

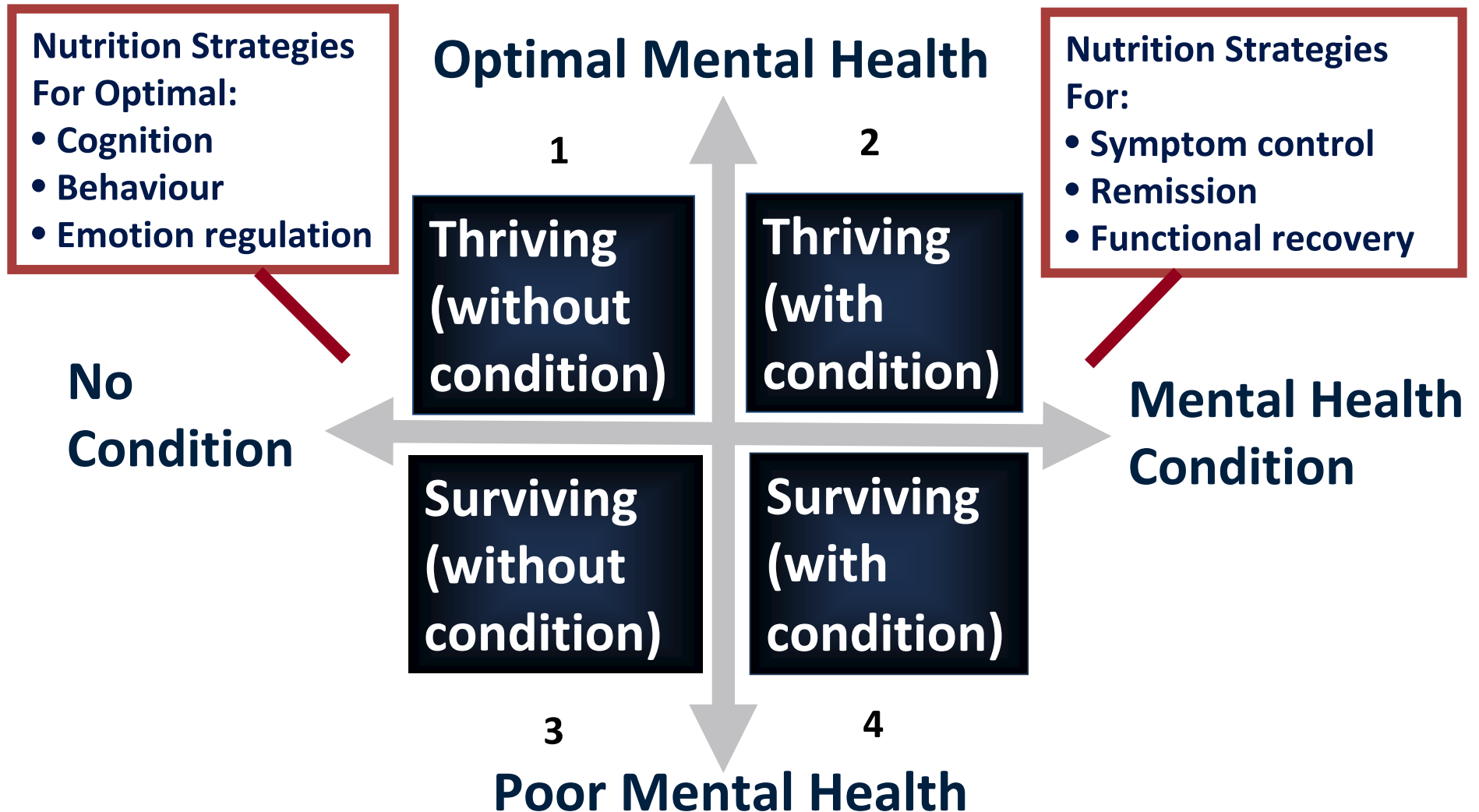
**Bridging the Divide:
Exploring Research in Nutrition,
Mental Health and Food
Security**

Take Away Messages

1. Nutrition, mental health, and food security research
2. Bridging the Divide project

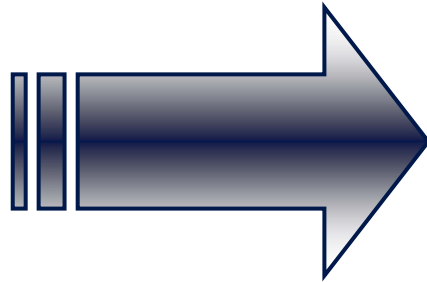


Mental Health Continuum¹



¹Keyes CLM (2002). Journal of Health and Social Research, 43: 207-222.

Nutrition and Mental Health Basics



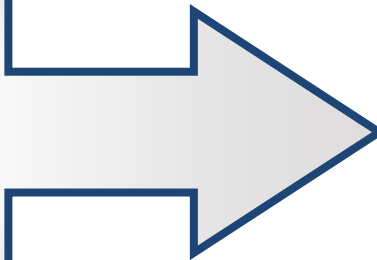
Happy, Energized, Satisfied

Symptoms:¹⁻⁸

- Anxiety
- Depression
- Fatigue
- Irritability
- Impaired Cognition

Deficiencies:

Pantothenic Acid, Folate
Vitamin B₁₂
Iron, Chromium, Zinc,
Magnesium, Selenium

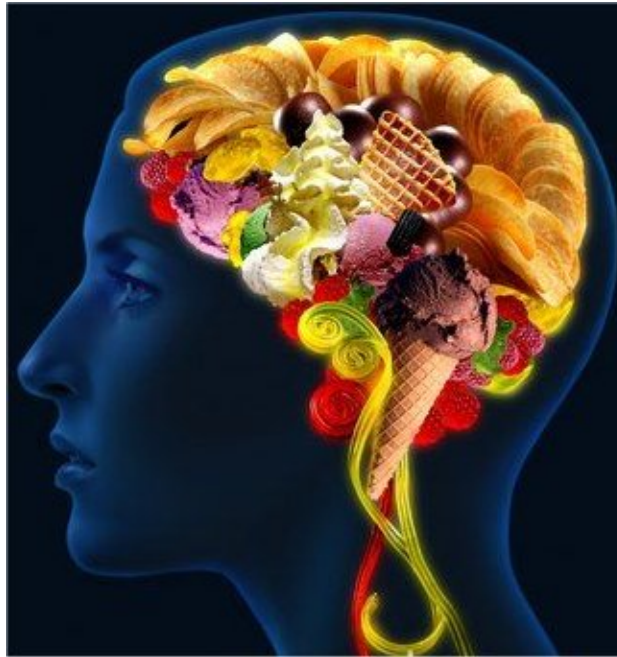


Nutrition and Mental Health: Links

Changes in
“typical” diet

Prenatal
environment

Long-term
poor
nutrition



Genetics

Cell
membrane
function

Cortisol

Inflammation

Macronutrients

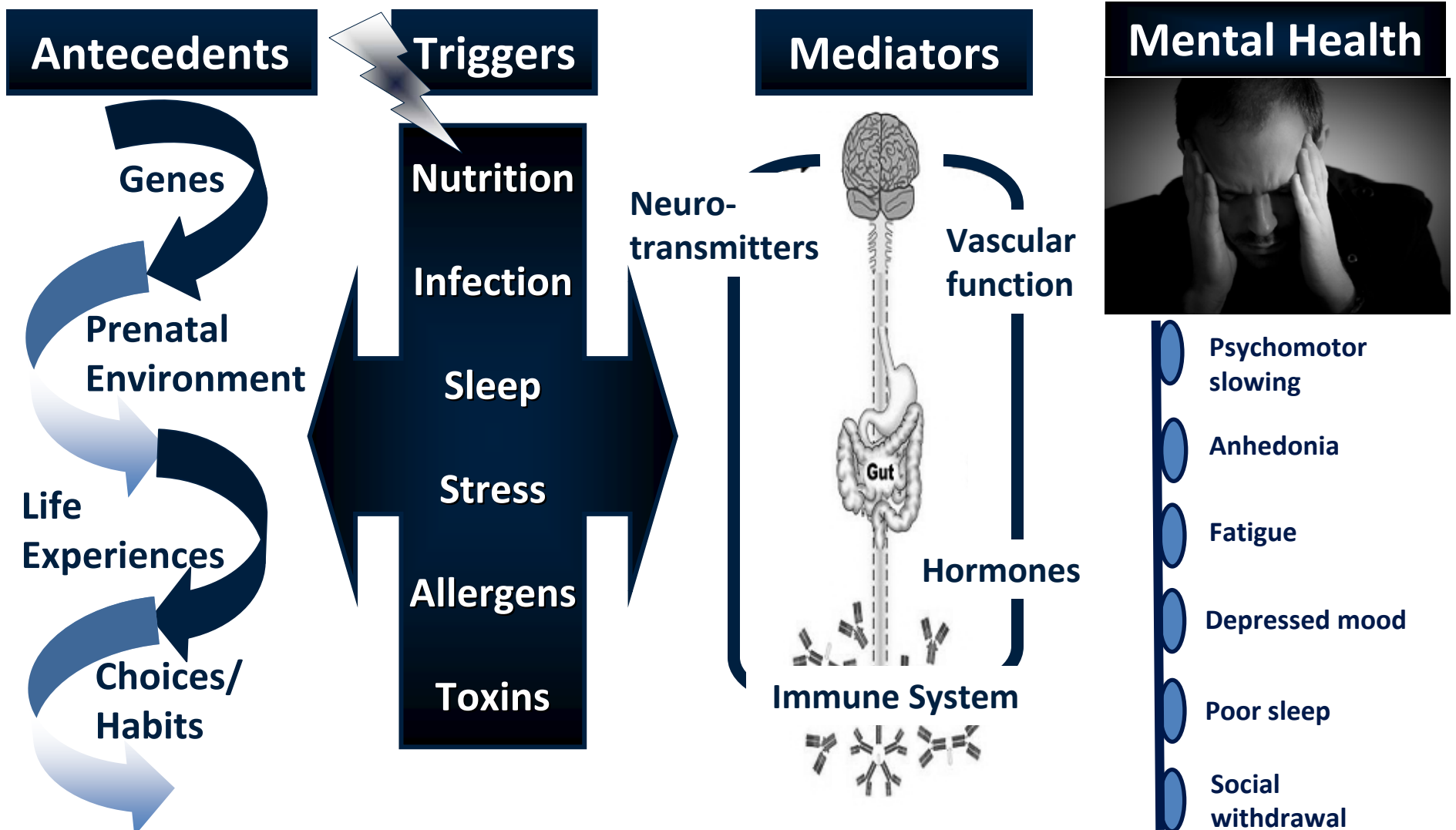
Carbohydrates, Fats, Proteins

Micronutrients

Vitamins, Minerals

Bioactive Compounds

Neurobehaviour: Interactions



Diet and Mental Health Evidence



United
Kingdom



Australia



Spain



Japan



Norway



Canada

Studies:¹⁻⁸

- **Cross-sectional:** diet patterns correlated with mood
- **Longitudinal:** diet patterns predict depression diagnosis
- **Combined results:** ↑ processed food based diet predict depression
- **SMILES trial:** personalized nutrition interventions → improvement in depression symptoms

¹⁻⁸Sánchez-Villegas A et al.: *Arch Gen Psychiatry* 2009; 66:1090; *PLoS One* 2011;6:e16268; *Public Health Nutr* 2012;15:424. Jacka FN et al.: *Am J Psychiatry* 2010; 167:305;; *Psychother Psychosom* 2012;81:196; *PLoS ONE* 2014 9(1): e87657; *BMC Medicine* 15:23. Davison KM et al.: *Can J Psychiatry* 2012; 57(2):85-92; DC Nutrition & Mental Health Role Paper;

Diet and Mental Health: Bottom Line

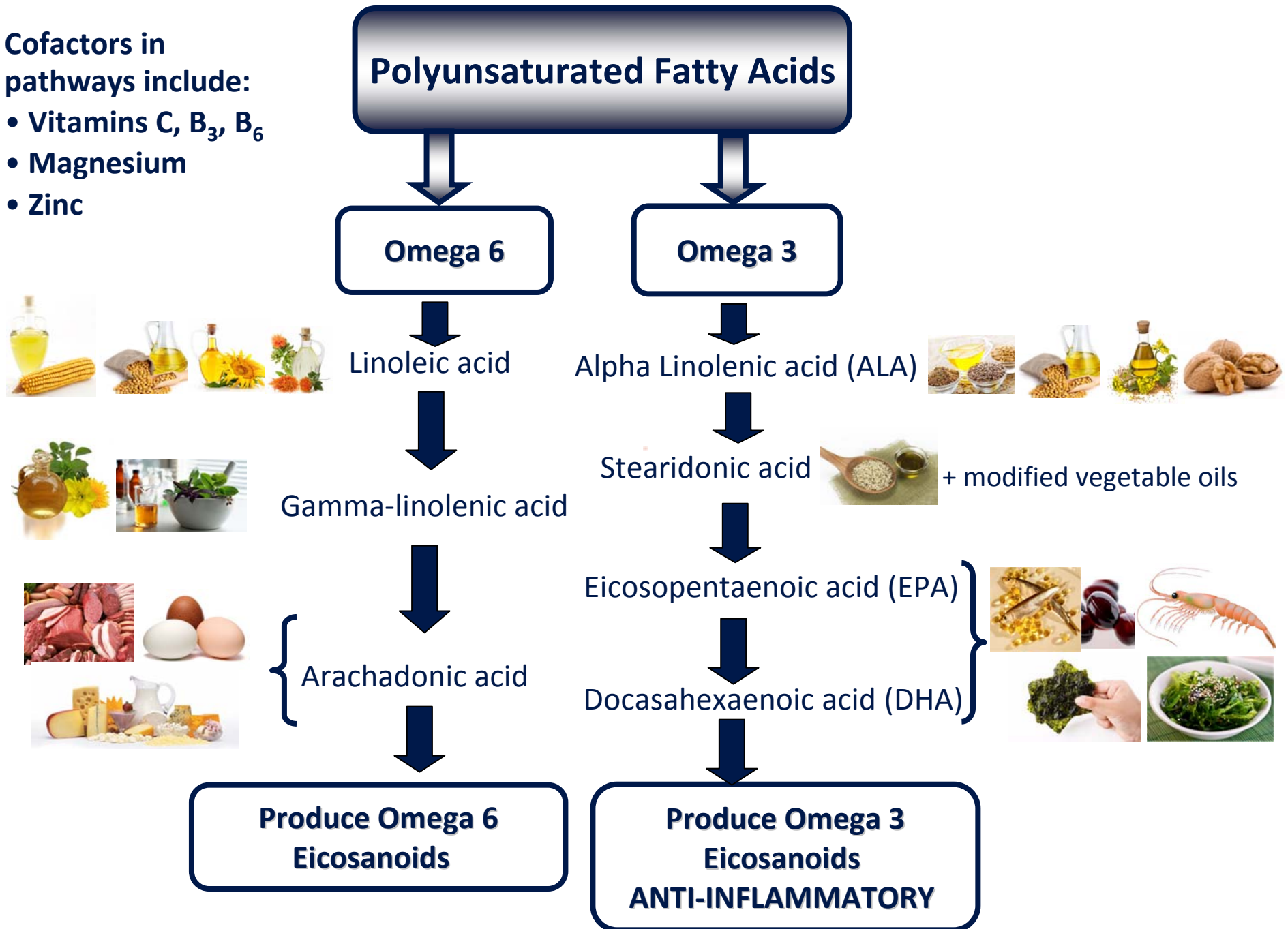
- **Focus:** high quality diet = unrefined, minimally processed foods
 - vegetables, fruits
 - whole grains
 - healthy fats
 - healthy sources of protein



