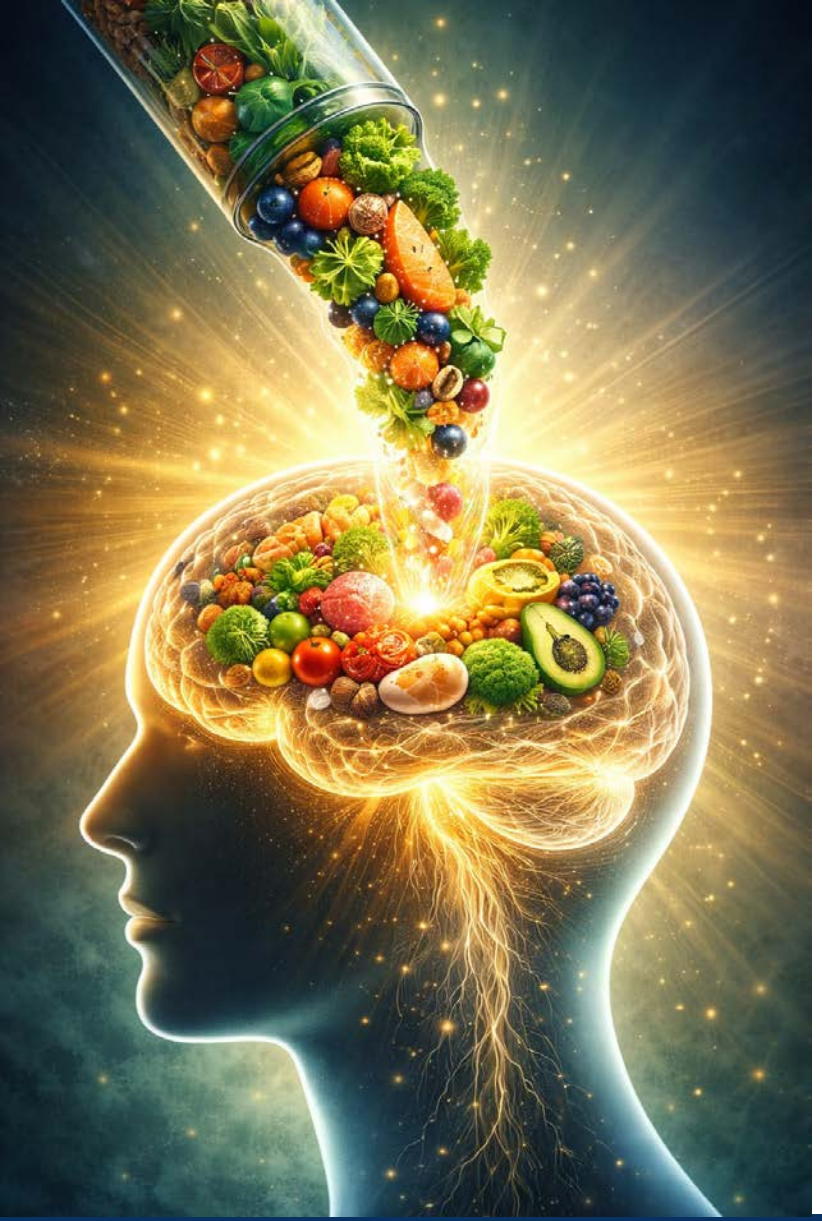


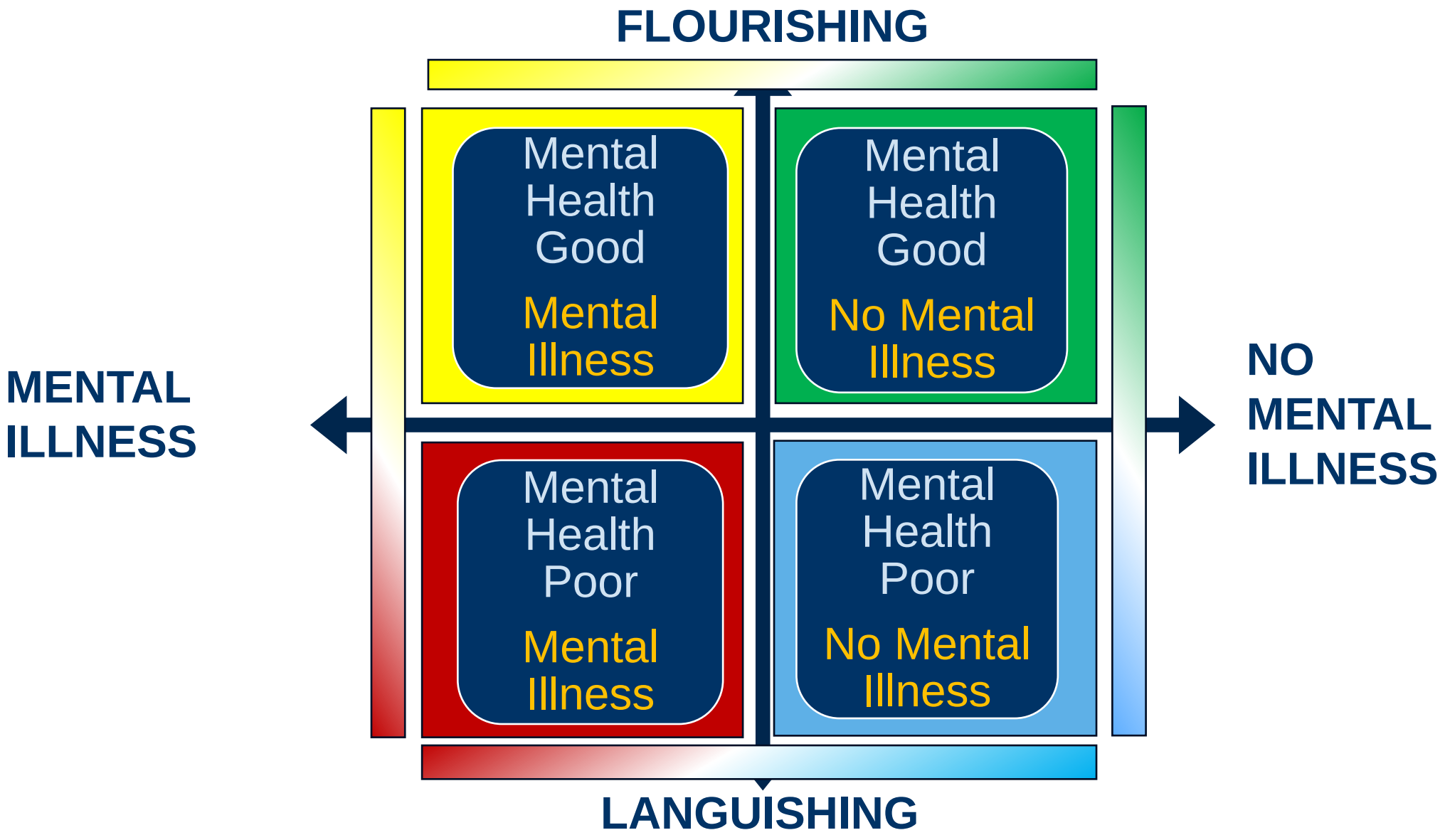
Depletion to Stability: Rebuilding the Body to Support the Brain

Anne R. Lindsay, PhD

Professor, Extension Specialist

University of Nevada Reno, Extension

EXTENSION
College of Agriculture,
Biotechnology & Natural Resources



Modified from Keyes, 2014

Illicit/non-medical use of

Opioids:

- Fentanyl
- Oxycodone (OxyContin®)
- Hydrocodone (Vicodin®)
- Heroin
- Morphine
- Codeine

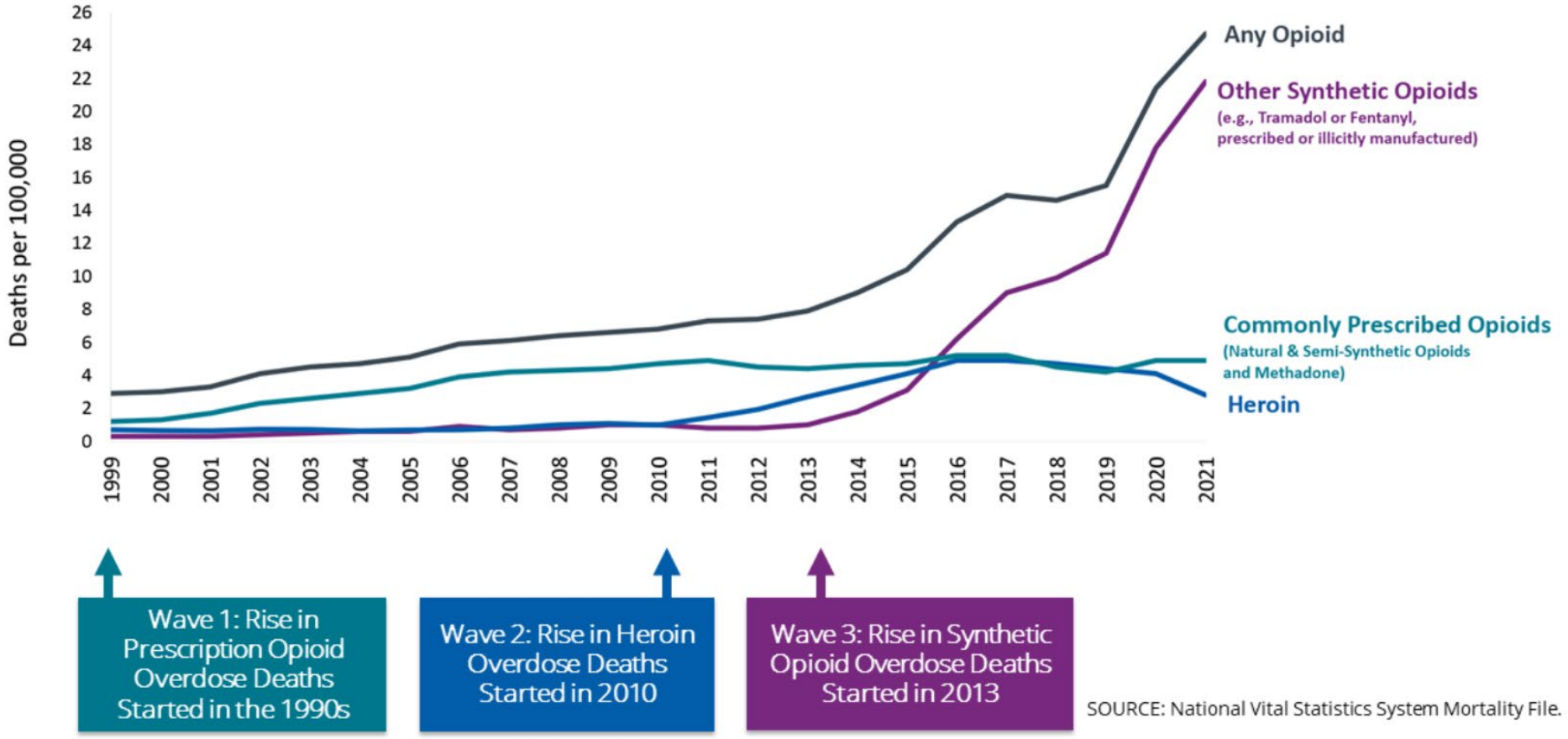
Illicit/non-medical use of

Amphetamines/Stimulants:

- Prescription amphetamines (e.g., Adderall/Ritalin)
- Methamphetamine
- Ecstasy
- Cocaine & crack cocaine

