Mind-Body-Spirit Connections In Modern Healthcare

Lauren Kim, MD
UCLA Family Medicine, PGY3
Nothing to disclose.
CONNECTIONS TO OUR:

parents
childhood
microbiome
environment
outside influences
food
healthcare providers
selves
loves ones
GRANT ME SERENITY
TO ACCEPT THINGS I CANNOT CHANGE,
COURAGE TO CHANGE THE THINGS I CAN,
& WISDOM TO KNOW THE DIFFERENCE
Connections to our parents
Parental trauma expressed in kids

- pups raised by unrelated mice (never smelled CB)
  - when pups smelled it, more jumpy/nervous compared to pups from non-conditioned fathers
  - more sensitivity to that smell (but not to other scents)
  - modifications in DNA coding for olfactory receptor
  - more neurons that respond to CB smell

After undergoing “CBT” (smell without shock) - their pups not heightened to CB scent
Connections to our childhood
ADVERSE CHILDHOOD EXPERIENCES - ACES

What are Adverse Childhood Experiences (ACEs)?
ACEs are potentially traumatic events that occur in a child’s life:

- Physical Abuse
- Emotional Abuse
- Sexual Abuse
- Domestic Violence
- Parental Substance Abuse
- Mental Illness
- Suicide or Death
- Crime or Imprisoned Family

Causing lifelong medical, mental & social suffering

CDC-Kaiser ACE Study (1995-1997)
questionnaires completed at WCCs <18 yo, over 17,000 participants
HOW PREVALENT ARE ACEs?

The ACE study revealed the following estimates:

**ABUSE**
- Physical Abuse: 29.3%
- Sexual Abuse: 20.7%
- Emotional Abuse: 10.6%

**NEGLECT**
- Emotional Neglect: 74.6%
- Physical Neglect: 9.9%

**HOUSEHOLD DYSFUNCTION**
- Household Substance Abuse: 26.9%
- Parental Divorce: 23.3%
- Household Mental Illness: 19.4%
- Mother Treated Violently: 12.7%
- Incarcerated Household Member: 4.7%

Of 17,000 ACE study participants:
- 36% have experienced 0 ACEs
- 26% have experienced 1 ACE
- 18% have experienced 2 ACEs
- 9.5% have experienced 3 ACEs
- 8.5% have experienced 4+ ACEs

64% have at least 1 ACE

WHAT IMPACT DO ACEs HAVE?

As the number of ACEs increases, so does the risk for negative health outcomes.

Possible Risk Outcomes:

**BEHAVIOR**
- Lack of physical activity
- Smoking
- Alcoholism
- Drug use
- Missed work

**PHYSICAL & MENTAL HEALTH**
- Severe obesity
- Diabetes
- Depression
- Suicide attempts
- STD
- Heart disease
- Cancer
- Stroke
- COPD
- Broken bones
ACEs & Physiologic Measures

- **Systematic review** (40 articles, ACEs measured retrospectively)

  - measured CRP, IL6, lipid panel, blood pressure, BMI, telomere length, cortisol, DNA methylation, etc...

  - here are some notable ones:
Trauma with Less Betrayal

- Been in a major earthquake, fire, flood, hurricane, or tornado that resulted in significant loss of personal property, serious injury to yourself or a significant other, the death of a significant other, or the fear of your own death

- Been in a major accident (car, plane, boat, etc) that resulted in similar consequences.

- Witnessed someone with whom you were not so close undergoing a similar kind of traumatic event.

- Witnessed someone with whom you were not so close deliberately attack a family member that severely.*

- You were deliberately attacked that severely by someone with whom you were not close.

- You were made to have such sexual contact by someone with whom you were not close

- You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were not close.*

Trauma with More Betrayal

- Witnessed someone with whom you were very close committing suicide, being killed, or being injured by another person severely

- Witnessed someone with whom you were very close deliberately attack another family member so severely as to result in marks, bruises, blood, broken bones, or broken teeth.

- You were deliberately attacked that severely by someone with whom you were very close.

