association with cortical thinning found with aging.

Decrease in the size of the amagydala, the fear processing center in the brain.

Luder found increase in the number of axons in the brain that connect to different regions of the brain.
Molecular Changes

• ↓ inflammatory parameters- cytokine
• ↓ ACTH
• ↓ cortisol
• ↓ Norepinephrine
• Changes in immune function
Cytokine Levels Pre and Post Meditation-Rosenkrantz, Brain Behav Immun Immun, 2013
Telomere and Meditation

Elizabeth Blackburn first discovered the telomeres in the 1990’s

Telomere are segments of DNA at the ends of the chromosome which ensures the stability of the genetic material during cell division.

Telomeres shorten with each cell division and eventually reach a critical point where cells stop dividing.
Perceived Stress and Telomere Length

Young Women (20-45), $r = -0.31$, $p < 0.01$

Older Women (50-80), $r = -0.44$, $p < 0.01$
Telomerase Activity in Meditation Vs. Relaxation

Change in telomerase

- **Meditation**
  - Pre: 2.5
  - Post: 3.5

- **Relaxation**
  - Pre: 3.0
  - Post: 2.0

Legend:
- Teal: Pre
- Dark Blue: Post
Meditation is about being rather than doing.
It enables us to slow down and to bring self-awareness and insight into our daily lives, so that we can more easily make decisions that are appropriate for us.

When our lives are filled with constant doing, meditation can provide periods of Stability, Clarity, Balance, Perspective, Inner peace.
Meditation is a process rather than a goal. It is most effective when we:

— Are able to let go of judgment and expectations
— Are open and accepting of whatever happens
— Are gentle and non-judgmental with ourselves
— Let go of trying to do it perfectly
— Trust in ourselves
— Are patient
Mindfulness Meditation—the Method

—Assume a comfortable position
—Bring your attention to your breath—noticing each inhalation and each exhalation
—When thoughts, feelings, sounds or sensations flow through your mind, notice them, accept them and gently bring your attention back to your breath
Benefits of Meditation

Physiological Benefits

- Decrease in HTN
- Lower HR
- Lower cortisol level
- Strengthen the immune system
- Reduce chronic pain
- Reduce incidences of HA
Psychological Benefits of Meditation

- Decrease anxiety
- Reduce stress level
- Decrease depression
- Lower incidents of irritability and moodiness
- Improve confidence and concentration
- Increase peace of mind, optimism, self worth
- Improved learning ability and memory
Spiritual Benefits of Meditation

- Identifying one’s purpose in life
- Finding meaning in illness
- Connection with higher aspect of self
- Connection with other people
- Connection with Higher Power outside of the self
General Guidelines for Meditation

Be open and receptive to whatever happens
Be gentle and non judgmental with yourself
Let go of expectations
Let go of trying to do it perfectly
Be patient