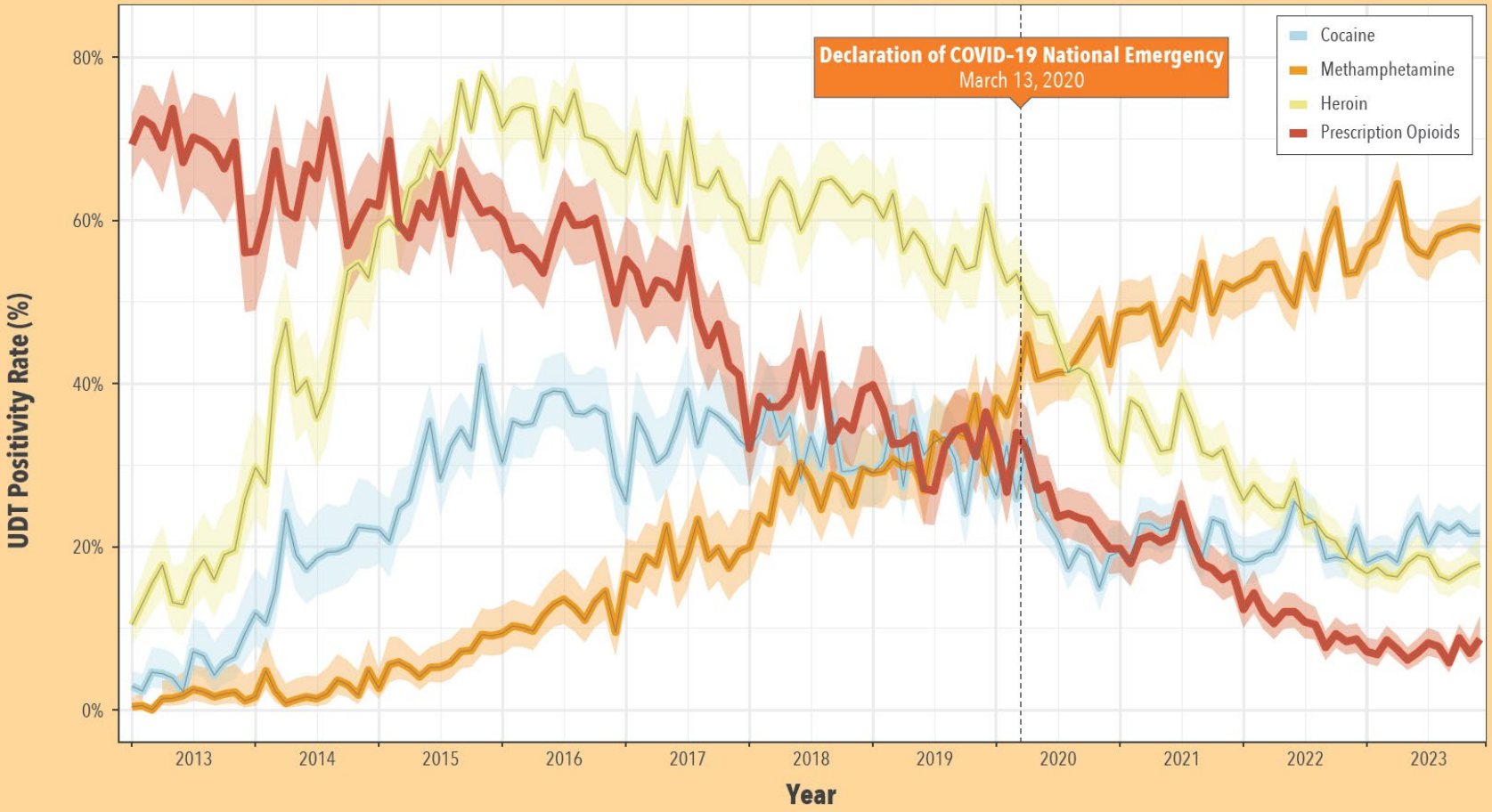
Alcohol

Three Waves of Opioid Overdose Deaths



SOURCE: National Vital Statistics System Mortality File.

Figure 2. National Co-Detection of Prescription Opioids, Heroin, Methamphetamine, and Cocaine in Fentanyl-Positive Specimens

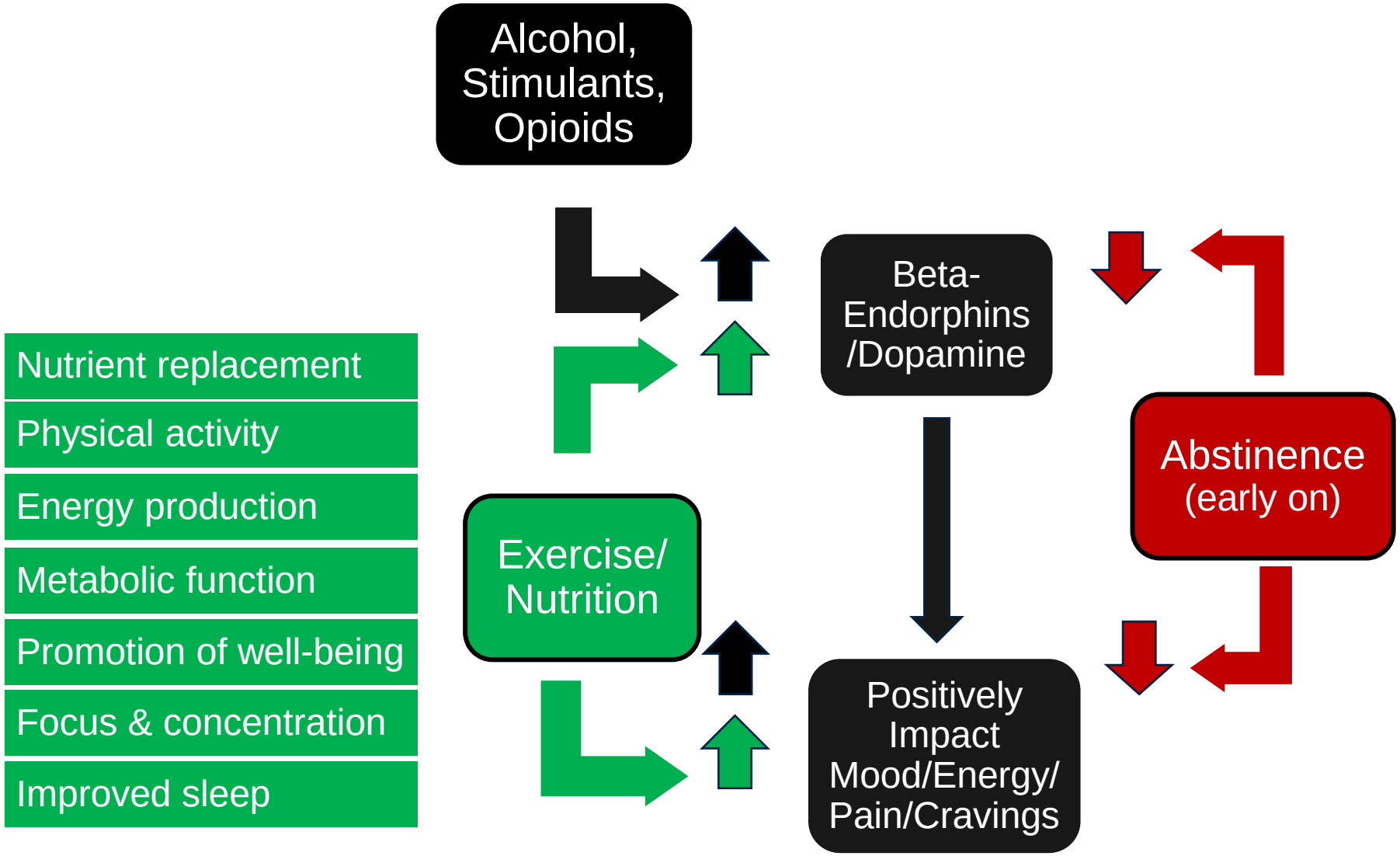


Monthly UDT positivity rates and 95% confidence interval (CI) values for cocaine (light blue line), methamphetamine (orange line), heroin (yellow line), and prescription opioids (i.e., hydrocodone, hydromorphone, oxycodone and oxymorphone without a reported prescription, red line) in fentanyl-positive specimens collected from 2013-2023. Positivity rates were estimated using logistic regression (see Methods).

Methamphetamine (MAmp)

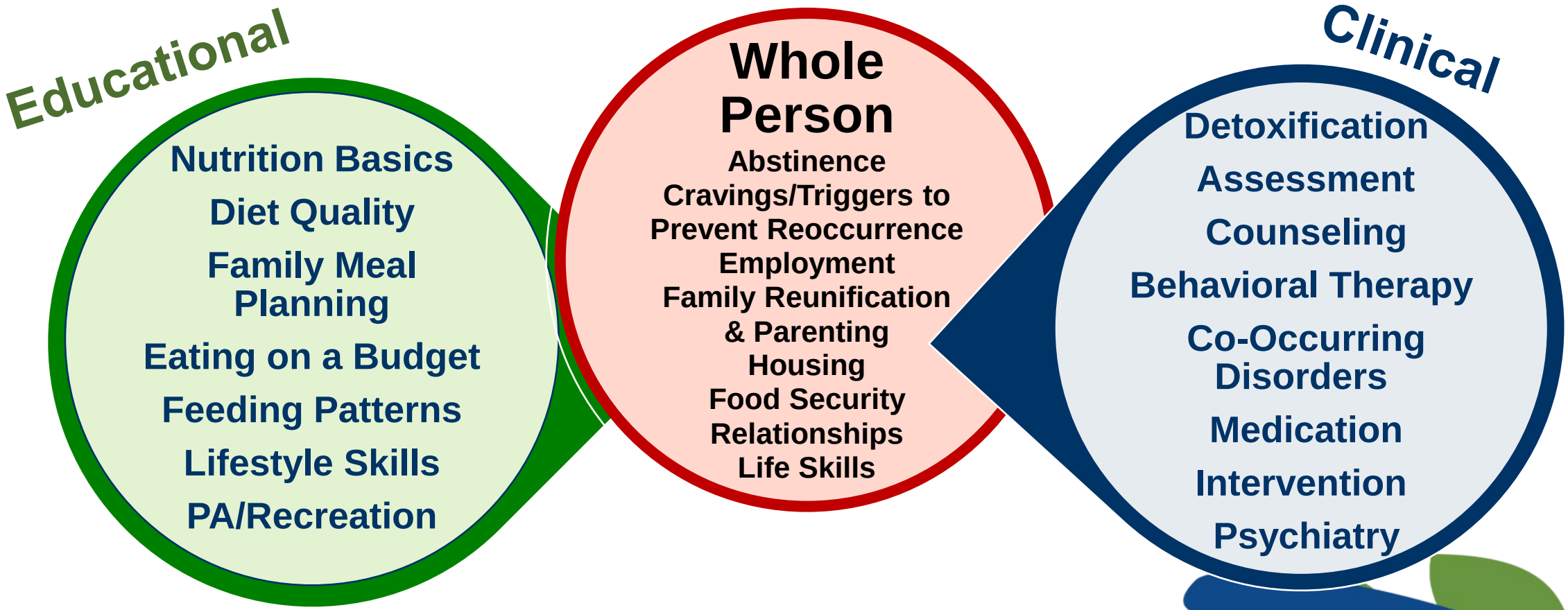
- Methamphetamine has increased 875% since 2015 in the U.S.
  - ✓The most common substances found with fentanyl in fatal overdoses and urine drug tests have gradually **shifted over time from heroin and other opioids to stimulants** including methamphetamine and cocaine
  - ✓In 2023 in the U.S., **methamphetamine was the most common drug found in fentanyl-positive specimens** (detected MA in 60% of cases; cocaine in 22%)
- **No FDA-approved pharmacotherapy for MA dependence**
  - ✓Underscores need to further develop interventions

Millenium Health, 2024; NIDA



Adapted From National Institute of Drug Abuse

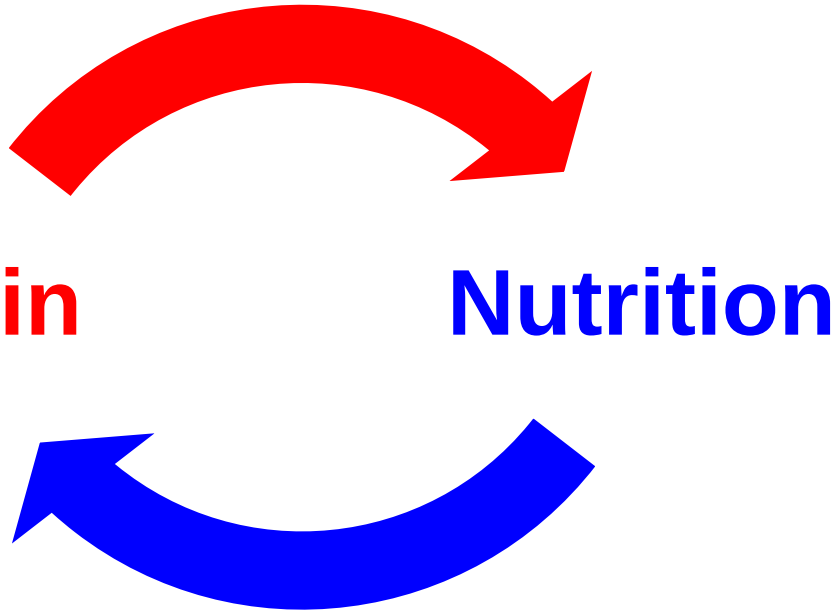
Our goal is not to change people but to *help* people change



Nutrition

The Nutrition Paradox

Poor psychological health and addiction negatively impacts nutrition



Poor nutrition negatively impacts psychological health and recovery

Jeynes, Gibson, 2017

Considerations during substance use that can influence nutritional status

- *Type(s) of substances*
- *Frequency of substance use*
- *Duration of substance use*
- *Pre-existing or co-occurring health conditions*

Considerations during recovery that can influence nutritional status

1. *Dependent on stage of recovery (critical in detox and early stages)*
2. *Severity of withdrawal symptoms (may exacerbate poor nutritional status and dehydration)*
3. *GI discomfort and distress*
4. *Medication-assisted therapy (may impact appetite, weight status)*
5. *Type of recovery setting*

How does SUD manifest itself in the body?