- You were made to have some form of sexual contact, such as touching or penetration, by someone with whom you were very close.

- You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were very close
Childhood physical abuse & Biomarkers

- cross section study n>1100
- sig associations b/t childhood physical abuse and markers of allostatic load
  - even after adjusting for education, social relationships, health behaviors

  blood pressure
  HDL, TGs
  CRP, IL-6, ICAM-1,
  fibrinogen
  fasting glucose
  urine epinephrine,
  norepinephrine, cortisol
  serum DHEA-S
  BMI
  waist: hip ratio
  HR variability
Childhood Trauma & Acute Stress Response

$n = 69$ adults recruited from community

Standardized stress protocol
(anticipation period then
public speaking & mental math in front of judge panel

response: More trauma a/w higher IL-6 release throughout & after stressor compared to controls
Connections to our Gut Microbiome
Fecal Transplant improves recipient health

Diagram:
- High fat diet
- Normal fat diet
- Sedentary exercise
- FMT: 5 times/wk; donor 2=HE, 6=NE
- Exercise: treadmill running, 30 min/d, 5 d/wk

Week 5  Week 8  Week 12  Week 24
- reduced food efficacy (less weight gained per 100g of food)
- lower LDL, FBG, ALT, TNF/IL-1 expression
Connections to our environment
ATRAZINE (weed killer) - 80 million lbs per year in US
Atrazine & Frogs

Tyrone Hayes (UC Berkeley, integrative biology professor) exposed male frogs to AZA at 0.1ppb

- decreased testosterone
- feminized laryngeal development
- suppressed mating behavior
- lower sperm count
- decreased fertility overall
- always lost when competing with normal males for mating

90%

10%

became reproducing females
(eggs in testes, can mate with normal males and have male offspring)

0.1 ppb = 30x lower than allowed in drinking water by EPA (3 ppb)
cross sections of testicular tubules
4 different formulations of Round Up (conc 0.0001% to 2%) applied to umbilical cord, placenta and embryonic kidney cells in vitro within 24 hrs

- **necrosis**
  - via: inhibition of mitochondrial Succinate DH)
  - measured by: increased adenylate kinase activity (signals that cytoplasmic membrane has ruptured)

- **apoptosis**
  - via: caspase 3/7
  - measured by: DNA fragmented, nucleus shrinkage & fragmentation

company recommends 1-2% for agricultural use
2015: changed to class 2A (probably carcinogenic)
Where is glyphosate used?
How would you treat a sick fish?

**THEORY ONE:** medicate the fish

**THEORY TWO:** clean the tank
Connections to Outside Influences
the Opioid push

1990s, shifting attitudes toward pain

1996: Purdue Pharma starts selling OxyContin
- marketed for chronic, non-cancer pain, safe
- crush → snorted
- or mixed with water → injected

---------- (opioid epidemic)----------

2007: Purdue sued for misbranding, paid $630m
2012 Opioid Rx Map

Some states have more painkiller prescriptions per person than others.

Map from Centers for Disease Control
Leaders in Opioid Rx


*University of Wisconsin*
Challenges to Health

Social Determinants of Health (SDOH): economic and social conditions that influence individual and group differences in health status

- Environment
  - Pollution
  - Barriers to Transportation

- Economic Stability
  - Unemployment
  - Poverty/Debt

- Education
  - Language barriers
  - Poorly funded schools

- Social Community
  - Immigration Status
  - Discrimination

- Health Care
  - Lack of insurance
  - Provider cultural incompetency
  - Inaccessibility

AltaMed
QUALITY CARE WITHOUT EXCEPTION™
Relationship Between Educational Attainment and Mortality for U.S. Adults

Source: Jennifer Karas Montez et al., “Educational Attainment and Adult Mortality
Table 1: Life expectancy, Americans age 25 in 2008 (age 33 in 2015), By education, gender, race and ethnicity