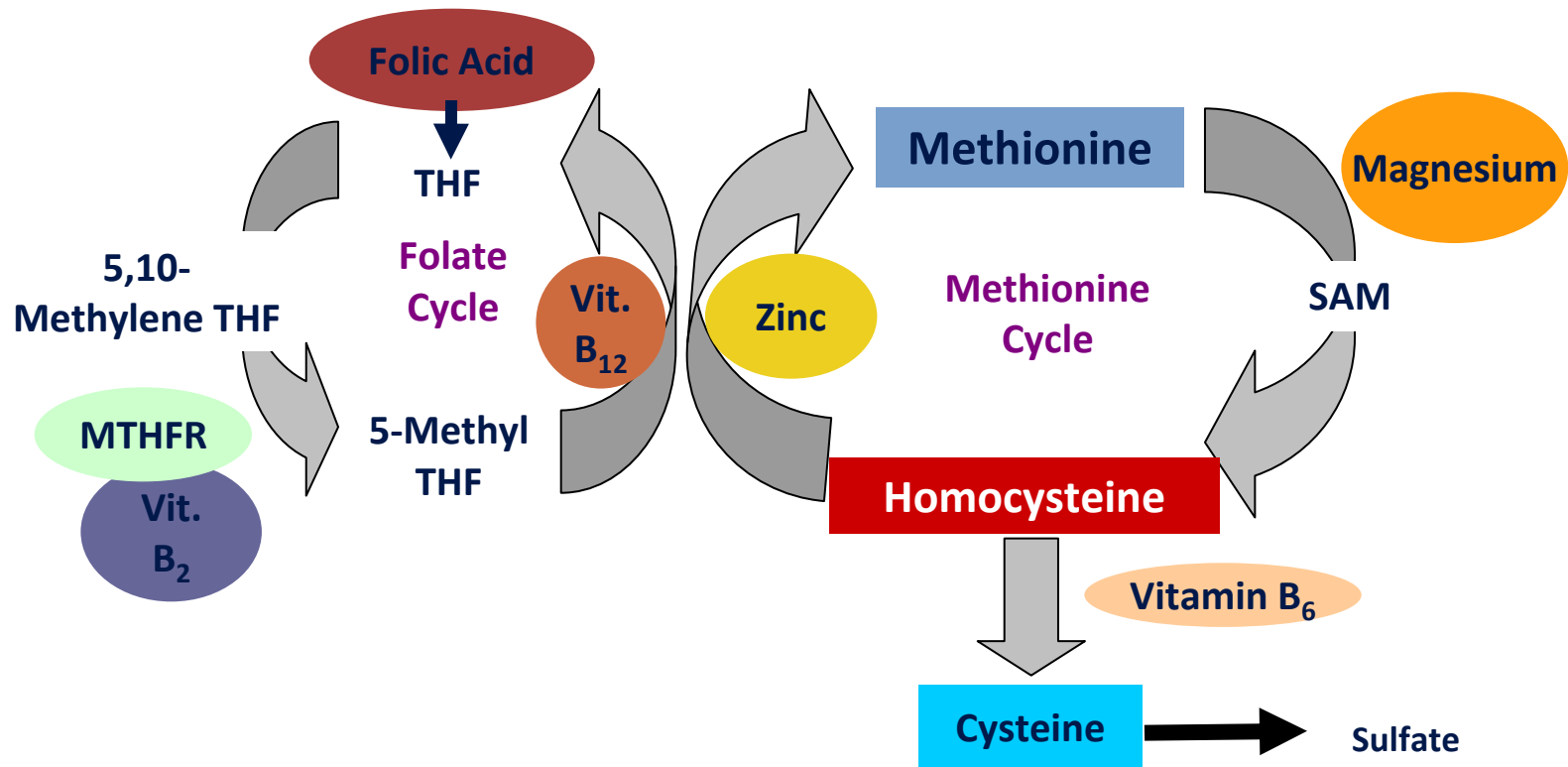
Some key nutrients to consider..

Cofactors in pathways include:

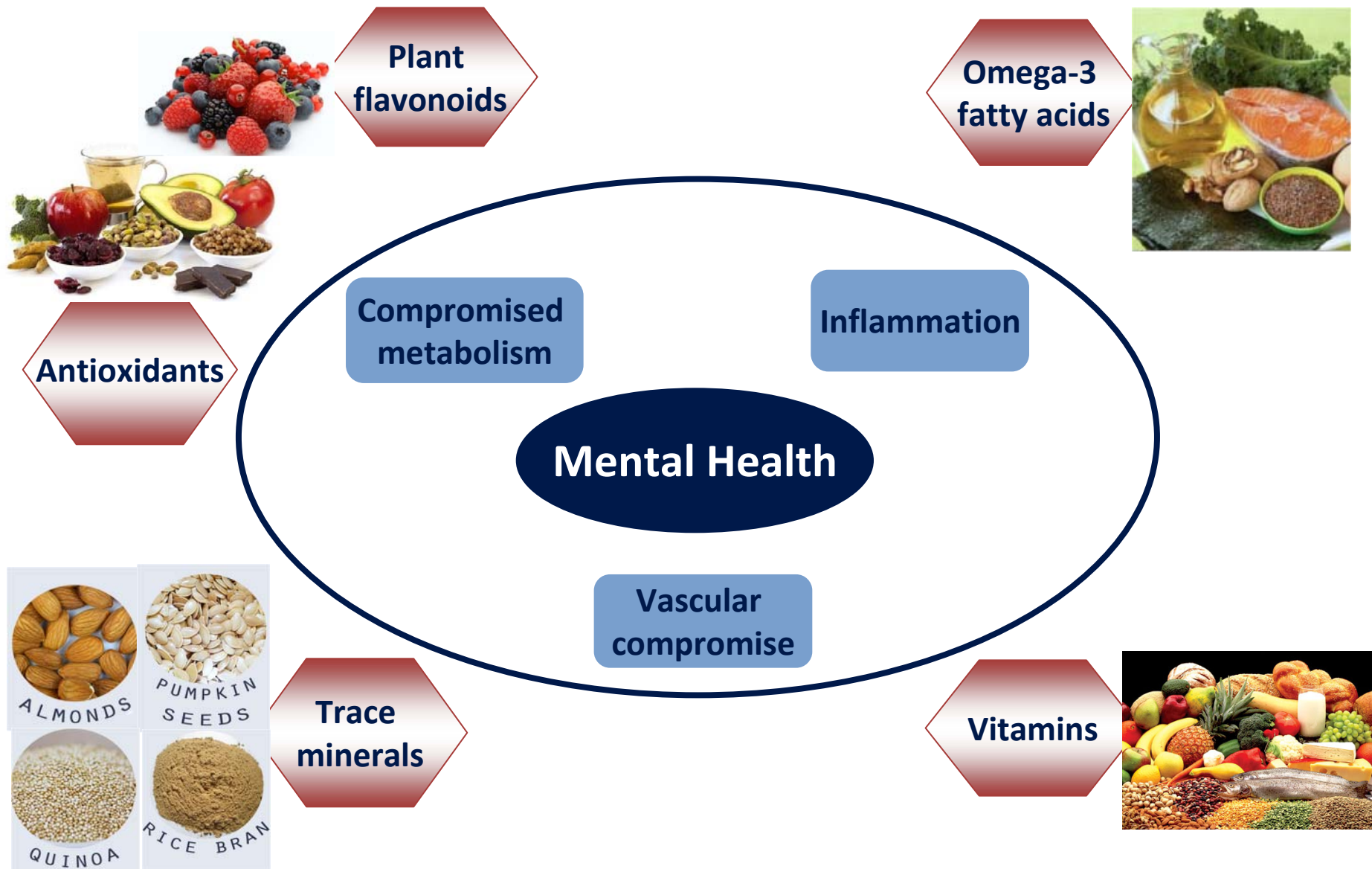
- Vitamins C, B₃, B₆
- Magnesium
- Zinc



Folate

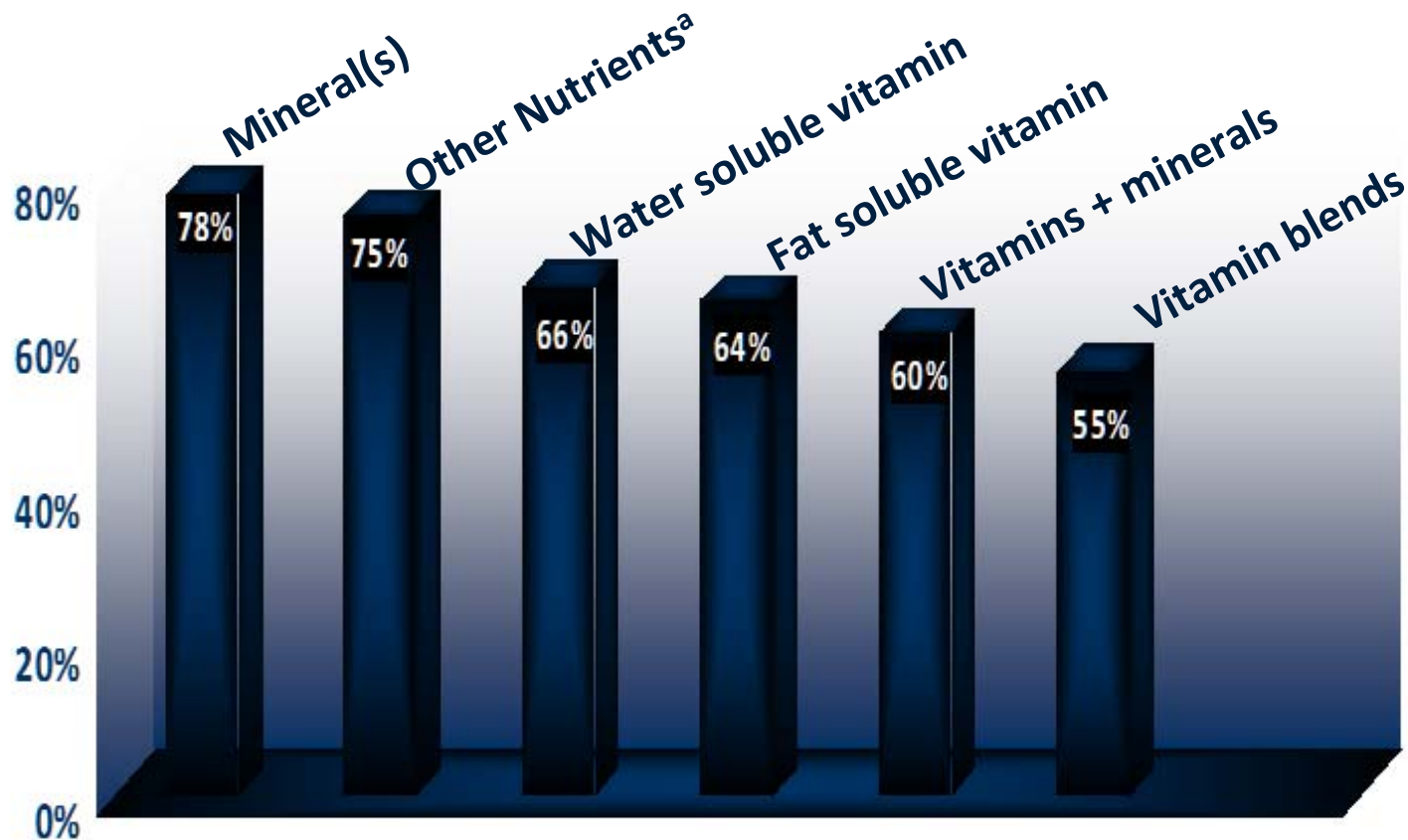


Multiple Influences of Diet Constituents and Pathways Linked to Mental Health



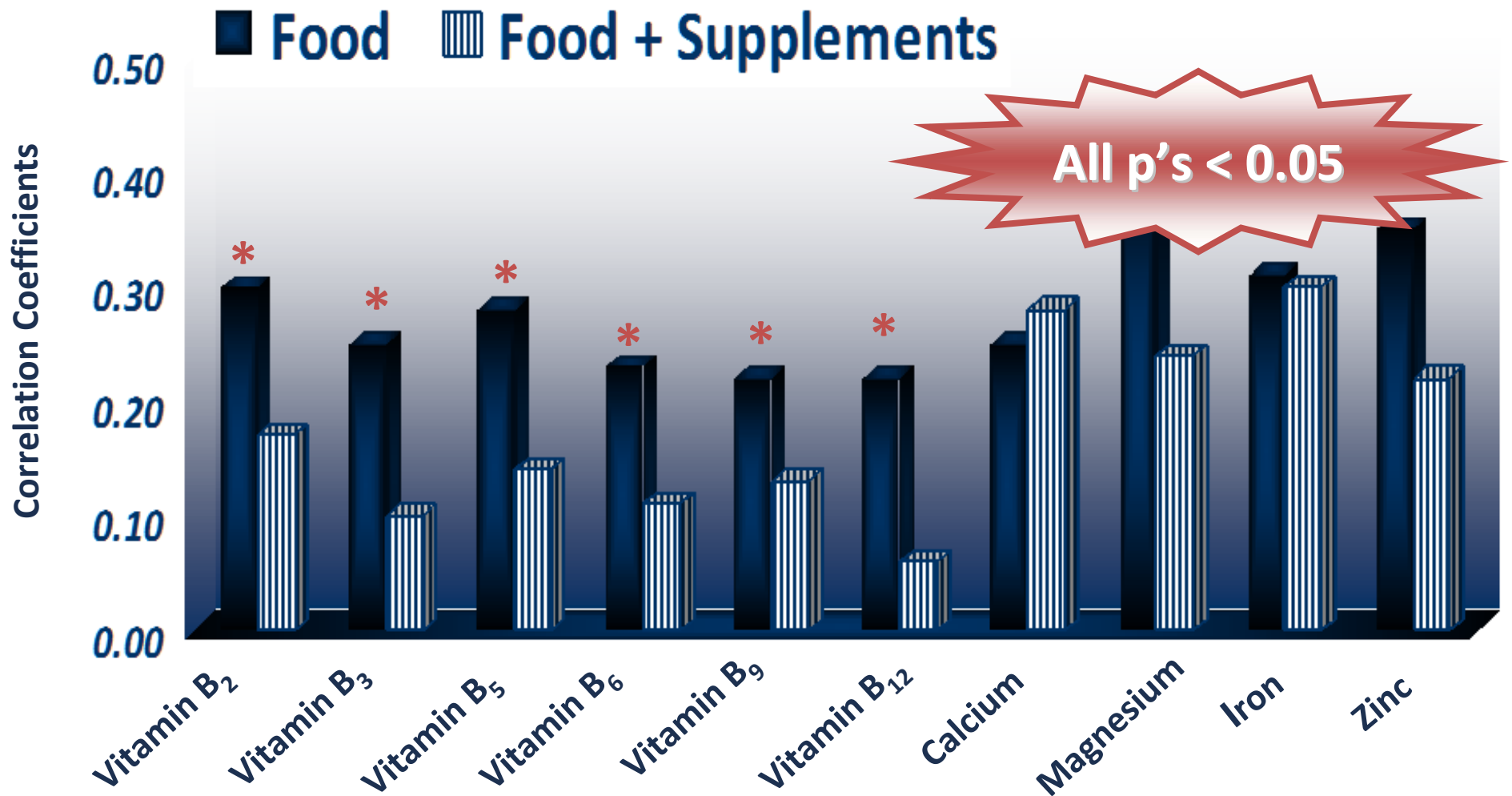
Natural Health Products (NHPs)