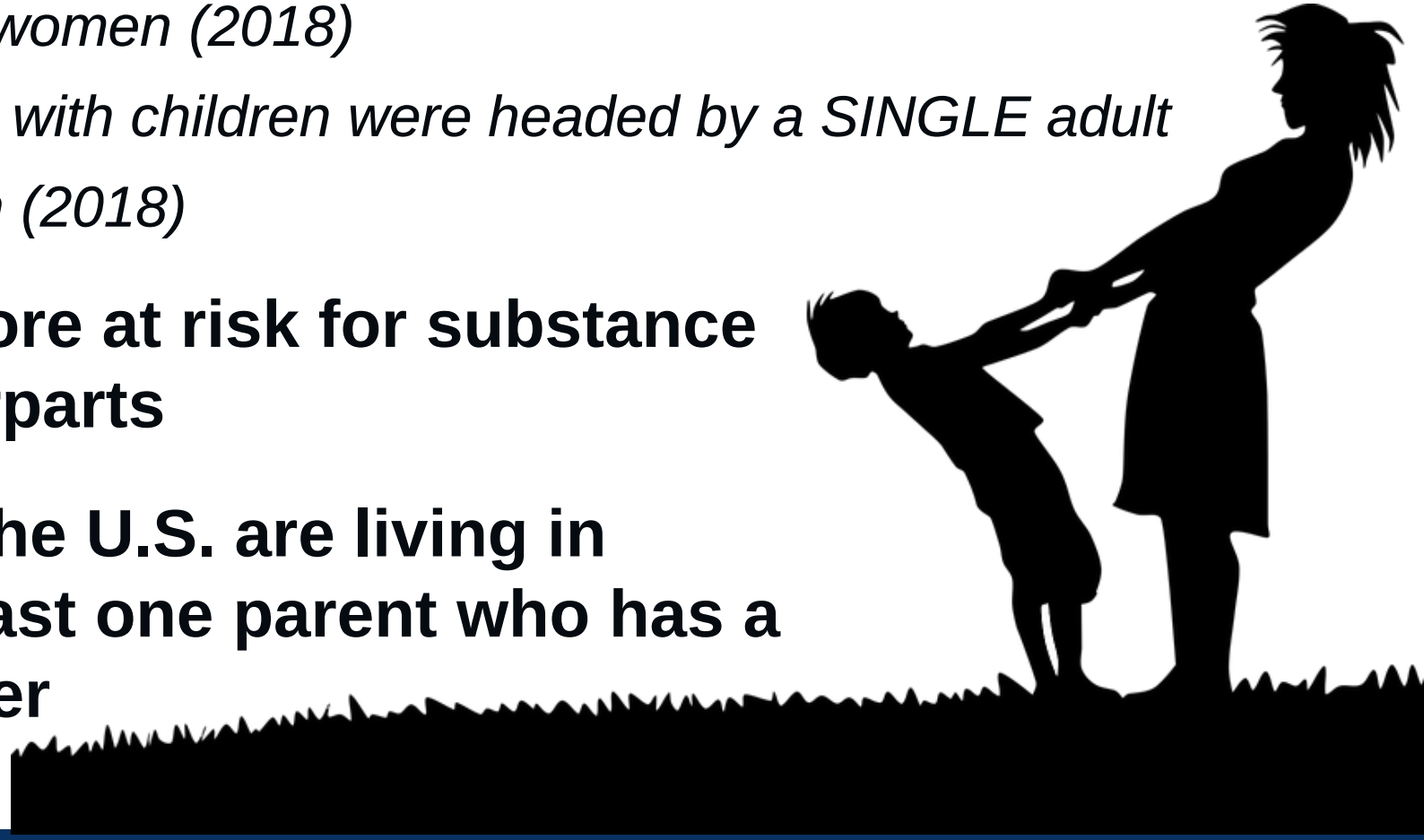
Compromised GI health	Poor oral health and tooth decay	Low energy; fatigue; poor focus	Sleep disorders; cognitive △
Metabolic changes	Impaired hormone sig/ satiety cues	Preferences for poor diet quality foods	Wt concerns; disordered eating
Irregular eating patterns	Impaired absorption/ met nutrients	MalNutrition; electrolyte imbalances	Food and housing insecurity

Dekker, 2000; Ross, 2011; Jeynes & Gibson, 2017

- **Currently, in the U.S. more than 65% SNAP participants are families with children**
  - ✓ *63% adults = non-elderly women (2018)*
  - ✓ *61% of SNAP households with children were headed by a SINGLE adult*
  - ✓*of which 91% were women (2018)*

Single mothers are more at risk for substance use than their counterparts

1:8 children (< 18) in the U.S. are living in households with at least one parent who has a substance use disorder



Nutrition and Food Security

- Female and male students who skipped breakfast on all 7 days were **48%** and **59%** more likely to **feel sad and hopeless**
- Female students who skipped breakfast on all 7 days were **2x more likely to have attempted suicide**
- Children showed cognitive, emotional and physical awareness of household food insecurity including feelings of embarrassment, worry, sadness, and anger

YRBS/HS; Michael et al., 2020, Prev. Med. Rep.

Malnutrition is defined as _____ of essential nutrients

- Deficiencies
- Excesses
- Imbalances
- Impaired utilization

Substance use is connected to all forms of malnutrition

World Health Organization. Malnutrition. (2024). Retrieved from https://www.who.int/health-topics/malnutrition#tab=tab_1

Prevalence of Poor Diet

(A study of 67 patients admitted to a public hospital detoxification unit)

- Appetite and diet quality were poor overall
  - 88% requiring nutritional guidance
  - 50% were clinically deficient in minerals or vitamins (esp. vitamin A, iron, potassium, vitamin C, respectively)
- Prevalence of mild/moderate “malnutrition” was 24% ($p < 0.05$)

Ross, Wilson, Banks, Rezannah, Daglish, 2012

Nutritious foods can support SUD recovery

- Provide adequate energy
- Replace essential nutrients
- Support physical healing processes
- Bolster immune system
- Restore and regulate hormonal signaling
- Stabilize mood
- Reduce and regulate cravings
- Support treatment outcomes

Prevalence of a Healthy Diet

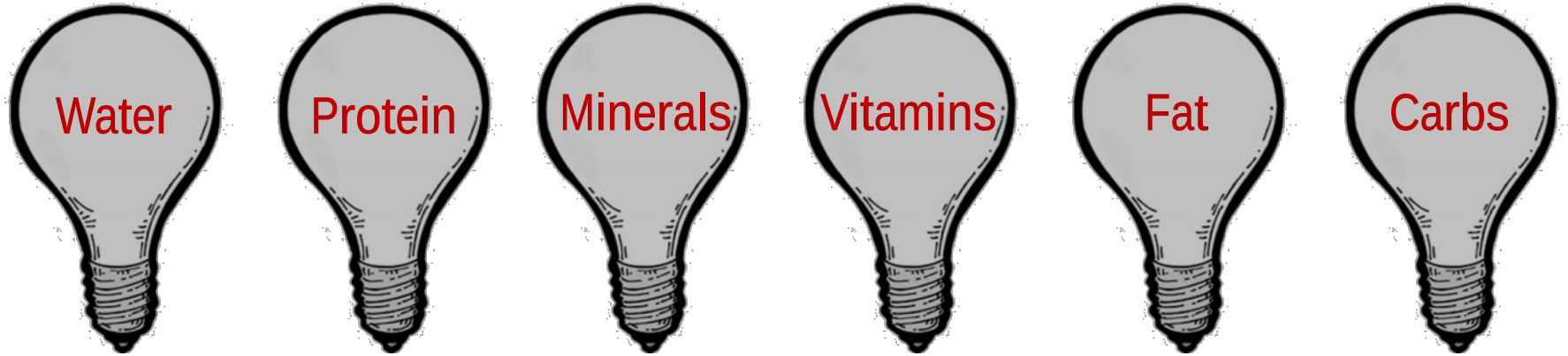
(A study of association between mental health and habitual diet - 1,046 women ages 20-93)

- Similar to common chronic diseases, significant impact of diet quality extends to high-prevalence mental illnesses
- When compared to a “western” diet (processed foods, refined grains and high sugar) “traditional” dietary patterns (fruit, meat, fish and whole grains) were associated with lower odd of major depression and anxiety disorders

Jacka, Pasco, Mykletun, et al. 2010

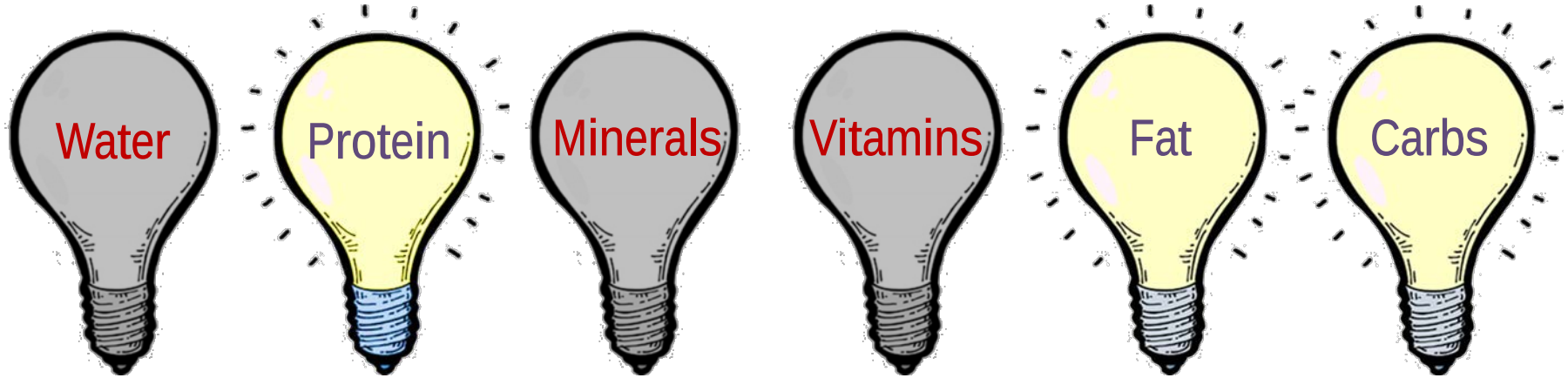
What's on the menu for those in recovery for substance use?