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>No HS diploma</th>
<th>HS graduate</th>
<th>Some college</th>
<th>College degree or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whites</td>
<td>Men: 68.6</td>
<td>Men: 73.2</td>
<td>Men: 80.3</td>
<td>Men: 81.7</td>
</tr>
<tr>
<td></td>
<td>Women: 74.2</td>
<td>Women: 79.0</td>
<td>Women: 84.2</td>
<td>Women: 84.7</td>
</tr>
<tr>
<td>Blacks</td>
<td>Men: 68.2</td>
<td>Men: 69.3</td>
<td>Men: 77.3</td>
<td>Men: 78.2</td>
</tr>
<tr>
<td></td>
<td>Women: 74.2</td>
<td>Women: 74.7</td>
<td>Women: 81.1</td>
<td>Women: 81.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Men: 78.5</td>
<td>Men: 77.9</td>
<td>Men: 82.5</td>
<td>Men: 84.0</td>
</tr>
<tr>
<td></td>
<td>Women: 83.4</td>
<td>Women: 82.7</td>
<td>Women: 86.3</td>
<td>Women: 86.3</td>
</tr>
</tbody>
</table>
Food Deserts

USDA characteristics

- lack access to affordable fruits, veggies, whole grains, etc.
- poverty rate $\geq 20\%$
- at least $\frac{1}{3}$ of the population lives over 1 mi from the nearest large grocery store (urban) or 10 miles (rural)
- often linked to lack of transportation
- approx 20m americans
Food Desert Map 2015
Connections to Our Food
5 years: WFPB + Moderate Statin

Figure. Angiographic images of the distal right coronary artery in a 54-year-old male patient at baseline in 1987 (left) and in 1992 after 5 years on a very low-fat diet (right). The lesion regressed by more than 30% (1.21 mm).

n = 22 pts with severe CAD (dx’d by angio), lovastatin 40-60mg + low fat diet x5 years.
- 5 dropped out (10 coronary events), 11/17 finished follow up
- 11: cholesterol baseline avg 246 → less than 150, no events
SUCCESS STORIES

I'm Reversing Metabolic Syndrome on a Plant-Based Diet

As a young schoolteacher in the 1980s and early 1990s, I completed several Olympic-distance triathlons. I stopped competing in these events when...

SUCCESS STORIES

I Cut My Weight in Half on a Whole-Food, Plant-Based Diet

I started struggling with obesity during childhood. Despite many attempts to manage my weight, it continually crept up. I was eventually diagnosed...

SUCCESS STORIES

Faced with Gastric Bypass Surgery, I Tried a Plant-Based Diet Instead

I'm from Kansas City and grew up on barbecue. I ate a lot of ribs, chicken, brisket, and pulled pork. I began...
**ACC/AHA Food Guidelines**

- Vegetables
- Fruits
- Legumes
- Greens
- Whole Grains

| • Poultry   | • Meat  |
| • Oils     | • Dairy |
| • Sugary Drinks |        |
Partial AHA Sponsor List:

- Pepsi
- Texas Beef Council
- Conagra Brands
- Nestle
- Subway
- Domino's
- Kellogg's
- Tyson Foods, Inc.
- Kraft
### Table 4: Potential Conflicts of Interest on the 2010 Advisory Committee