Prevalence of Use in Adults with Mood Disorders¹



^a**Other Nutrients:** Glucosamine, amino acids, evening primrose oil, coenzyme Q10, flax seed oil, lactic acid bacteria

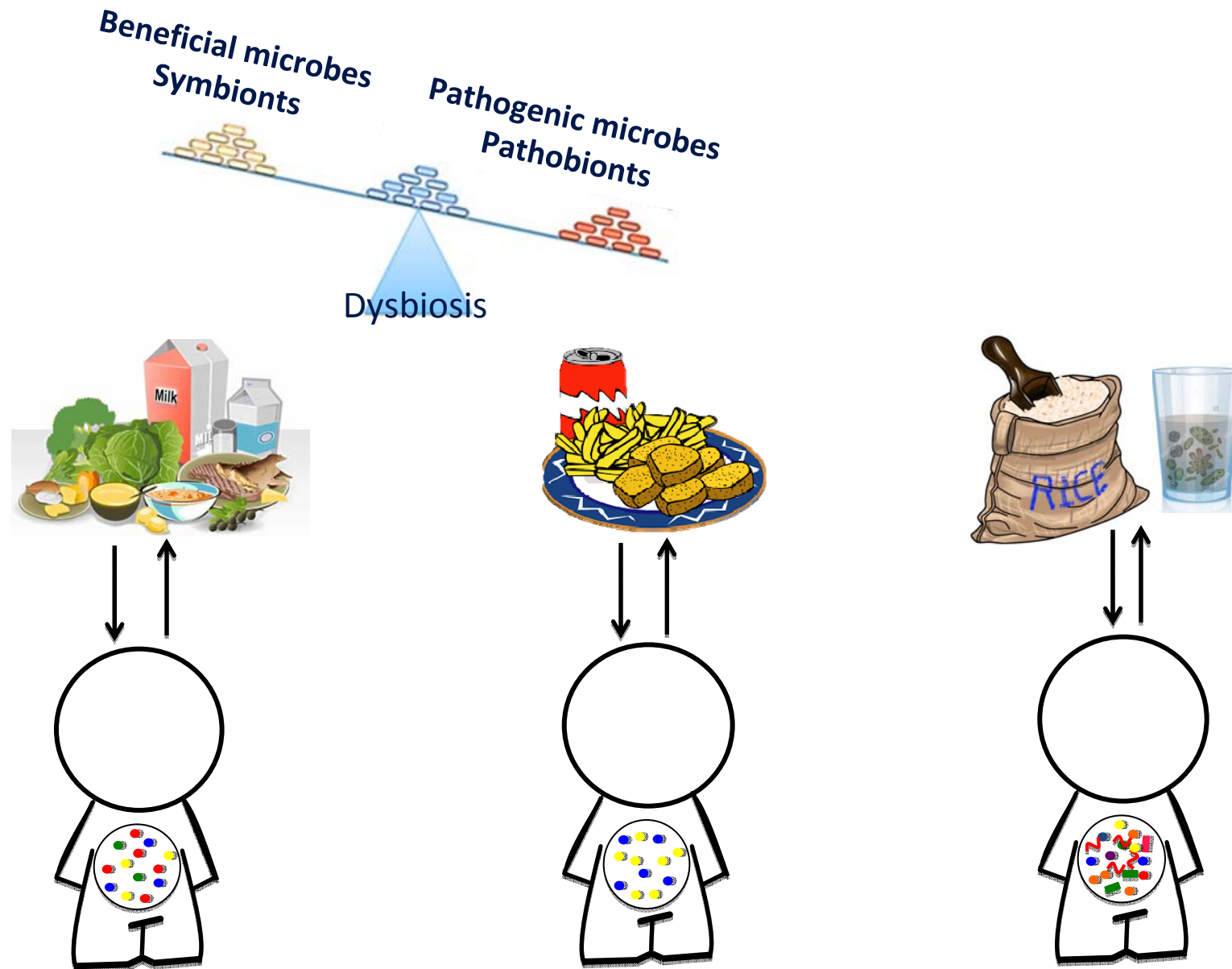
Nutrient Intakes and Global Assessment of Functioning: Correlations¹



¹Davison KM, Kaplan BJ. *Can J Psychiatry* 2012;57(2), 85-92.

*p < 0.05

Nutrition, Mental Health and The Microbiome



Dysbiosis: Probiotics to the Rescue?



"...translocated" gut commensal bacteria activate immune cells to elicit IgA and IgM responses..this phenomenon may play a role in the pathophysiology of (chronic) depression..."¹

Research report

Increased IgA and IgM responses against gut commensals in chronic depression: Further evidence for increased bacterial translocation or leaky gut

Michael Maes ^{a,*}, Marta Kubera ^b, Jean-Claude Leunis ^c, Michael Berk ^{d,e,f,g}

^a Maes Clinics @ Tris, Bangkok, Thailand

^b Department of Experimental Neuroendocrinology, Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland

^c Laboratory Ategis, Waver, Belgium

^d Mental Health Research Institute, Parkville, Australia

^e Deakin University, School of Medicine, Barwon Health, Geelong, Australia

^f University of Melbourne, Department of Psychiatry, Parkville, Australia

^g Oxygen Youth Health Research Centre, Parkville, Australia

To improve "post-prandial dysmetabolism"²

- Minimally processed, high fiber, plant-based foods (vegetables, fruits, whole grains, legumes, nuts)
- Lean protein; Fish oil; Tea; Cinnamon
- Calorie restriction; Weight loss; Exercise

Journal of the American College of Cardiology
© 2008 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 51, No. 3, 2008
ISSN 0735-1097/08/\$34.00
doi:10.1016/j.jacc.2007.10.016