6 Basic Nutrients



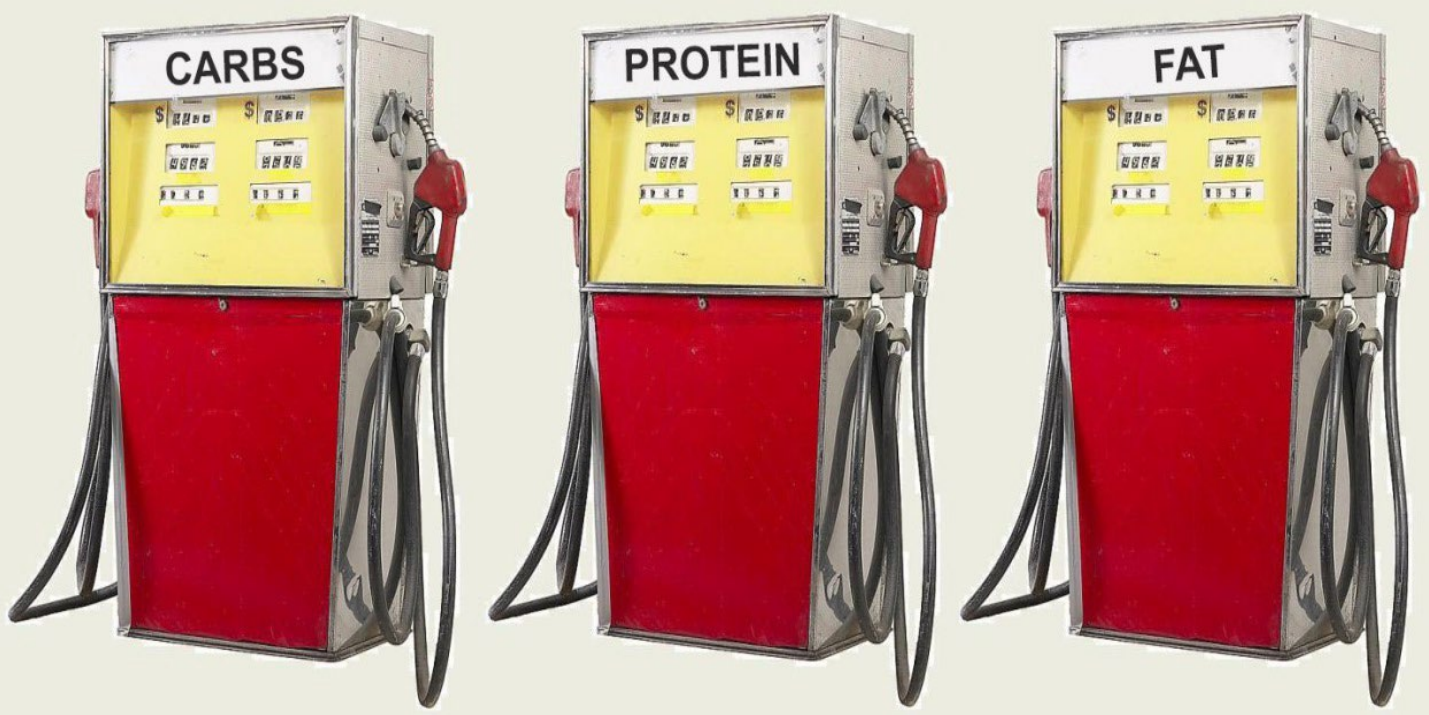
Which of these nutrients provide our bodies with energy?

Energy Nutrients

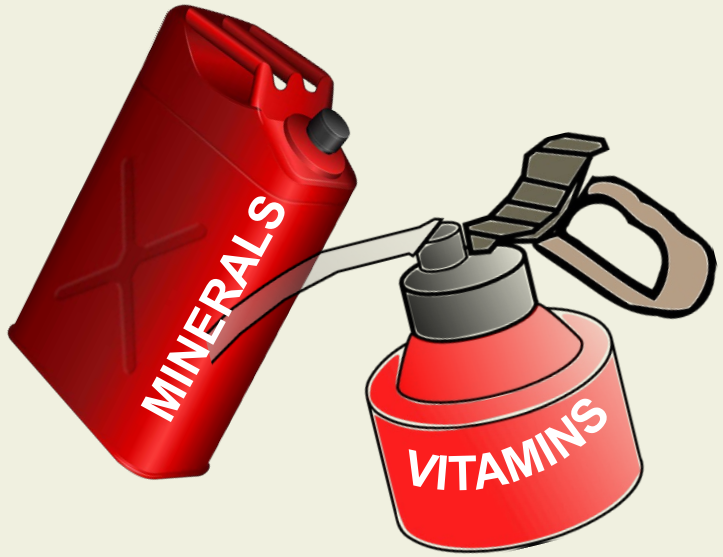


These lit nutrients provide our bodies with energy.

Nutrients



Macronutrients



Micronutrients

Protein

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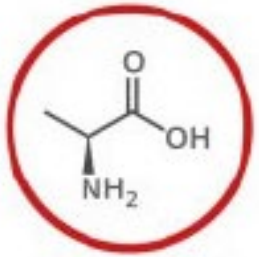
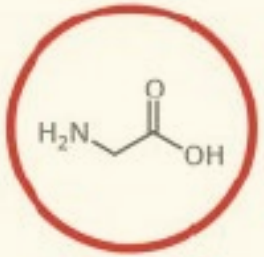
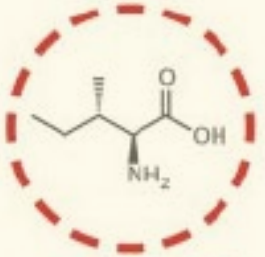
20 Common Amino Acids



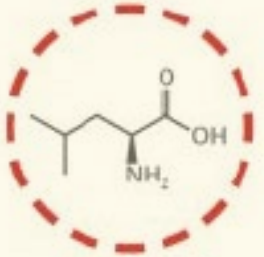
ALANINE A
Ala
GCT, GCC, GCA, GCG



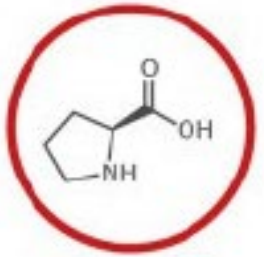
GLYCINE G
Gly
GGT, GGC, GGA, GGG



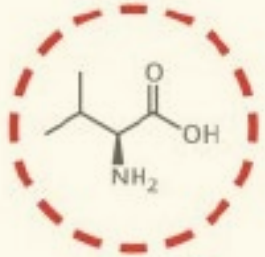
ISOLEUCINE I
Ile
ATT, ATC, ATA



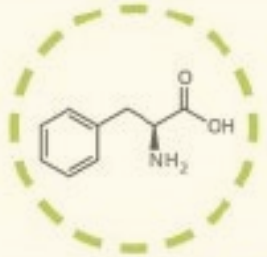
LEUCINE L
Leu
CTT, CTC, CTA, CTG, TTA, TTG



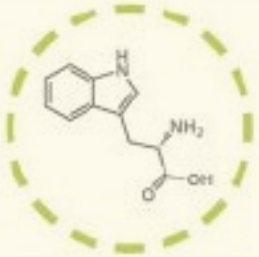
PROLINE P
Pro
CCT, CCC, CCA, CCG



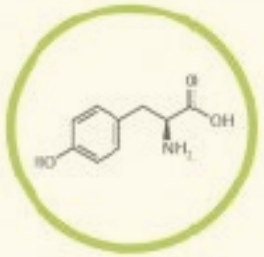
VALINE V
Val
GTT, GTC, GTA, GTG



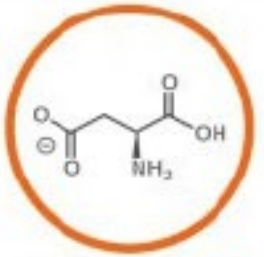
PHENYLALANINE F
Phe
TTT, TTC



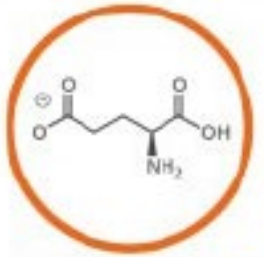
TRYPTOPHAN W
Trp
TGG



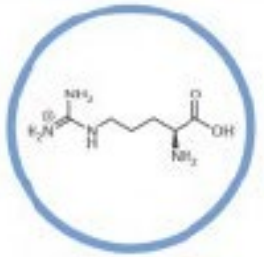
TYROSINE Y
Tyr
TAT, TAC



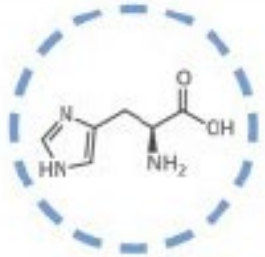
ASPARTIC ACID D
Asp
GAT, GAC



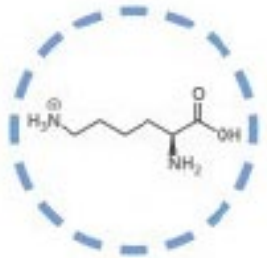
GLUTAMIC ACID E
Glu
GAA, GAG



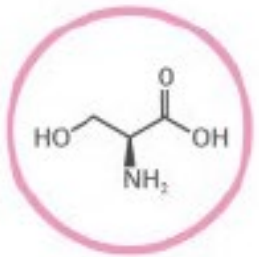
ARGININE R
Arg
CGT, CGC, CGA, CGG, AGA, AGG



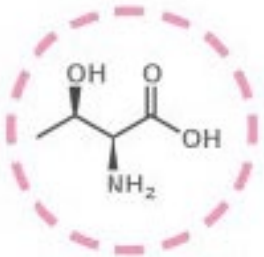
HISTIDINE H
His
CAT, CAC



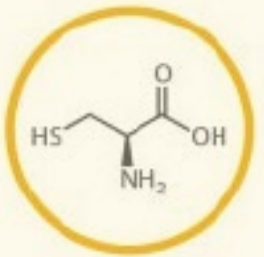
LYSINE K
Lys
AAA, AAG



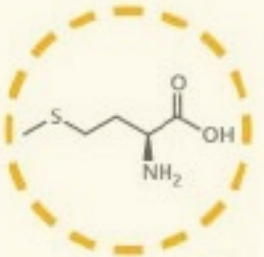
SERINE S
Ser
TCT, TCC, TCA, TCG, AGT, AGC



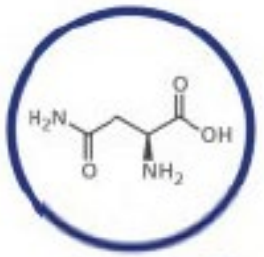
THREONINE T
Thr
ACT, ACC, ACA, ACG



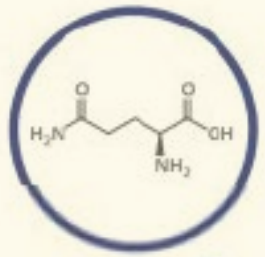
CYSTEINE C
Cys
TGT, TGC



METHIONINE M
Met
ATG



ASPARAGINE N
Asn
AAT, AAC



GLUTAMINE Q
Gln
CAA, CAG

Benefits of protein-rich foods during recovery

- Naturally increase dopamine and serotonin during recovery.
- Can reduce irritability and low mood/energy experienced during recovery
- Linked to fewer cravings for substances and high-sugar foods and beverages.
- People eating adequate amounts of protein are more likely to have a balanced diet with a variety of nutrients, fiber, vitamins, and minerals.
  - Increased energy
  - Healing
  - Tissue repair

Mahboub et al, 2021; Kris-Etherton et al, 2021

Carbohydrates

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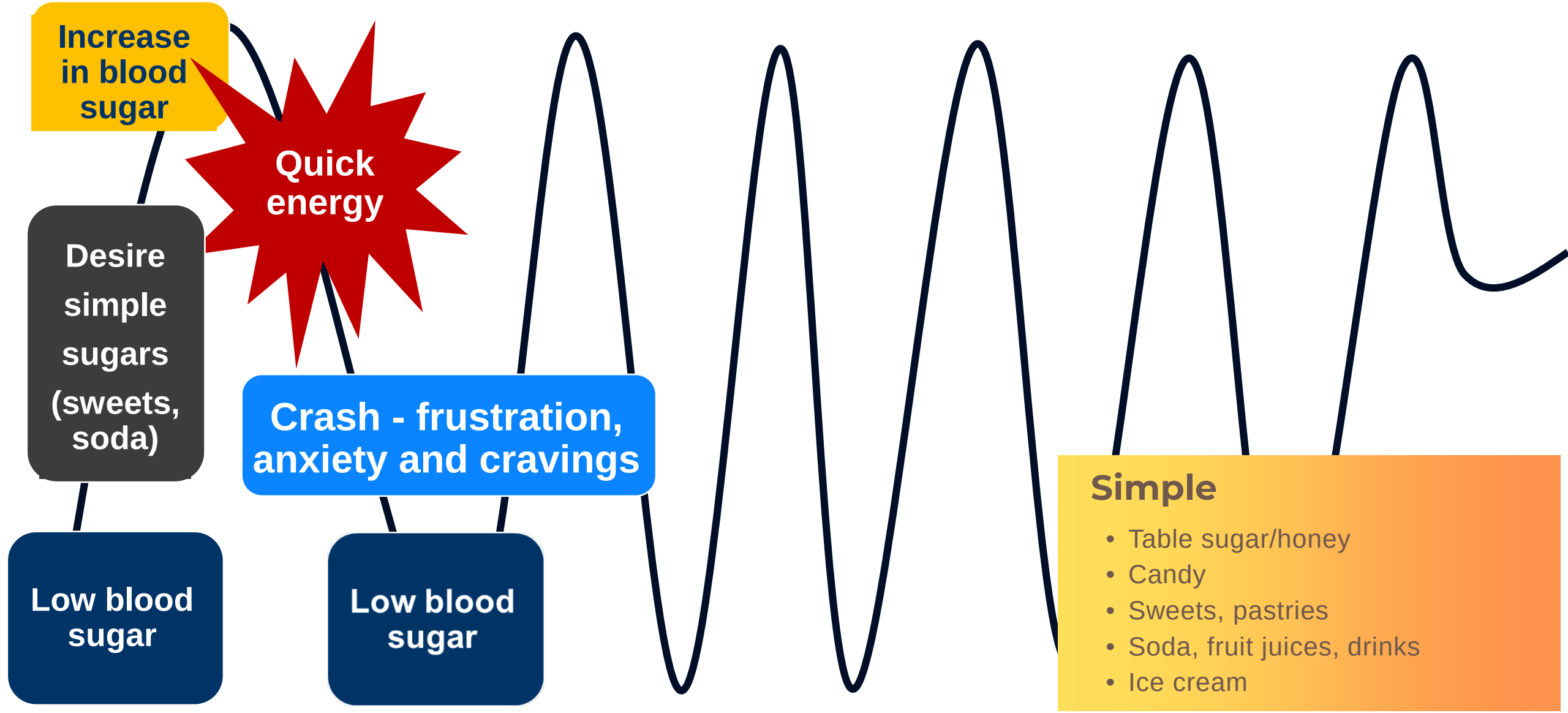