<table>
<thead>
<tr>
<th>MEMBER</th>
<th>RELATIONSHIPS WITH INDUSTRY UP TO &amp; INCLUDING 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Linda V. Van Horn, Ph.D., R.D., L.D. (Chair)</td>
<td>2007 study on the impact of intervention of beverage choice of children funded in part by General Mills.</td>
</tr>
<tr>
<td>2. Naomi K. Fukagawa, M.D., Ph.D., (Vice-Chair)</td>
<td>None.</td>
</tr>
<tr>
<td>3. Cheryl Achterberg, Ph.D.</td>
<td>Scientific advisor to the Dannon Institute in 1998. Received a $150,538 grant from Kraft General Foods in 1993-94. Received a $125,000 grant from Campbell’s Soup from 1995-97.</td>
</tr>
<tr>
<td>4. Lawrence J. Appel, M.D., M.P.H.</td>
<td>In 2003, listed as a consultant to Tropicana. In 2003, listed as receiving research grants from King Pharmaceuticals.</td>
</tr>
<tr>
<td>5. Roger A. Clemens, Dr.P.H.</td>
<td>None.</td>
</tr>
<tr>
<td>6. Miriam E. Nelson, Ph.D.</td>
<td>In 2007 listed as having received over $10,000 from Mission Pharmacal (which makes the calcium supplement Citracal, which is sold by Bayer Pharmaceuticals) and over $10,000 from Lluminari (a producer of health-related multi-media content for General Mills, PepsiCo, Stonyfield Farm, Newman’s Own, and other companies). In 2003, listed as being a member of the McDonald’s Corp. Global Advisory Council on Healthy Lifestyles.</td>
</tr>
<tr>
<td>7. Sharon M. Nickols-Richardson, Ph.D., R.D.</td>
<td>None.</td>
</tr>
<tr>
<td>8. Thomas A. Pearson, M.D., Ph.D., M.P.H.</td>
<td>1994 study on chocolate’s effect on cholesterol levels supported by the American Cocoa Research Institute (an arm of the Chocolate Manufacturers Association). 1999 study on monounsaturated fats was supported by the Peanut Institute. Research for 2000 study on lipid and lipoprotein responses to different diets partially supported by Abbott Laboratories.</td>
</tr>
<tr>
<td>9. Rafael Perez-Escamilla, Ph.D.</td>
<td>None.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12. Joanne L. Slavin, Ph.D., R.D.</td>
<td>Co-author of 2002 study on the “effect of whole grain on insulin sensitivity on overweight hyperinsulinemic adults” funded in part by General Mills. 2001 study on the “effects of dietary arabinogalactan on gastrointestinal and blood parameters in healthy human subjects” sponsored by Larex Inc. In 1999 or earlier, conducted research for General Mills. Research for 1998 study on soybeans supported by the Minnesota Soybean Promotion and Research Council and Minnesota Agricultural Experiment Station. 1997 study on soy-protein supported by the Minnesota Soybean Promotion and Research Council and the Minnesota Agricultural Experiment Station.</td>
</tr>
<tr>
<td>13. Christine L. Williams, M.D., M.P.H.</td>
<td>Research for 1999 study on bran fiber in childhood supported in part by Kellogg.</td>
</tr>
</tbody>
</table>
Connections to our doctors
Implicit Memory

Edward cloparede, (Neurologist, psychologist)
- Korsakoff pt (no new memories)
- Hid pin in hand, pricked her
- Next day, she declined his hand (but didn’t know why)
Implicit Bias

Physicians’ implicit pro-white bias correlates with:

- black patients’ perceptions of **poorer communication & lower quality care** (1)
- **shorter visits** with oncologist, **less pt centered** decisions, patients **less confident** in treatments, **feeling less supported** (2)

Doctor’s self-awareness matters too!

- Explicit/Implicit discordancy → lower pt satisfaction (3)
Time Limitations

Things that exacerbate bias: high stress, frequent distractions, brief visits

What do you do when your patient starts to have a breakdown at minute 14?
Physician Burnout

2014

½ of doctors report at least 1 burnout symptom

2017

⅓ of residents are depressed

2020

¾ doctors report multiple burnout symptoms

To compare:
2x more burnout compared to other professions after controlling for work hours

