Modern Wellness:
Stress, Your Self, Your Skin

Howard Murad, M.D., FAAD
Associate Clinical Professor of Medicine-Dermatology,
David Geffen School of Medicine, UCLA
Board Certified Dermatologist, Pharmacist, Researcher,
Founder of Murad, LLC.
"Discovery is seeing what everybody has seen and thinking what nobody else has thought."

- Dr. Albert Szent-Györgyi Von Nagrapolt
  (Noble laureate 1937)
There are over 300 different theories of aging.

The final common pathway of aging, disease, wrinkles, wrinkles and more, is always the same.

Cellular water loss.
The Science of Cellular Hydration

Healthy young cell, holding cellular water

Age, disease, free-radicals, stress and inflammation attack the cell membrane

When the membrane is compromised, water leaks out and the cell starts to die

A Connected Beauty system creates the ideal environment for strong cell membranes retaining cellular water
The Skin & The Body Are Connected

- CARDIOVASCULAR
- DIGESTIVE
- ENDOCRINE
- LYMPHATIC
- MUSCULAR
- NERVOUS SYSTEM
- REPRODUCTIVE
- SKELETAL
- URINARY
- INTEGUMENTARY
- IMMUNE
The Pitcher of Wellness

Nutrition

80% in the healthy zone
20% comfort foods for an emotional lift
Dedicating 30 Years to Stress & Skin

WHY?

48% of Americans feel their stress has increased over the last 5 years.

SOURCE: Statistic Brain Research Institute, American Institute of Stress, NY July 19, 2016

58% of Americans say work is a significant source of stress.

SOURCE: American Psychological Association - Stress in America survey. 2017

1 in 5 Americans say technology is a major source of stress.

SOURCE: American Psychological Association - Stress in America survey. 2017

One in 4 millennials claim they are ‘stressed out’ every day.

SOURCE: Mintel 2018
The Silent Killer:

“Over the last decade, a new stress has come to our earth. I call it Cultural Stress. It's the stress of modern living. It’s the rules and regulations, it’s a digital dependency which is wreaking havoc on every cell in your body because the stress that’s caused is pervasive and goes unabated.”

Howard Murad, M.D.
So what is Cultural Stress:

<table>
<thead>
<tr>
<th>What is Traditional Stress?</th>
<th>What Stress is Cultural Stress? (TODAY)</th>
<th>What Stress is Cultural Stress? (THE NEXT LEVEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ A broken arm</td>
<td>✓ Techno Stress</td>
<td>✓ Loneliness / social isolation</td>
</tr>
<tr>
<td>✓ A death in the family</td>
<td>✓ Poor sleep</td>
<td>✓ Sedentary lifestyle</td>
</tr>
<tr>
<td>✓ Divorce or heartbreak</td>
<td>✓ Bullying/online trolls</td>
<td>✓ A lack of human interaction</td>
</tr>
<tr>
<td>✓ Job loss</td>
<td>✓ Increasing traffic &amp; commutes</td>
<td>✓ Robot replacement</td>
</tr>
<tr>
<td>✓ An accident</td>
<td>✓ Work/life balance</td>
<td></td>
</tr>
<tr>
<td>✓ Burglary</td>
<td>✓ Media pressure</td>
<td></td>
</tr>
<tr>
<td>✓ Storms &amp; natural disasters</td>
<td>✓ Perfectionism &amp; increased Expectation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Money</td>
<td></td>
</tr>
</tbody>
</table>

**The pressure of reducing stress:** You must do yoga. You must wear Lululemon yoga clothes. You must relax.
Looking Ahead – Then & Now
<table>
<thead>
<tr>
<th>Car</th>
<th>Uber</th>
<th>Lyft</th>
<th>JustPark</th>
<th>wingz</th>
<th>Breeze</th>
</tr>
</thead>
<tbody>
<tr>
<td>House</td>
<td>Airbnb</td>
<td>HomeAway</td>
<td>WeWork</td>
<td>Fon</td>
<td>Love Home Swap</td>
</tr>
<tr>
<td>Tools</td>
<td>Freelancer</td>
<td>TaskRabbit</td>
<td>mechanical turk</td>
<td>Zaarly</td>
<td>Lending Club</td>
</tr>
<tr>
<td>Bag</td>
<td>eBay</td>
<td>Craigslist</td>
<td>Etsy</td>
<td>Rent The Runway</td>
<td>Poshmark</td>
</tr>
<tr>
<td>Handshake</td>
<td>match.com</td>
<td>Tinder</td>
<td>UberPOOL</td>
<td>Chariot</td>
<td>Happn</td>
</tr>
</tbody>
</table>
The Result of Cultural Stress

- Social Media
- Chronic Disease
- On-Demand Entertainment
- Internet Search Engines
- Depression
- At-Home Deliveries

Sedentary Lifestyle

Isolation

Anxiety
### Effects of Stress on Skin

<table>
<thead>
<tr>
<th>Breakouts &amp; Inflammation</th>
<th>Dark circles &amp; Puffiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expression lines &amp; Crows feet</td>
<td>Dehydration &amp; Dullness</td>
</tr>
</tbody>
</table>

![Diagram showing the effects of stress on skin](image_url)
Stress and Skin Aging

People with a high baseline cortisol look on the average 3.5 years older\(^1\)

High cortisol correlates with reduced facial attractiveness in young women (early 20’s)\(^2\)

High stress lifestyle is associated with accelerated telomere shortening, equivalent to 9-17 years of aging\(^3\)

---

Scale of Cultural Stress

Yerkes-Dodson Human Performance Curve

- Optimal Performance
- Energised
  - Focused Work feels effortless
- Fatigue
- Exhaustion
- Health
- Breakdown & burnout

Traditional Stress

Cultural Stress

Inner Toddler
A Pilot Study on Cultural Stress: The Gene Study

OBJECTIVE
The purpose of this pilot study is to explore the effectiveness of a Murad’s Inclusive Health method to treat Cultural Stress (CS).