Simple

- Table sugar/honey
- Candy
- Sweets, pastries
- Soda, fruit juices, drinks
- Ice cream

Complex Carbs
(whole grains, fiber, f/v)

“Fiber Anchors”

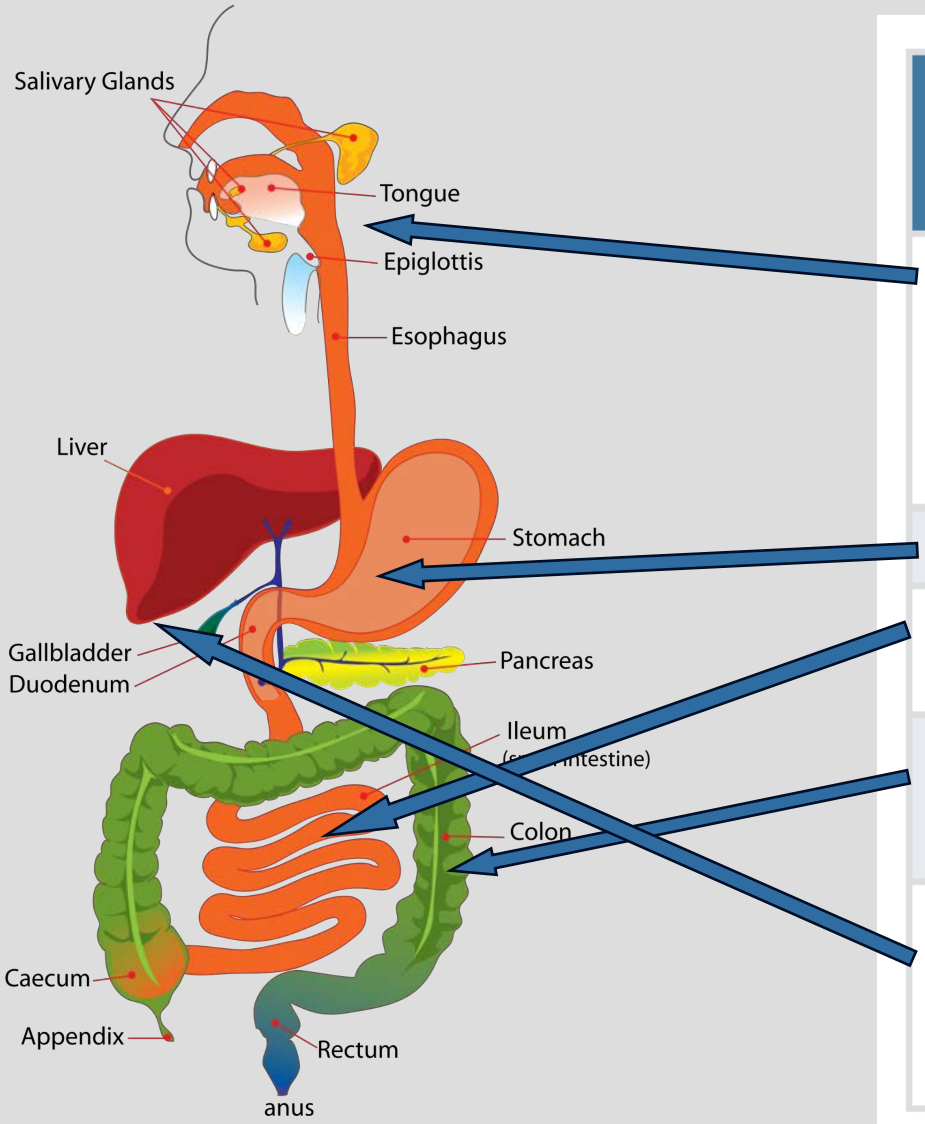
Complex

- Whole grain crackers, bread, cereal
- Oatmeal
- Popcorn
- Tortillas
- Whole wheat pasta
- Whole fruits and vegetables

Digestive health benefits of fiber for those in recovery

- Restores regular bowel movements for those who have specifically used opioids or opiates
- Reduces common symptoms associated with detoxification and early recovery
- Restores "good" bacteria in the gut

Supporting the GUT supports the BRAIN



Organ/ Tissue	Effects From Substance Use (depends on the substance)
Mouth	Increases risk of dental caries (cavities) due to sugary drinks and foods. Increases tooth pain, decay and loss that makes it difficult to bite, chew and swallow foods. Less saliva is produced that can't protect teeth or help breakdown food.
Stomach	Damages the lining, causing ulcers.
Small Intestine	Damages the lining and villi, preventing absorption of nutrients.
Large Intestines	Reduces amount of good gut bacteria in the large intestine, impairing vitamin absorption and nutrient processing.
Liver and Gallbladder	Alters the process of absorption and secretion of bile, damaging other systems in the body. Impairs the ability of the liver to clear toxins from the body. Increases risk of cirrhosis.

Gut health and substance use

- Substance use can interfere with enzyme production in the gut that helps break down food, causing people to have to change dietary patterns (e.g., may present as lactose intolerance)
- Trauma, stress and anxiety are all associated with impaired gut function
- To reduce weight, people, especially women, may resort to laxatives during recovery which are associated with undesirable changes in the gut microbiota
- Many in recovery experience digestive conditions, whether diagnosed or not
- Healing and restoring the gut will change as someone moves through detoxification into long-term recovery
- Prioritizing fiber-rich foods that include both prebiotic and probiotic sources will set up an individual with the best habits to ultimately support brain and gut health

Prebiotics plant-based fibers that diversify strains of bacteria in the gut (e.g., soldiers in the army)

- Diversifies and builds a strong immune system typically impaired or destroyed by prolonged substance use
- Produces nutrients that are crucial for brain and mental health, including biotin, vitamin B12, niacin (B3), pantothenic acid (B5), folate, vitamin D and vitamin K.
- **Good sources include both soluble and insoluble fiber such as yogurt, kefir (fermented milk drink), and FERMENTED foods such as sauerkraut and sour pickles, yogurt (live and active cultures on label).**

Probiotics are parts of food and specific nutrients that feed the good bacteria (e.g., feed and give soldiers the support they need)

- Give the gut microbes nutrients to create short-chain fatty acids that can boost mood
- **Good source include HIGH FIBER foods, such as whole grains and fruits and vegetables, including onions, garlic, artichokes, asparagus, bananas, berries, green vegetables and tomatoes.**

Fats

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Types of fat

Saturated Fats

- Mostly solid at room temperature
- Found in foods from animals and sweet foods
  - Red meat
  - Butter cheese
  - Fried foods
  - Pastries and cakes
  - Cookies and snack items
- Linked to inflammation, heart disease risk, and poor mental health

Unsaturated Fats

- Mostly liquid at room temperature
- Higher quality type of fat
- Includes both mono- and polyunsaturated fats
- Examples include omega-6 and omega-3 fatty acids
- Found in foods from plants and fish
  - Canola, soybean, olive, and vegetable oils
  - Avocados
  - Almonds, peanuts, walnuts, pine nuts, and pecans
  - Sunflower, pumpkin, flax, and chia seeds
  - Salmon, sardines, and oily fish
- Linked to lower inflammation, reduced risk of heart disease, and improved mental health

Functions of Fat (physical)

- Provides long-term energy
- Supplies essential fatty acids for signaling and structural purposes
- Gives structure to every cell in the body
- Absorbs and transports fat-soluble vitamins
- Supports temperature regulation
- Plays a role in hunger and fullness signaling
- Supports hormone signaling
- Protects organs
- Maintains healthy skin and hair
- Cell inflammation

Functions of Fat (mental health)

Primarily polyunsaturated fats (aka PUFAs):

- **Depression** (*Zhou et al, 2022; Hibbeln 1998, 2009, 2014)*
- **Dopamine** (*Sublette et al, 2014; Patan et al, 2021; Healy-Stoffel, 2018)*
- **Anxiety** (*Kiecolt-Glaser et al., 2011; Mocking et al, 2020)*
- Also, **aggression, impulsivity, suicide ideation, PTSD**
- Decreased relapse in **addiction** (cocaine, alcohol)
  (Hibbeln under review)
- Numerous systematic reviews and meta-analyses

Omega-3 Polyunsaturated Fatty Acids

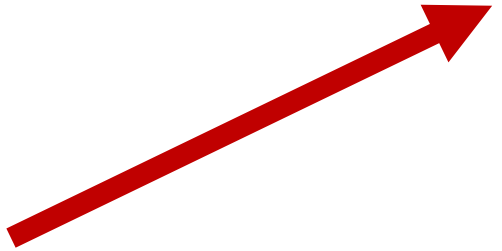
EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid)

1. Critical components of:
   - Brain cell membranes
   - Structure and function of neuronal signaling systems (dopamine pathways)
   - Regulation of **serotonin** and **dopamine** receptor function and turnover
   - Lower inflammation
2. Influence dopamine function in:
   - The **prefrontal cortex** (attention, motivation, decision-making)
   - The **nucleus accumbens** (reward and pleasure)
   - The **striatum** (motor control and habit formation)

These are the same regions affected in conditions linked to dopaminergic dysregulation like **ADHD, depression, PTSD, and addiction**

Omega 6: Omega 3 = Ideal 1:1 – 4:1

Higher levels of Omega 6s
(e.g., high ultra processed foods)



American Diet = 25:1

Lower levels of Omega 3's
(e.g., low fish intake)


FIRE & FLAVOR


Albacore
Chunk Light
Tuna
in Water
MSC

Micronutrients

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Micronutrients

- These are vitamins and minerals
- Needed in small amounts - "*micro*"
- Do not provide direct energy
- Essential nutrients found in food and beverages
- Support healthy development, disease prevention, optimal metabolism, and overall physical and mental wellbeing

The Role of Micronutrients during Recovery

- Physical healing, repair, mood regulation, and mental health
- Zinc and magnesium reduce the risk of anxiety
- Iron, folate, vitamins B6 and B12 may protect against:
  - Poor mental health
  - Depression
  - Fatigue
  - Poor attention
  - Difficulty sleeping
- B6, zinc, and chromium support the natural production of serotonin
- B complex vitamins support energy and metabolism

Kris-Etherton et al, 2021; Whatnall et al, 2021; Du J, Zhu et al, 2016; Jeynes and Gibson, 2017