½ RNs report at least 1 symptom
<table>
<thead>
<tr>
<th>Domain</th>
<th>Espoused value (what we say)</th>
<th>Artifact (our behavior)</th>
<th>What it reveals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture of our organizations and health care system</td>
<td>Physicians are professionals (we trust them)</td>
<td>Preauthorization and excessive documentation required to justify billing and prevent malpractice suits</td>
<td>We do not trust you</td>
</tr>
<tr>
<td></td>
<td>Physicians are our most highly trained and expensive workers (we should maximize their efforts)</td>
<td>Excessive clerical burden and ineffective use of time</td>
<td>Your time is not valuable</td>
</tr>
<tr>
<td></td>
<td>High-quality care is our top priority</td>
<td>A delivery system that drives fatigue and burnout which erode quality of care</td>
<td>Economic priorities are more important than quality</td>
</tr>
<tr>
<td></td>
<td>We value patient autonomy, shared decision making, and tailoring care to individual needs</td>
<td>Focus on relative value units/volume/net operating income</td>
<td>Commoditization of physicians and patients</td>
</tr>
<tr>
<td></td>
<td>We believe in social justice and fair distribution of resources for our patients and communities</td>
<td>Visit lengths and limited staff support preclude shared decision making and tailoring care to individual patient needs</td>
<td>Economic priorities are more important than patient agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organizational tactics that tailor access to optimize payer mix and care for highly reimbursed medical conditions rather than patient need</td>
<td>Economic priorities are more important than social justice assumptions</td>
</tr>
<tr>
<td>Domain</td>
<td>Espoused value (what we say)</td>
<td>Artifact (our behavior)</td>
<td>What it reveals</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Professional culture</td>
<td>Self-care is important</td>
<td>Excessive hours, work always first, and often do not take care of ourselves (diet, exercise, sleep, and preventive health care)</td>
<td>Self-care is not important; short-term productivity is more important than sustainability</td>
</tr>
<tr>
<td></td>
<td>Prevention is better than treatment</td>
<td>We do not attend to our own health needs</td>
<td>Physician health is not important</td>
</tr>
<tr>
<td></td>
<td>To err is human</td>
<td>A professional culture of perfectionism, lack of vulnerability, and low self-compassion</td>
<td>Physicians expected to be superhuman</td>
</tr>
<tr>
<td></td>
<td>Fatigue impairs performance</td>
<td>Belief that mistakes are the fault of the individual and are unacceptable</td>
<td>We have not yet internalized many of the lessons of the quality movement that errors are inevitable in complex systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Excessive work hours; work even when ill</td>
<td>We do not believe this adage applies to physicians or we are too arrogant to admit it does</td>
</tr>
</tbody>
</table>
Connections To Ourselves

GRANT ME SERENITY
TO ACCEPT THINGS I CANNOT CHANGE,
COURAGE TO CHANGE THE THINGS I CAN,
& WISDOM TO KNOW THE DIFFERENCE
Work Smarter, Not Harder (when possible)

<table>
<thead>
<tr>
<th>Classification of Tasks: Urgency and Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important</td>
</tr>
<tr>
<td>Urgent</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>Not Important</td>
</tr>
<tr>
<td>Not Urgent</td>
</tr>
<tr>
<td>2 goal to spend around 20% of time here</td>
</tr>
<tr>
<td>3 try to avoid/decrease, delegate if possible</td>
</tr>
<tr>
<td>4 eliminate</td>
</tr>
</tbody>
</table>
Mindfulness in Clinical Practice and Physician Self-Care

Physicians with a regular mindfulness practice enjoy reduced:

- Stress response
- Perseveration
- Physical illness
- Depression
- Anxiety
- Burnout

These physicians also experienced improvements in:

- Perceived empathy
- Patient adherence
- Patient outcomes
- Reduced medical errors

Posture

**Wrong Sitting Posture**
- Neck:
- Shoulder:
- Low Back:
- Wrists:

**Correct Sitting Position**
- Monitor:
  - Adjust distance and height: top of the monitor at eye level and slightly tilted.
- Arms:
  - Rest shoulders, forearms parallel to the floor, elbows bent at the wrist.
- Chair:
  - Should have a backrest and armrests, adjust height.
- Legs:
  - Thighs parallel to the floor.
- Feet:
  - Parallel to the floor, use a footrest if necessary.