STATE-OF-THE-ART PAPER

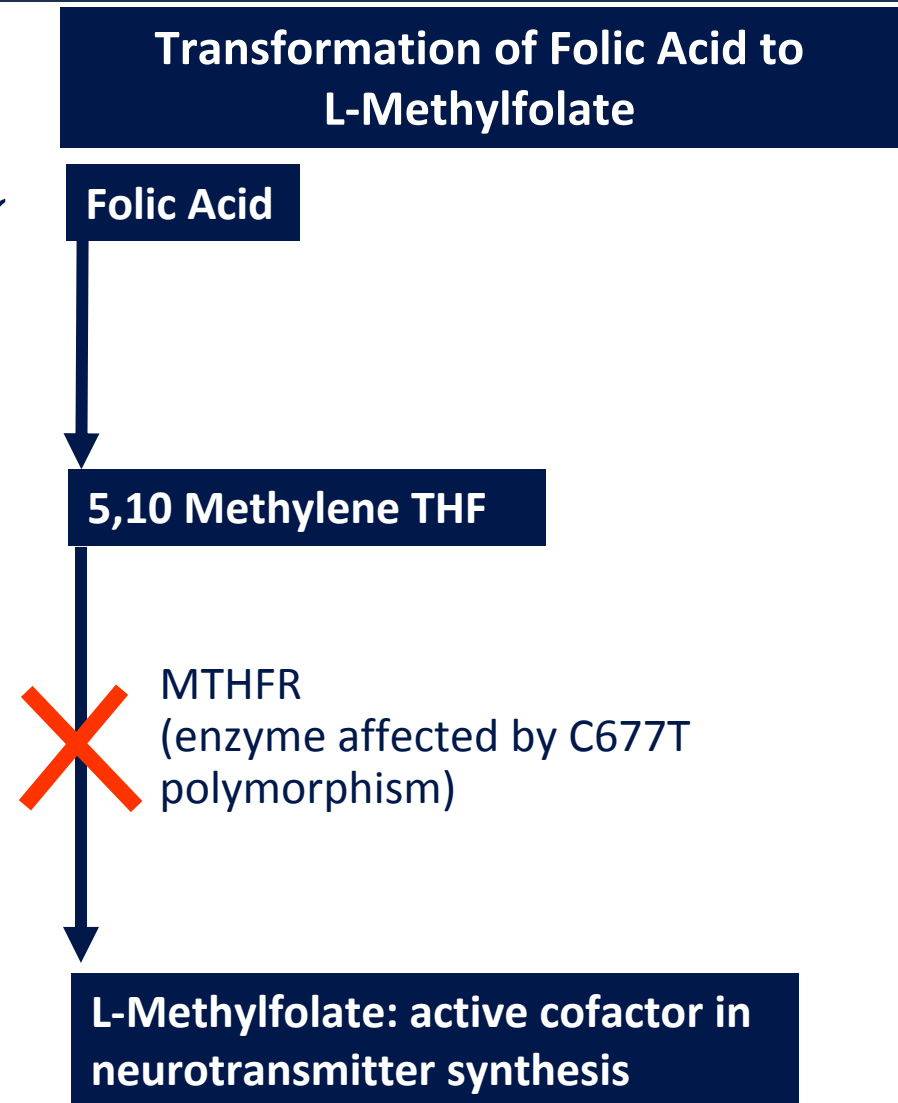
Dietary Strategies for Improving Post-Prandial Glucose, Lipids, Inflammation, and Cardiovascular Health

James H. O'Keefe, MD, Neil M. Gheewala, MS, Joan O. O'Keefe, RD
Kansas City, Missouri

¹Maes M et al. *J Affect Dis* 2012 141(1):55-62; ²O'Keefe JH et al. *J Am Coll Cardiol* 2008 51(3):249-55; Slyepchenko et al. *CNS Neurol Disord Drug Targets*. 2014;13(10):1770-86

Ideally Base NHP Use on Biomarker and Genetic Marker Information

- Omega 3 fatty acid most beneficial if blood levels ↓
- Biomarkers & genomic markers associated with L-methylfolate may identify those with resistant depression



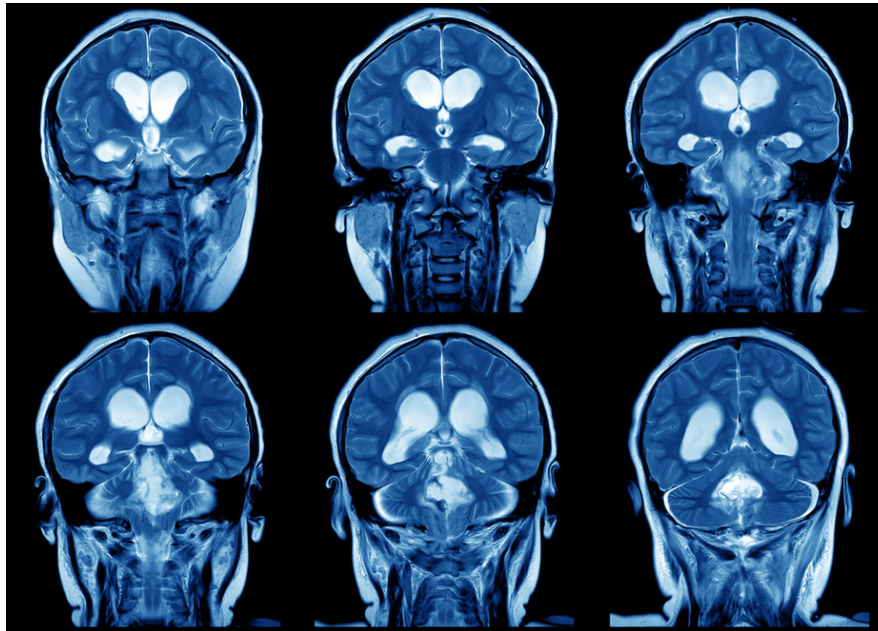
NHP Use: Bottom Line

- **As an add on to** standard treatment may be beneficial
- **Ideal:** Assess biomarkers &/or genomic markers
- **Need:** Individualized approaches



Where Is The Research Going?

- Repeat and scale up research in prevention and treatment
- Targeting pregnancy and perinatal period; early life
- Biological mechanisms: immune system, inflammation, gut microbiome, neurochemicals, brain plasticity



Eating Behaviours and Mental Health



¹Davison KM. *Eating Behaviors* 2013;14(2):187-91; ²Davison KM et al. *General Hospital Psychiatry* 2014;36:411-414

**Cognitive Behavioural
Therapy**

How thoughts affect actions

Mindfulness

Use senses to ↑ pleasure & connection to hunger/satiety



**Therapeutic
Approaches**

Dialectical Behaviour Therapy

CBT + mindfulness & validation; blend acceptance & change (dialectic)

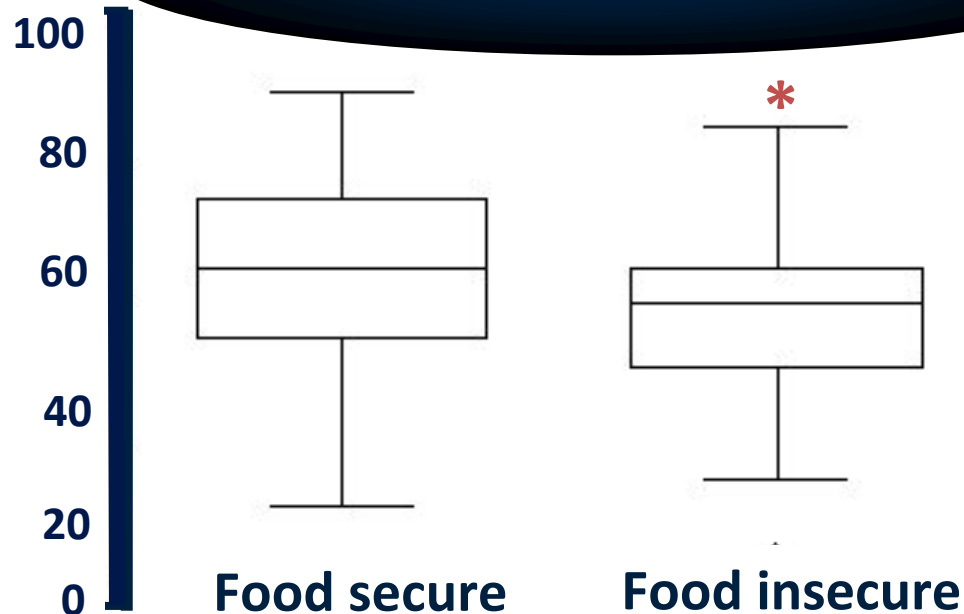
Food Insecurity and Mental Health

- **Food insecurity:** inability or uncertainty in ability to consume a sufficient quantity of food



In Individuals With Mood Disorders¹

Global Assessment of Functioning



*p < 0.05

¹Davison KM, Kaplan BJ. *Ann Gen Psychiatry* 2015;14(21).