Strategies for Adding More Micronutrients to the Diet

1. Add fruits and vegetables to the diet in a variety of ways

Strategies for Adding More Micronutrients to the Diet

1. Add fruits and vegetables to the diet in a variety of ways
2. Eat the rainbow

Keeps bladder healthy

Promotes good vision

Keeps bones and teeth strong

Keeps bladder healthy

Lowers risk of cancer

Keeps memory strong

Supports immune system

Lowers risk of cancer

Keeps memory strong

Lowers blood pressure

Keeps heart healthy

Keeps skin healthy

Clots blood

Stay healthy as you age

Improves blood cholesterol levels

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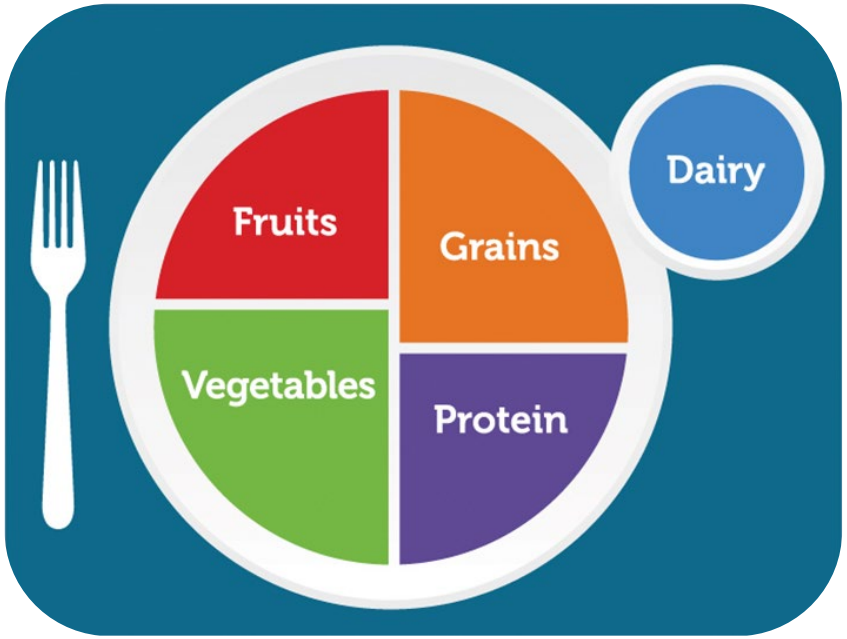
Strategies for Adding More Micronutrients to the Diet

1. Add fruits and vegetables to the diet in a variety of ways
2. Eat the rainbow
3. Use the nutrition facts label for nutrient quality
4. Choose foods with little nutrition less often
5. Build cooking skills
6. Promote family mealtimes and routine
7. Keep healthy snacks readily available
8. Create a plate of 5 balanced food groups



e.g. fruit (2 cups)

Examples of 1 cup equivalents


1 piece of fruit the size of a baseball


1 cup of canned fruit


2 kiwi


1 medium banana


1/2 cup of dried fruit


1 cup frozen berries


1 cup of grapes


2 plums

Are you getting enough?

Water

Dehydration is common in people who use substances and in recovery

Dehydration =

A loss of fluids from the body that may cause negative health effects and mineral and electrolyte imbalances

Substances and side effects

Detoxification

MAT and side effects

Caffeine, sodas, diets

Lifestyle factors

Hydration/Water

- Helps the body regulate temperature
- Supports brain function, cognition, and concentration
- Properly removes waste from the body (e.g., urine, bowel movements)
- Helps absorption of nutrients and prescribed medications
- Moves food through the gut appropriately
- Allows fiber to function properly in the gut
- Lubricates joints and supports movement
- Protects important organs like the spinal cord

Increase Water Intake

- ✓Eat fresh fruits, vegetables and other foods with high water content
- ✓Drink water, other decaffeinated beverages (w/ little to no added sugar)
- ✓Flavor water by adding fruit (fresh or frozen)
- ✓Add extra water to juice or juice bevera
- ✓Drink beverages with electrolytes
- ✓Drink herbal teas (no caffeine)
- ✓Carry water bottles, drink regularly
- ✓Avoid energy drinks

Vitamins & Minerals

Carbohydrates

Quick fuel source

Fiber feeds microbiome, decrease constipation

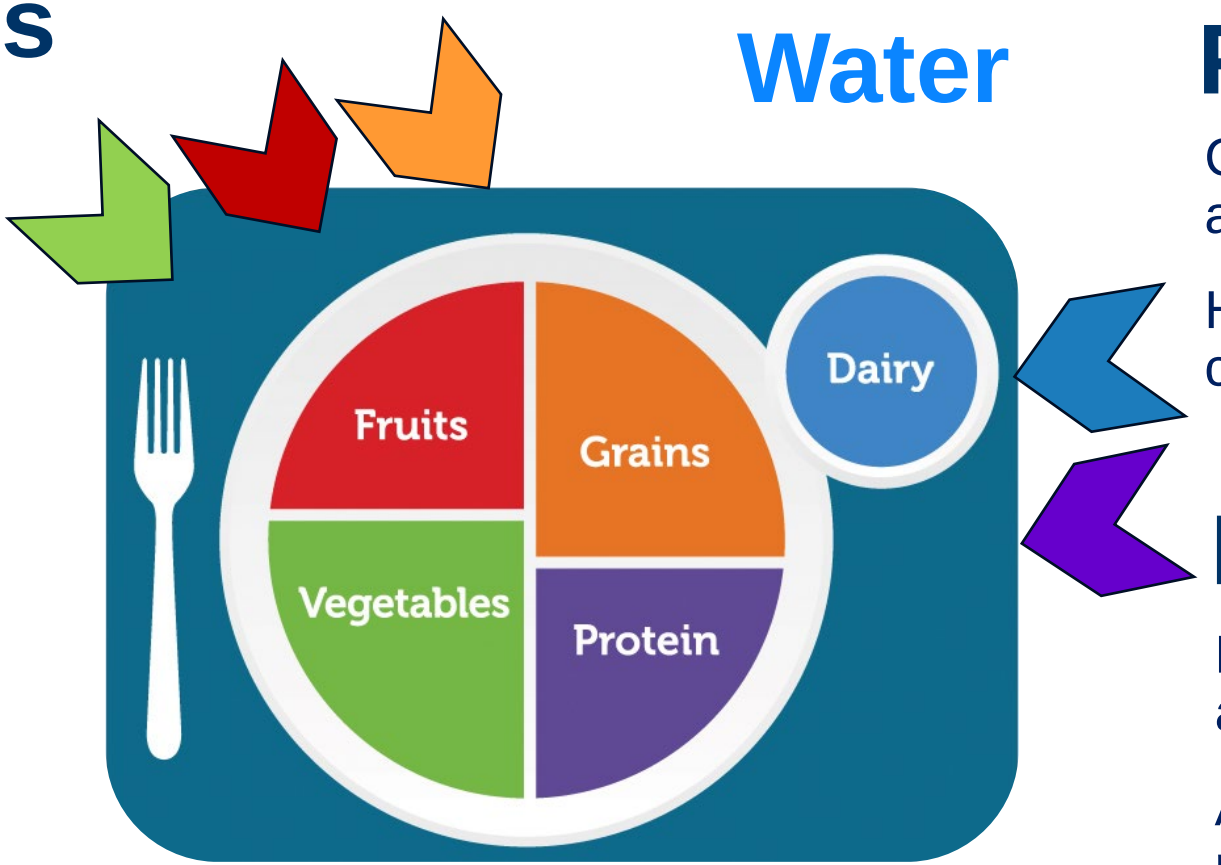
Produces serotonin (happy, stable mood)

Affects sleep, irritability, depression (low serotonin)

Brain needs to function

Complex CHO critical to reduce cravings

Water



Protein

Chemicals in the brain are protein-based

Helps with energy and concentration

Fat

Low levels neg affect mood and depressive symptoms

Anti-inflammatory properties-decrease stress

Physical Activity

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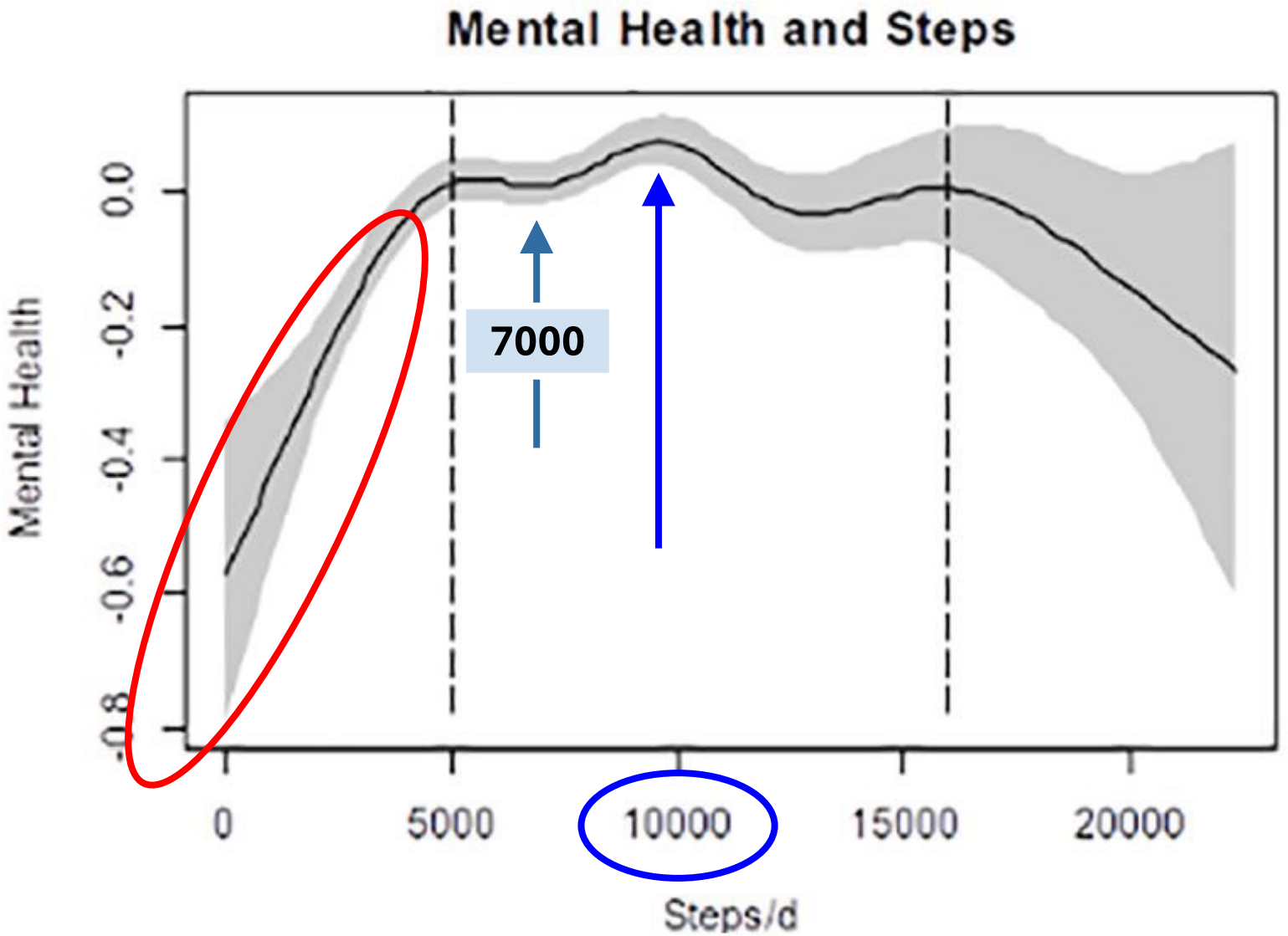
EXERCISE can support recovery

Dolezal et al., 2014	↑ **EXERCISE** VO_2 max, strength; body mass, BF, BMI
Haglund et al., 2015 Rawson et al. 2015a Rawson et al., 2015b	↓ **DEPRESSION** ↓ **DEPRESSION/ANXIETY** ↓ **METHAMPHETAMINE USE** 1-, 3-, and 6-months post treatment
Robertson et al, 2016	↑ **DOPAMINE** striatal D2/D3 receptor availability
Salem et al, 2022	↓ **CRAVINGS & METHAMPHETAMINE USE** after discharge
Wang et al., 2015	↓ **CRAVING** during, immediately following, and 50 min after the exercise session
Wang et al., 2016	↑ **INHIBITORY CONTROL**
Wang et al., 2017	↓ **CRAVING** ↑ **INHIBITORY CONTROL** more accuracy
Zhang et al., 2018	↑ **PROCESSING SPEED**
Xu et al., 2022	↑ **QOL /MENTAL /PHYSICAL FITNESS** social, mental and physical health
Zhu et al., 2016	↑ **QUALITY OF LIFE (QOL) /BALANCE /BODY FAT**



Dose-Response Exercise for Mental Health

Bernard et al, 2018

Minimize time in bed

Noise

Sugary, spicy foods

Meditate, pray, journal

Temp < 72º

Shower, bedding

Darkness, LEDs, Mask, Screens

Caffeine, nicotine, water

Routine

“creating an environment . . . that reflects an understanding of the realities of women’s lives and addresses the issues of women.”

“gender-responsive practice can improve outcomes for women by considering their histories, behaviors, and life circumstances.”