**Correct Standing Position**
Power Posing

15 min after posing for 1 min
higher testosterone
lower cortisol
fake job interview
Quick Nervous System Regulation

- drink glass of water
- name 6 colors
- count backward from 20
- notice something (temperature, sounds, how the table feels)
Acknowledge Your Emotions

- frequent admissions for chest pain
- gastritis
- chronic NSAID use
- severe knee OA
- morbid obesity
- emotional eating
- grief from mom’s death
  (not acknowledged for 10 years)
Self-Forgiveness

79 Patients in outpatient treatment for alcohol abuse

routine treatment for etoh dependence (no intervention)  self forgiveness intervention (4 hrs)

more improvement over time in scores for
1. self-forgiveness
2. self-efficacy to decline a drink

decreased guilt & shame (for etoh-related offenses)
Connections to Our Loved Ones
Anger & Forgiveness

Anger-induced myocardial ischemia (1)
- pts with CAD → anger recall induces stress perfusion defects on imaging
  - after 10 weeks of forgiveness therapy vs. control therapy
  - fewer perfusion defects with anger recall (pre/post imaging)

Elderly terminal cancer patients (2)
- after 4 weeks of forgiveness therapy (pre/post tests) compared to wait list control group
  - increased hope
  - better quality of life
  - decreased anger
Made for Connection

https://www.youtube.com/watch?v=C8AHODc6phg

- Social community protects against addiction
- rats with cocaine water isolated vs. in social cages
- when junctions damaged → cancerous morph changes
- when epith cells get damaged but junctions remain intact → autophagy
5 things to say before you die

I'M SORRY
I FORGIVE YOU
THANK YOU
I LOVE YOU
GOODBYE
connections to our parents
connections to our childhood
connections to our microbiome
connections to our environment
connections to outside pressures
connections to our influences
connections to our healthcare providers
connections to our selves
connections to our loved ones
Last thoughts

• Everything is connected!
  - You are exactly where you need to be in this moment
  - Let’s grow strong, not hard
REFERENCES:


CDC-Kaiser ACE Study


Elsenburg, LK, et al. (2017). The Longitudinal Relation Between Accumulation of Adverse Life Events and Body Mass Index From Early Adolescence to Young Adulthood, Psychosomatic Medicine: Volume 79 - Issue 3 - p 365-373


Shanafelt, TD et al (2019). Healing the Professional Culture of Medicine, Mayo Clinic Proceedings, Volume 94, Issue 8, pages 1556-1566,


https://www.cdc.gov/violenceprevention/aces/about.html


https://www.medicalnewstoday.com/articles/what-are-food-deserts#summary

Implicit Bias In Medicine, DGSOM, Jerry Kang: https://vimeo.com/146838436

“Why Everything We Know About Addiction Is Wrong”: https://www.youtube.com/watch?v=C8AHODc6phg

https://www.mayooshin.com/heroin-vietnam-war-veterans-addiction/
Slides not used
Epigenetics & Trauma

- 2015 holocaust study - rachel yehuda
  - survivors had more methylation at FKBP5 gene, a/w AM cortisol levels
  - caution: small sample size (n = 32/22 vs. 8/9), no causation, cross-section study
Social connection (video)

- vietnam veterans & heroine with community

rat study: water or water + cocaine
  rat will keep coming back for more until kills itself
1970s psychologist bruce alexander
  noticed that rat in cage all alone (nothing to do except take the drug)
  “Rat Park” Experiment - tunnels, climbing poles, food, friends, sex
  - use it less, almost none use it compulsively, and none of them OD’d died

congressmen visited vietnam (1971), Reported: over 15% of veterans in vietname = heroin addicts. Nixon commissioned war against drugs - researcher Lee Robins tasked it.
- when soldiers came back, 95% of them stopped
  5% kept using. after 3 years, only

  “addiction is a symptom of disconnection”
Wayne Campbell

Educational Background

- B.S., Nutritional Sciences at University of Delaware in 1984
- M.S., Nutritional Sciences at University of Maryland in 1987
- Ph.D., Nutritional Sciences at Tufts University in 1993
- Post-Doc., Nutrition/Exercise/Aging at The Pennsylvania State University in 1997

Awards & Honors

- Pfizer Consumer Healthcare 2018
- Research Excellence Award, Purdue, 2015
- University Scholar from Purdue, 2011
- Career Research Achievement: Ikerd Award, 2010
- Undergraduate Honors Mentor: Undergraduate Honors Mentor, 2010
- Presidential Citation for Outstanding Teaching, 2007
- First Independent Research Study: 1999