OVERVIEW
• Six subjects recruited into the Murad Inclusive Health Program (IHP)
• Total Program length: 24 weeks
• Blood and skin biopsy samples collected at baseline (time 0), 12 weeks, and 24 weeks
• General health parameters were collected throughout the study by Dr. Murad’s personnel (Including self-assessments completed by the subjects throughout the course of the study)
The Gene Study Program

**STUDY ACTIONS**

Measurements taken at week 1, 12 and 24

Every 2 weeks face to face meeting & journal review

Every 2 weeks /facial or massage

**STUDY ACTIONS**

First Stage Positive Depression Screening: % at risk

Workout group sessions 2-3 times per week

Art therapy class every 12 weeks

Cooking class every 12 weeks

Hike every 12 weeks
Global gene expression analysis was carried out using Affymetrix microarrays to identify gene expression changes correlated with improved health outcomes as a result of the program.

Affymetrix microarrays contain approximately 45,000 transcripts representing the ~23,000 human genes and are an ideal method for screening the entire genome.

As expected, the blood and skin datasets have little in common. Based on the small overlap in specific genes, each tissue was further analyzed independently.
GENE EXPRESSION

The Results

qPCR Validation

qPCR analysis confirmed decreased gene expression in skin samples at 12 weeks (compared to baseline) for the following genes:

- ESSRG [Estrogen-related receptor gamma]
- LIPE [Hormone-Sensitive Lipase]
- ITGB6 [Integrin beta 6]
- GPC6 [Glypican 6]

ITGB6- Integrin Beta 6

ITGB6 inhibits keratinocyte proliferation

- Keratinocytes proliferation is required for cell renewal and turnover
- Decrease in an inhibitor may produce an increase in bioactivity
- Decreasing it is an important growth factor in the skin, and a variety of extracellular matrix molecules

ESSRG- Estrogen Receptor Gamma

- Decreased gene expression in the skin in 5 out of 6 subjects
- The decrease in ESSRG would increase estrogen bioactivity
Conclusions

Further research to investigate changes in expression of genes related to health and aging, as well as levels of transcription factor that regulate expression of genes regulating cellular hydration is indicated.

Further research directions
Long term studies on how lifestyle modification can effect gene expression

Further Reading:
White Paper
Effectiveness of positive insights for emotional well-being and stress reduction:
A four-week intervention in participants experiencing Cultural Stress
Insight Study

Effectiveness of positive insights in emotional wellbeing and stress reduction

What these insight cards encourage

Affect as information:
- Dance even if you don't hear the music.

Emotion regulation:
- Forgive yourself.
- Why have a bad day when you can have a good day?
- Beware of creating your own stress.

Gratitude:
- Happiness resides within.
- Be thrilled with who you are.

Maximisers vs. sacrificers:
- If it is no big deal don't make a big deal about it.
- Be imperfect live longer.

Optimism:
- The best is yet to come you have to let it enter.
- Give yourself permission to be successful.
- Your harshest critics are really very critical of themselves not you.
## Results

<table>
<thead>
<tr>
<th>Measured Vitals</th>
<th>Baseline (SD)</th>
<th>Week 4 (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSS Total Score</td>
<td>19.75 (4.75)</td>
<td>17.64 (3.15)*</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>75.15 (13.04)</td>
<td>72 (13.44)*</td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>122.15 (17.33)</td>
<td>120.63 (15.69)</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>78.48 (11.76)</td>
<td>77.35 (9.93)</td>
</tr>
<tr>
<td>ICW</td>
<td>26.35 (3.96)</td>
<td>26.58 (4.03)</td>
</tr>
</tbody>
</table>
The Future of Skincare & Beyond

“The future is not in medicine or technology (although these will all play their role) – the future is in modern wellness, an inclusive approach which addresses all the usual factors, but also addresses the pressure of cultural stress & its negative impact. Murad refers to these solutions as our 4 pillars of wellness.

“Eat Your Water”  “Be Kind to Your Mind”  “Awaken Your Body”  “Nourish Your Skin”
Pillars to Total Skin Health

“Eat Your Water”

"By eating water-rich fruits and vegetables, nutrients are better absorbed for skin health."

“Be Kind to Your Mind”

"By caring for your emotional self, you can reduce the cellular impact of stress which can lead to signs of unhealthy skin."

“Awaken Your Body”

"By exercising, you'll help promote circulation – skin is the largest organ in the body. Increased blood flow carries oxygen to cells."

“Nourish Your Skin”

"Skin is beautiful when it's healthy at the cellular level, so we create products with powerful, hydrating ingredients that support the skin's barrier function."
What do you see?
“A bear hug a day keeps the Doctor and Psychiatrist away.”
Q & A

With Dr. Howard Murad
+
Jason Choy, Director of Deacon Medical Sdn Bhd