Bloom, Owen & Covington, 2003

Recovery Challenges for Women & Gender-Responsive Approaches

Women & Substance Use

- Females ***use different drugs*** than males
- Females ***respond differently*** to drugs than males
- Females use drugs ***for different reasons*** than males
- Females ***relapse for different reasons*** than males

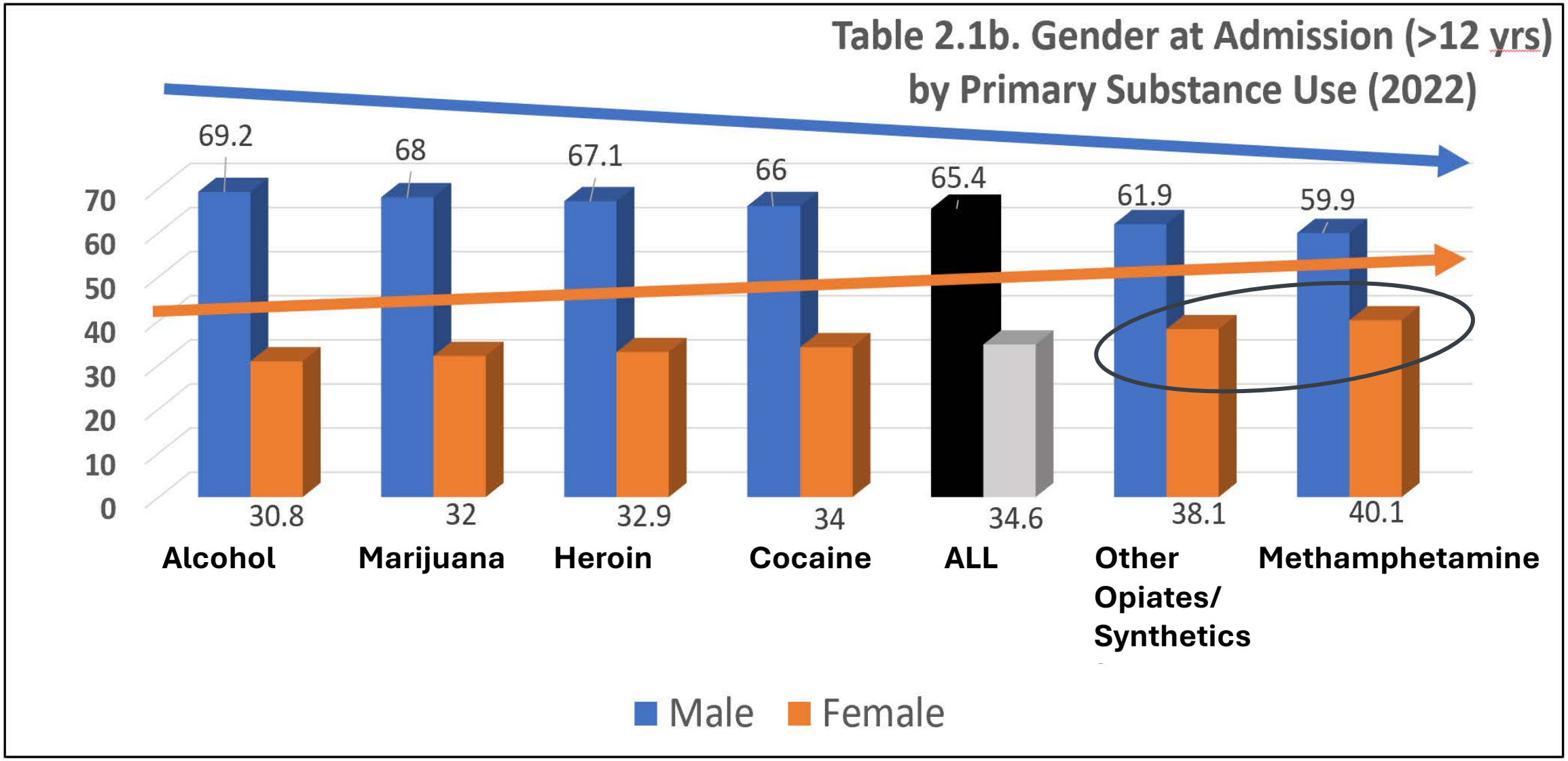
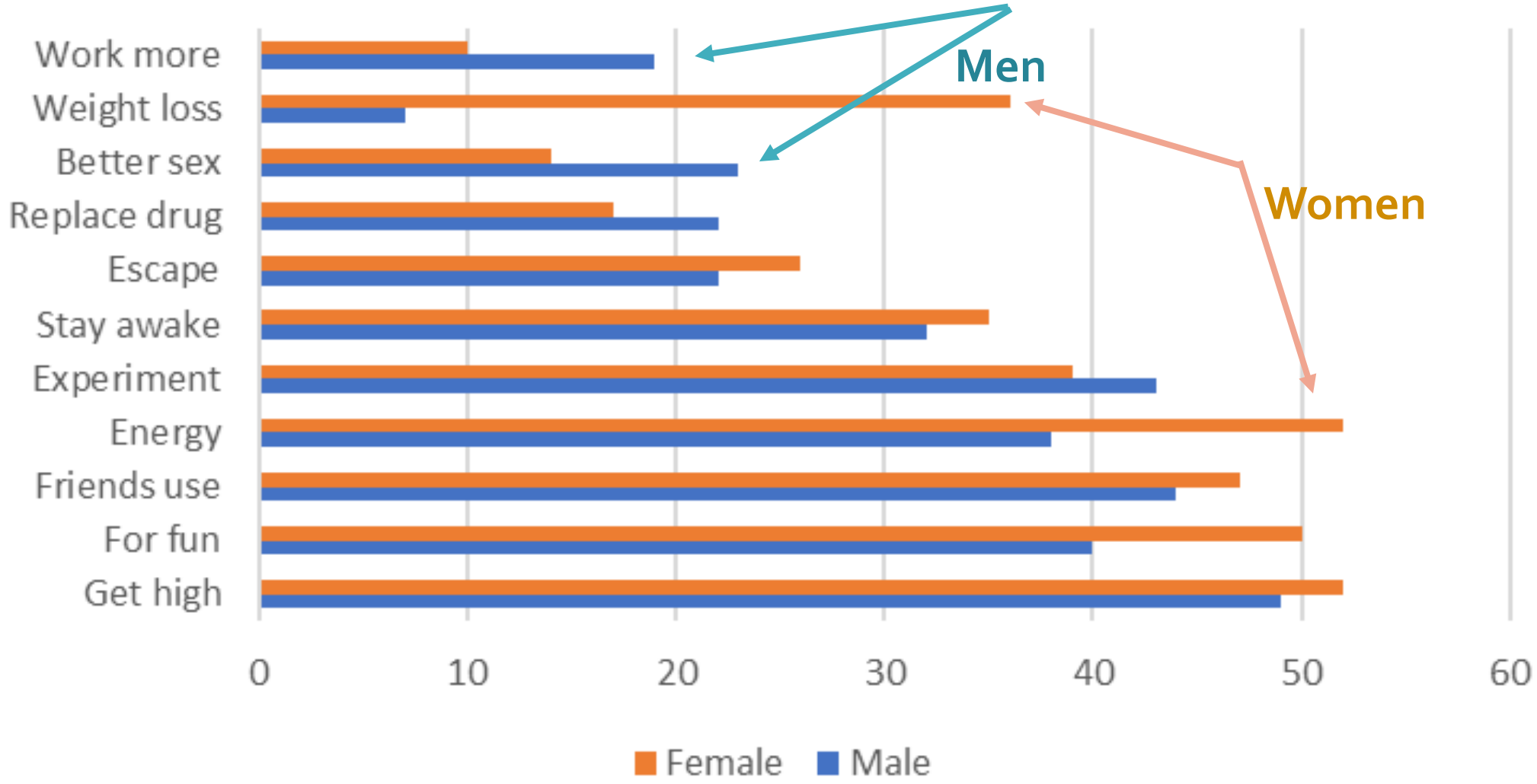


Table 2.1b. Gender at Admission (>12 yrs)
by Primary Substance Use (2022)
69.2
68
67.1
66
65.4
61.9
59.9
70
60
50
40
30
20
10
0
30.8
32
32.9
34
34.6
38.1
40.1
Alcohol
Marijuana
Heroin
Cocaine
ALL
Other Opiates/ Synthetics
Methamphetamine
Male
Female

Motivators for Methamphetamine Use



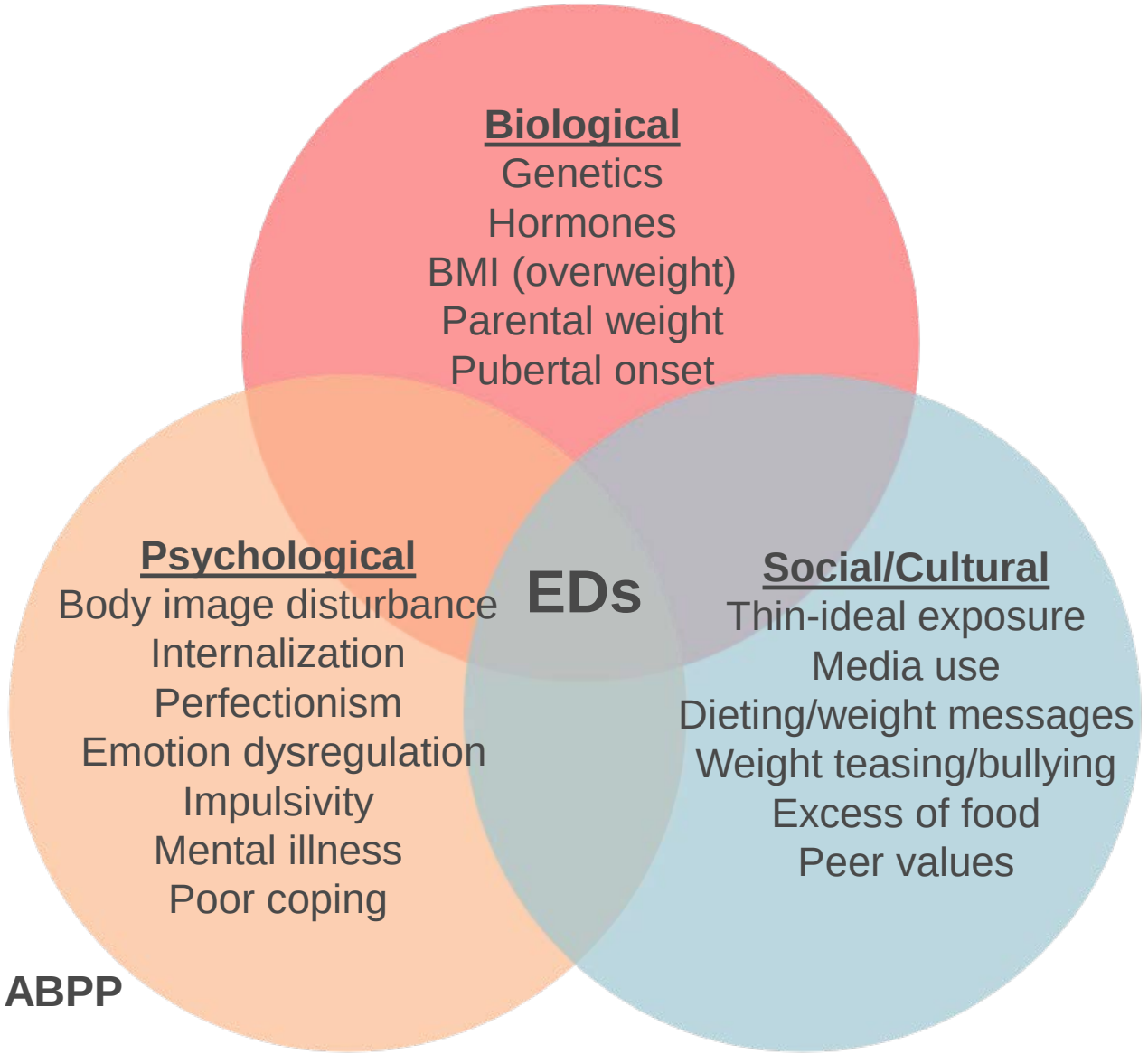
Brecht, 2004

Prevalence of Comorbid ED & SUD

- Eating Disorders: Up to 50% report problematic substance use (5x national average)
- Substance Use Disorder: Up to 35% report eating pathology (11x national average)

References: Bahji et al., 2019; Hambleton et al., 2022; Hudson et al., 2007; Kowalewska, et al., 2024; MacNeil, Gorman & Maier, 2025; Robinson et al., 2023