Substance Use, Mood Disorders, Food Insecurity¹

- Odds of food insecurity two times as likely with presence of mood disorder and lifetime use of cocaine or crack and speed

Interactions:

- Lifetime use of marijuana, ecstasy, hallucinogens and mood disorder in relation to food insecurity



¹Davison KM et al. (submitted) 2017

Food Insecurity and Suicide Ideation¹

Individuals who experienced:

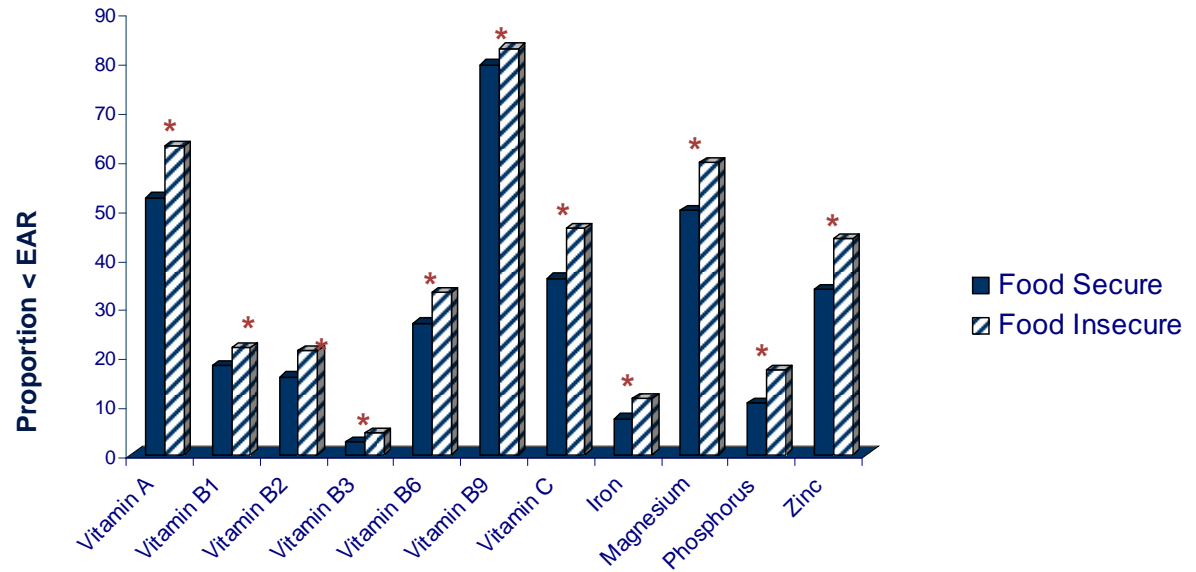
- moderate food insecurity 32% more likely to report suicidal ideation
- severe food insecurity 77% more likely to report suicidal ideation



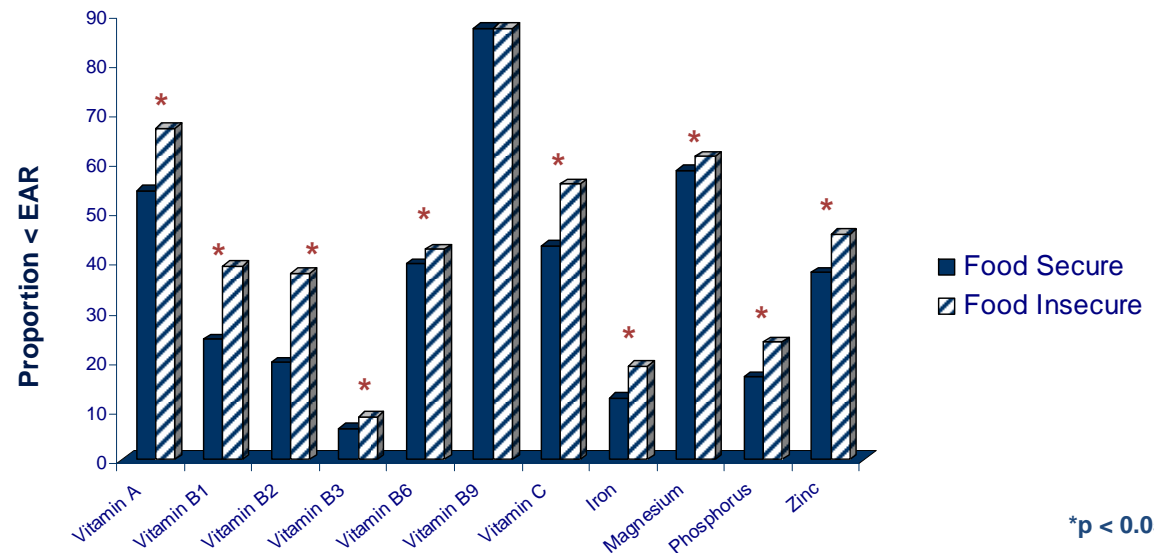
¹Davison KM et al. *Soc Psychiatry Psychiatr Epidemiol* 2015;50(6):963-72.