Activities & Memberships

- Member, American Society for Nutritional Sciences
- Member, 2018 Physical Activity Conference
- Member, 2015 Dietary Guidelines Advisory Committee
- Clinical Research Center and Exercise Laboratory, 2015
- Member and Fellow of the Oc Transplant Foundation
- Member of the American Society for Nutritional Sciences
- Scientific review panelist for the Journal of Nutrition, 2010

Education

- PhD Tufts University 1993

Research Interests

Our research interests include human nutrition and exercise studies on protein, carbohydrate and energy metabolism, dietary protein and energy requirements, body composition, obesity, weight loss, muscle strength, and muscle function with special emphasis on aging. We are also interested in the relationship between diet, exercise, and aging impact appetite and ingestive behaviors. Our recent research suggests that older people who habitually consume the Recommended Dietary Allowance for protein experience subtle declines in skeletal muscle size. Thus we seek to find the optimal protein intake for older and elderly people to consume. Our research also focuses on how protein metabolism, body composition, and glucose metabolism change in older people with changes in protein intake, body weight, and exercise (especially strength training). We are also interested in evaluating the effectiveness of compounds that are promoted to have ergogenic properties. The potential importance of the physical form of food (e.g., liquid versus solid) on appetite, digestive behaviors, energy balance, and body weight control is also of great interest to our research team.

Our research includes the use of traditional metabolic balance techniques (with strict dietary control possible in a metabolic research kitchen), stable isotope infusion techniques (to measure in vivo acid turnover and incorporation into muscle tissues), whole body composition (hydrostatic weighing, plethysmography, dual-x-ray absorptiometry, deuterium oxide dilution), the muscle biopsy technique (to obtain small samples of human skeletal muscle), and indirect calorimetry (to measure resting and exercise energy expenditure). We also highly value collaboration within and outside of Purdue to expand our interests, expertise, and research capabilities, as become available.

Teaching Interests

- Topics in Nutrition, Fitness, and Health (F&N 418) - Review of current literature in nutrition as it relates to fitness and health with in-depth analysis of topics such as diet, obesity, exploration of career opportunities in nutrition, fitness, and health. Geriatric Nutrition (F&N 580) - Nutritional needs and problems of the elderly population including community and institutional food programs.

Grants

- National Institutes of Health
- US Whisky Consortium
- National Pork Board
- American Egg Board
- United States Department of Agriculture
Personal interests of USDA officials may also play a role in these pro-industry changes. In 2004, nearly every major officeholder at the USDA had previously owned, been employed by, or lobbied for agricultural companies and organizations.

77 The USDA’s tendency to choose industry over science may also be evident on the Advisory Committee. The Departments could select members who are less likely to threaten agricultural interests.

Relationships with the food and drug industries are commonplace on the Advisory Committee: three out of 11 members on the 1995 Committee had past or present industry ties (see Table 1); 78 seven out of 11 members on the 2000 Committee (see Table 2); 11 out of 13 members on the 2005 Committee (see Table 3); and currently nine out of 13 members on the 2010 Committee (see Table 4). 79 These relationships are substantial. For example, on just the 2000 Committee (see Table 2), members had past or present ties to: two meat associations; 80 four dairy associations and five dairy companies; 81 one egg association; 82 one sugar association; 83 one grain association; 84 five other food companies; 85 six other industry-sponsored associations; 86 two pharmaceutical associations; 87 and 28 pharmaceutical companies. 88
Hospital Food

CDC Best Practice Guidelines for Financial Sustainability of Healthy Food Service Guidelines In Hospital Cafeterias

interviewed food service directors at 8 hospitals

what are barriers to healthy food options at hospitals?