Development of Eating Pathology



Acknowledgement: Dr. Cortney Warren, PhD, ABPP

References: Engel, 1977; McCabe et al., 2023; National Academy of Sciences, 2019

Warning Signs of Comorbid ED/SUD

- SUD History and/or ED History
- Body Image Disturbance
- Low weight, weight fluctuation, rapid weight loss or gain
- Extreme eating/body practices with substance use

References: NEDA, NIH

Dieting is self-medication

- Fad diets, dieting products, dieting supplements
- Restrictive eating, skipping meals, fasting
- Orthorexia, “clean” eating, cleansing
- Energy products, energy drinks and caffeine

These can alter metabolism and lead to further weight gain as well as mental health issues

Behavioral Effects of Dieting

- Body dissatisfaction
- Low self-esteem and insecurity
- Mood fluctuations
- Interpersonal and affective problems
- Weight cycling
- Difficulty discriminating between and regulating moods
- Feelings of ineffectiveness
- Perfectionism
- Distrust in interpersonal relationships
- Need for self-control compounded by poor impulse control skills

Varma and Pawar 2015, Ackard 2001, Lowe 2013

Dangers of Dieting, Supplements and Diet Pills

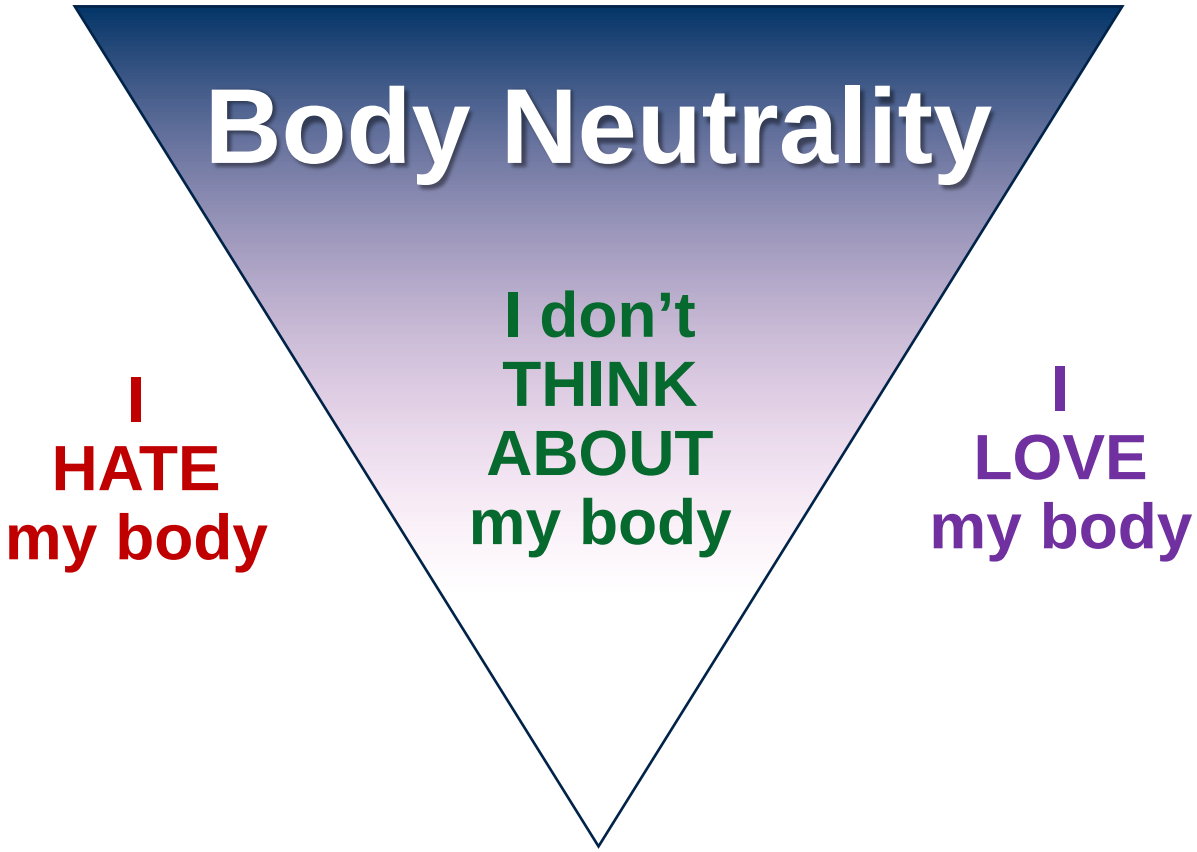
- Dietary supplement companies and many dietary ingredients are not evaluated nor do they need approval FDA
- Manufacturers are “encouraged” to report any serious consumer reported health problems (DSHEA)
- It is not until a safety issue is suspected or reported that the FDA investigates and removes a product from the market

All seals verify product quality and purity

These also free of sports banned ingredients

What message would you promote for clients who struggle with body dissatisfaction?

Body Neutrality



The goal isn't to love your body every single day
It's to be free of thinking of how it looks every single day

Treatments & Interventions

- Range of treatments for ED
  - Family-based, CBT, DBT, dynamic, nutritional, pharmacology, 12-step
  - Inpatient, PH, outpatient
- Common interventions suggested for ED/SUD

  Focus on health—not weight and appearance
  - Psychoeducation (nutrition, eating, body image, weight)
  - Coping strategies (relaxation, impulse control)
  - Emotion regulation (e.g., mindfulness, distress tolerance)
  - Body acceptance (e.g., media literacy, positive body-talk)
  - Social support (e.g., 12-step)

National Eating Disorder Association
nationaleatingdisorders.org

Eating Disorder Referral and Information Center
edreferral.com

Acknowledgement: Dr. Cortney Warren, PhD, ABPP

Claudat et al., 2020; Fairburn, Cooper & Shafran, 2003; Narvaez-Camargo et al., 2025; Solmi et al., 2024

Assessments and Screenings

Binge Eating Scale (BES)

Assesses the severity of binge eating

BEDS-7; Takeda

Eating Disorder Examination Questionnaire (EDE-Q 6.0)

Assesses the range, frequency, and severity of disordered eating behaviors and attitudes

Fairburn & Belgin, 2008

Sociocultural Attitudes Towards Appearance (SATAQ 4R)

Assesses internalization and social pressures

Heinberg, Thompson, & Stormer, 1995

Intuitive Eating Scale (IES-2)

Assesses level of intuitive eating

Hawks, Merrill, Madanat, 2004

Nevada Adult Nutrition Survey

Assesses healthy food choices, food resources and nutrition behaviors

Nevada Adult Physical Activity Survey

Assesses physical activity behaviors and weight as a trigger for relapse

Base-10

Forbush, 2022

(Modified SUD) Base-10

Group Nutrition Education Classes Are Effective

Nutrition education, particularly with a substance use treatment focus, provided within a group setting is associated with positive substance use treatment outcomes and should be included as a component of substance use treatment.

Grant et al., 2004

Healthy Steps to Freedom

Health, Nutrition and Physical Activity

Weight Concerns

Disordered Eating

Poor Body image

Grant et al., 2004

Healthy Steps to Freedom

CURRICULUM COMPONENTS

PowerPoint Slides

Visual aids to accompany lesson plans

Self Reflection Activity

Promote personal insight and apply lessons

Lesson Plans

Guides discussion alongside the PowerPoint presentation

Lesson Handout

Summarizes core content

Supplemental Handouts

Optional resources to deepen understanding

Journal of Nutrition Education and Behavior *Research Article*

Impact of a Program to Improve Nutrition, Body Image, and Health-Related Behaviors for Women in Treatment for Substance Use

Anne R. Lindsay, PhD[1]; Cortney S. Warren, PhD, ABPP[2,3]; Nichol Heleman[1]; Najat Elgeberi, PhD[1]

ABSTRACT

Objective: To assess whether a nutrition and body image program improved healthy food consumption, physical activity, eating pathology, and psychosocial factors for women in recovery from substance use.

Design: Secondary data, pretest-posttest.

Setting: In-person intervention conducted in 6 substance use recovery centers.

Participants: Six hundred and seven adult women.

Intervention: Ten-week, 90-minute weekly intervention led by trained instructors.

Main Outcome Measures: Self-report demographics, drug-use history, general nutrition and health behaviors, thin-ideal internalization, body dissatisfaction, eating pathology, binge eating, and intuitive eating. Researchers collected anthropometric/physiological measures.

Analysis: Paired t tests using Cohen's d tested the differences between pretest and posttest total scores on all outcome measures; univariate analysis of variance tests were used for pretest participant comparison.

Results: Participants demonstrated statistically significant ($P < 0.05$) improvements in general nutrition, physical activity, thin-ideal internalization, body dissatisfaction, eating pathology, binge eating, and intuitive eating behaviors compared with pretest, with effect sizes ranging from small to large (d = 0.11–0.83). Participants also reported decreases in weight-related concerns.

Conclusions and Implications: Healthy eating and physical activity significantly increased, whereas thin-ideal internalization, body dissatisfaction, and disordered eating symptoms significantly decreased. Results

Compared with Pre-test –

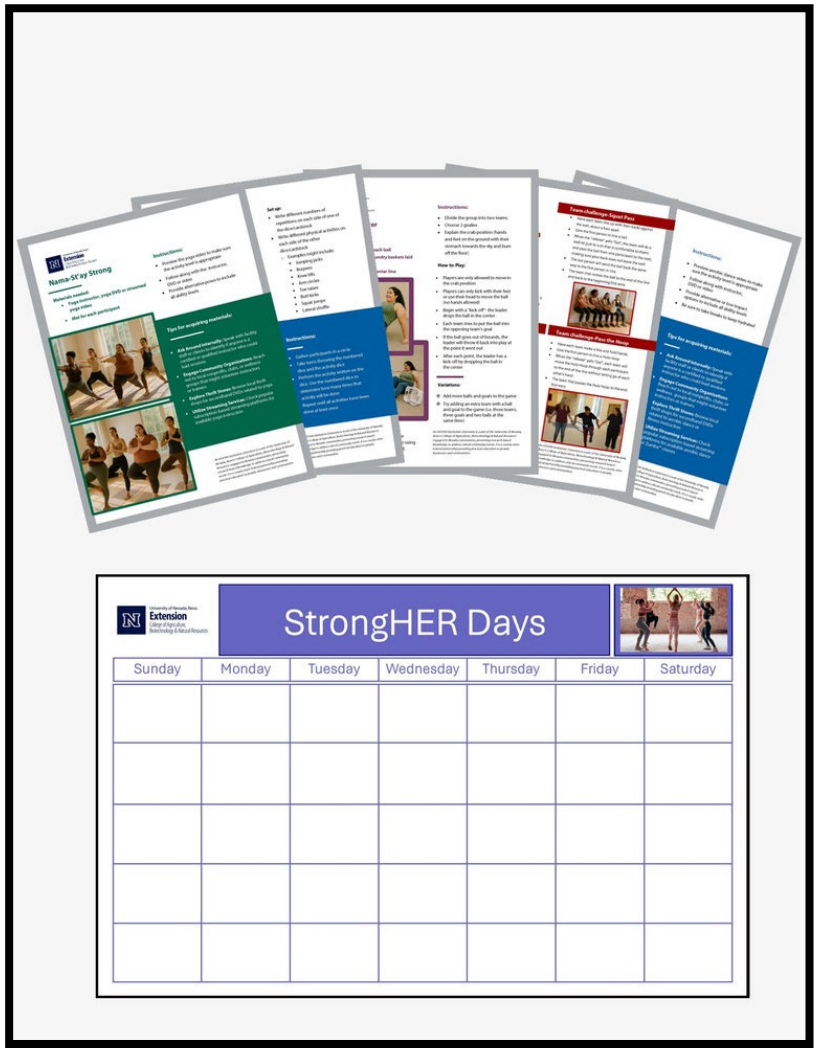
- **General nutrition, physical activity and intuitive eating significantly increased**
- **Thin- ideal internalization, body dissatisfaction, binge eating, and disordered eating symptoms and weight-related concerns significantly decreased**

All significant at $P < 0.05$
Effect sizes ranged from small to large (d=0.11–0.83)

1. Healthy Message

2. Health Challenges

3. Activity Calendars



4. Staff Health Briefs

University of Nevada Reno, Extension

Center for the Application of Substance Abuse Technologies (CASAT)

Pacific Southwest Rural Opioid Technical Assistance Region 9 (ROTA-R)

Curriculum Infusion Package (for Academic Courses)

Nutrition and Recovery Fact Sheets

Nutrition and Recovery Webinars

Women and Stimulants Online Learning Course

Completed in Early Summer 2026

UNR Extension

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Sustainable Recovery
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