Prevalence Estimates Below EARs

Good Mental Health

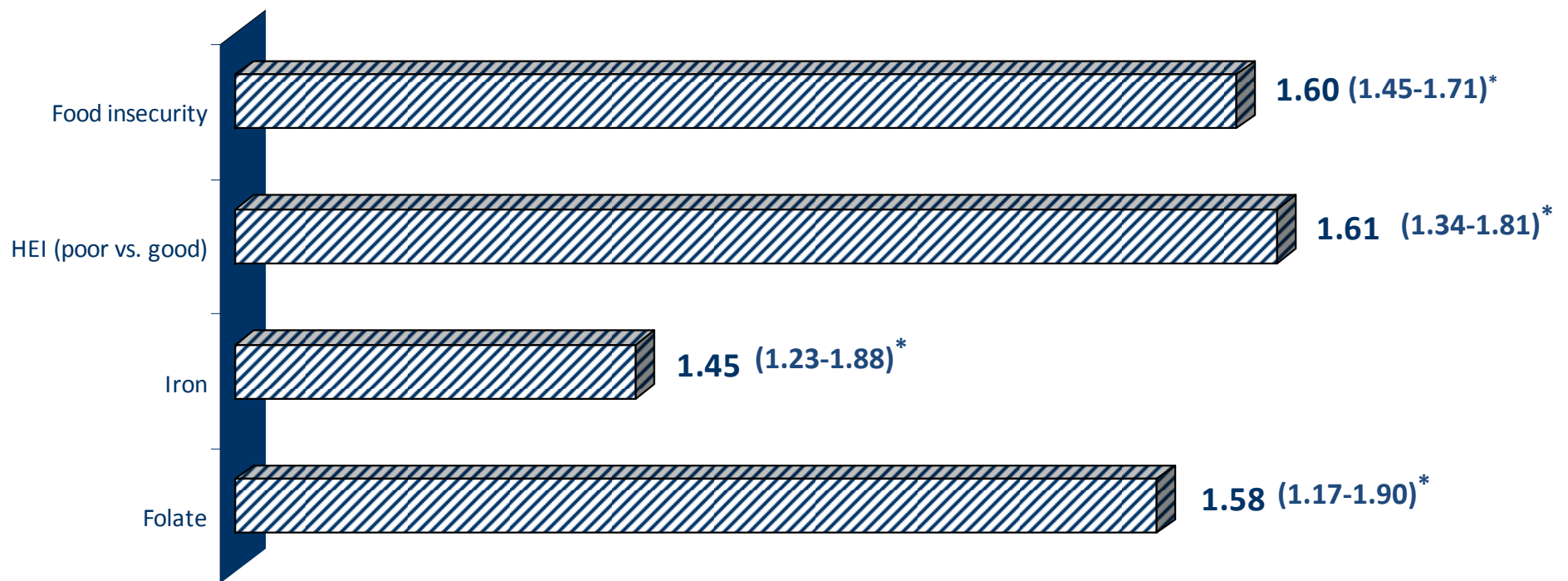


Poor Mental Health



EAR: Estimated Average Requirement

Multivariate Odds Ratios: Food Insecurity, Healthy Eating Index, Folate and Iron¹



HEI = Healthy Eating Index (needs improvement vs good)

Adjustments: fat and protein < AMDRs, vitamins, minerals, demographics. Folate and iron are based on odds of being below or above the EAR

*p < 0.05

¹Davison KM et al. *Nutrients*, 2017

Managing Mental Health Through Diet: Summary

**Optimize nutrition status/
remission & functional recovery**

Individualized nutrition interventions

Optimize medication effectiveness

Identify and correct eating disturbances

**Address contextual factors that
impact on nutrition**





National Priorities for Nutrition and Mental Health

<http://nutritionandmentalhealth.ca>

Dietitians and Community Mental Health: Setting the Research Agenda (2013-2014)

GOAL: To develop a Canadian research agenda for nutrition and community mental health with input from a broad range of stakeholders



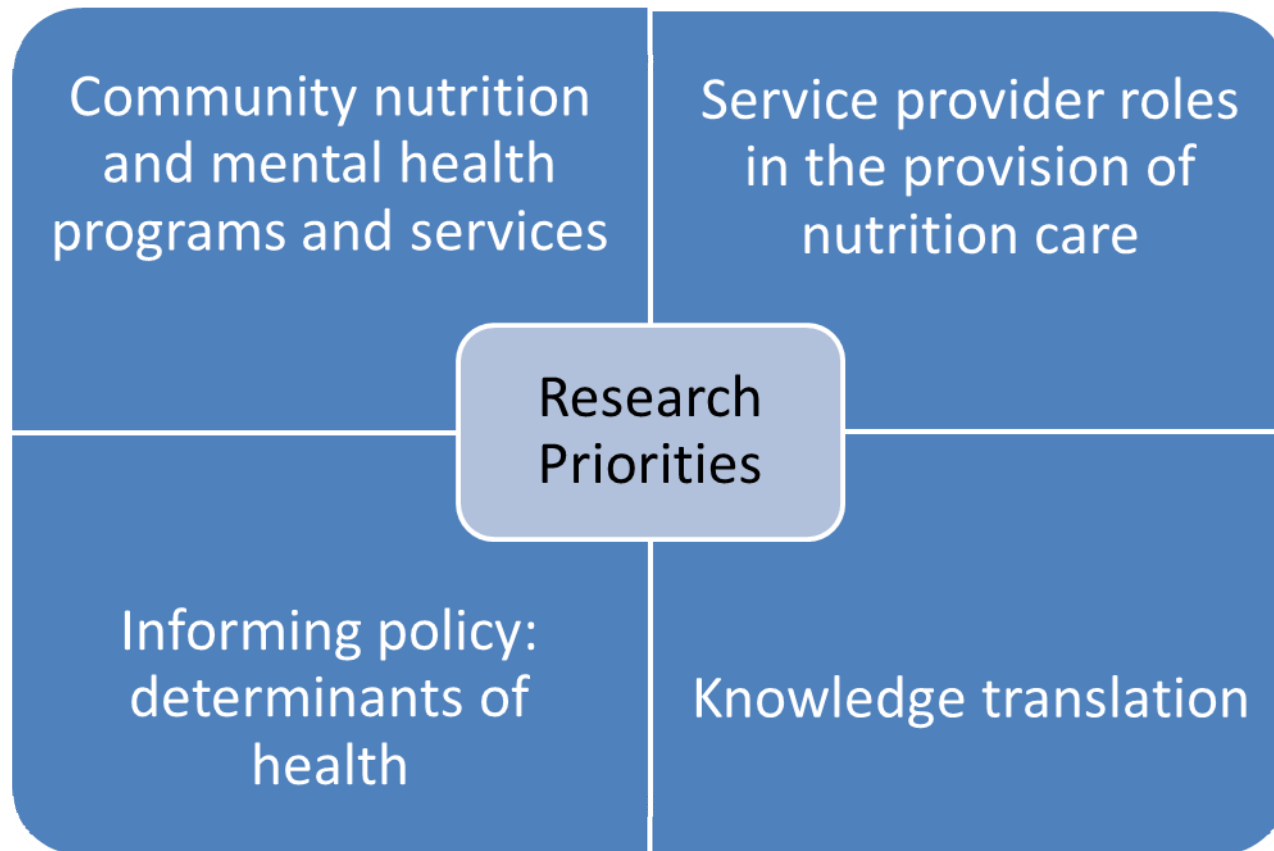
a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA
Critical Research in Health and Healthcare
Inequities (CRiHHI) Research Unit



Collaborative Multi-Step Consultation Process



Four Priority Areas for Research



Bridging the Divide Project

Some project elements:

- Webinars to raise awareness
- Stakeholder workshops
- Online hub
- Other opportunities...?



WEBINAR:
TREATING **MOOD** WITH FOOD:
WHERE TO FROM HERE?

THURSDAY, DECEMBER 8, 2016

10:30 A.M. PST ■ 11:30 A.M. MST ■ 1:30 P.M. EST ■ 2:30 P.M. AST

SARAH DASH



PhD Candidate
Deakin University

GLENDA MACQUEEN



Vice Dean, Cumming School of Medicine
University of Calgary

Objective: To review the current state of research related to depression and diet, understand potential future research opportunities, and explore the lessons learned from working in collaborative cross-disciplinary research teams.



WEBINAR:
COLLABORATION AND COMMUNICATION
Exploring the Roles of Nutrition
and Mental Health Providers

THURSDAY, FEBRUARY 9, 2017

10:30 A.M. PST ■ 11:30 A.M. MST ■ 1:30 P.M. EST ■ 2:30 P.M. AST

RACHEL HICKS



Registered Dietitian

KELLY MATHESON



Clinical Dietitian and
Certified Diabetes Educator
Centre for Addiction and Mental Health

Objective: Explore the roles and responsibilities of mental health care providers, including dietitians, in the effective provision of nutrition care to clients living with mental health conditions in community settings.



Thank you!

Questions / Discussion