1. customer complaints & dissatisfactions
2. need for increased labor skills
3. increased time needed to prepare healthier food
4. inadequate selections offered from vendors

“Six food service directors expressed concern with the financial stress that adopting a healthy food program may place on management and staff, which, in turn, can affect staff morale, productivity, and retention.”
Table 1. Characteristics of Hospital Cafeterias Reported by Food Service Directors (N = 8), Study of Best Practices for Implementing and Sustaining Healthy Food Service Guidelines, 2017

<table>
<thead>
<tr>
<th>Respondent Identifier</th>
<th>Geographic Location</th>
<th>Number of Hospital Beds</th>
<th>Number of Cafeteria Employees</th>
<th>Payment Model (Self-Operated or Contracted)</th>
<th>Group Purchasing Organization(^a)</th>
<th>Broadline Distributor(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P01</td>
<td>West</td>
<td>176</td>
<td>1,200</td>
<td>Self-operated</td>
<td>Entegra</td>
<td>Sysco</td>
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<tr>
<td>P02</td>
<td>Midwest</td>
<td>1,400</td>
<td>14,000</td>
<td>Self-operated</td>
<td>Vizient</td>
<td>US Foods</td>
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<tr>
<td>P03</td>
<td>West</td>
<td>661</td>
<td>7,015</td>
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<td>Vizient</td>
<td>US Foods</td>
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<td>P04</td>
<td>Midwest</td>
<td>207</td>
<td>2,600</td>
<td>Self-operated</td>
<td>Vizient and Intalare</td>
<td>Gordon Food Service</td>
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<tr>
<td>P05</td>
<td>Midwest</td>
<td>2,000</td>
<td>12,000</td>
<td>Profit</td>
<td>Premier</td>
<td>US Foods</td>
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<td>P06</td>
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<td>25,000</td>
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<td>Premier</td>
<td>US Foods</td>
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<tr>
<td>P07</td>
<td>Northeast</td>
<td>401</td>
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<td>Self-operated</td>
<td>Premier</td>
<td>Gordon Food Service</td>
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<td>West</td>
<td>92</td>
<td>4,800</td>
<td>Neither</td>
<td>Not applicable</td>
<td>US Foods</td>
</tr>
</tbody>
</table>

\(^a\) Numerous hospitals or other entities joined together to pool purchasing power to obtain reduced pricing and rebates from manufacturers.

\(^b\) A company that provides food and nonfood products to hospitals and functions as an intermediary between manufacturers and the hospital food service operator.
connections to doctors

- implicit bias
- time limitations
- night shifts, ambient lighting, ergonomics, hospital food
- vicarious trauma
- burnout
What is Vicarious Trauma?

Vicarious Trauma is an ongoing process of change over time that results from witnessing or hearing about other people’s pain and suffering. It may feel overwhelming to hear about an intense trauma so personal reactions are delayed as you focus on the task at hand. Listening to traumatic material can also trigger memories of your own previous traumas. Vicarious trauma is similar to direct trauma. It carries many of the same symptoms and can be treated in many of the same ways.

Who Experiences Vicarious Trauma?

If you are regularly hearing about another person’s trauma, then you are at risk of developing vicarious trauma symptoms. This can include medical providers, law enforcement, mental health staff, social workers, and those working in the courts. How you experience vicarious trauma depends on many factors including personality, personal experience, life stressors, social support, and spiritual resources.

Common Reactions to Vicarious Trauma:

- PHYSICAL: Feeling on edge, difficulty sleeping, feeling tired, getting sick
- EMOTIONAL: Feeling sad or anxious, angry, irritable, lonely or unsupported, unsafe
- COGNITIVE: Difficulty concentrating or making decisions, memory problems, disturbing imagery, nightmares, “zoning out”
- BEHAVIORAL: Social withdrawal, drinking or smoking more, changes in eating patterns, overprotectiveness
- RELATIONAL: Expecting the worst of others, becoming judgmental, relationship problems, loss of friends
- SPIRITUAL: Cynicism, discouragement, loss of faith, an attitude of “why bother”
Other Hacks

• SLEEP
  • GRATITUDE
• Tiny habits & positive loops
• Food (fiber)
• Culture of appreciation
• generosity, forgiveness
Things to Explore

- hostility/holding a grudge linked to CV disease
- connectedness/twin studies?
- prayer
- psilocybin
- oxytocin promotes prosocial behaviors - generosity, trust, cooperation
- greed is more reciprocated than generosity