



ARIZONA CENTER FOR  
**Integrative Medicine**

# **The Evolution of Integrative Medical Education**

**Victoria Maizes MD**

**Executive Director, Andrew Weil Center for Integrative Medicine**

**Andrew Weil Endowed Chair in Integrative Medicine**

**Professor of Clinical Medicine, Family Medicine,  
and Public Health**

**University of Arizona**



# Integrative Medicine Defined

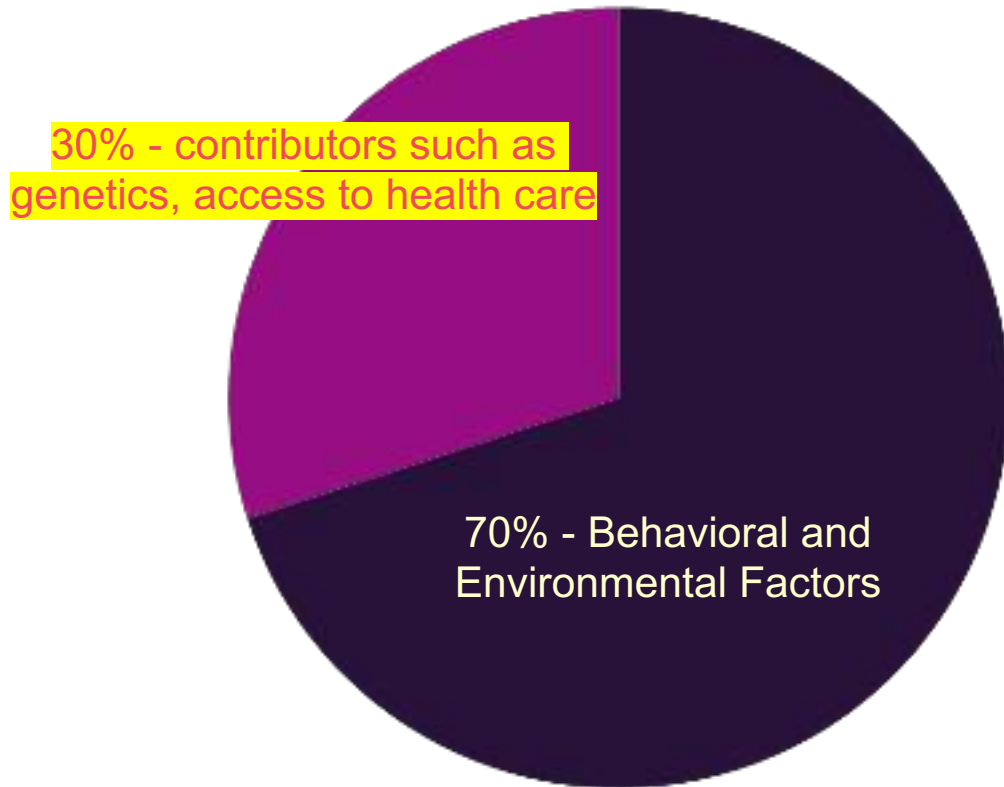
Healing-oriented medicine that takes account of the whole person including all aspects of lifestyle. It emphasizes the therapeutic relationship between practitioner and patient, is informed by evidence, and makes use of all appropriate therapies.

# **Myths in Medicine**

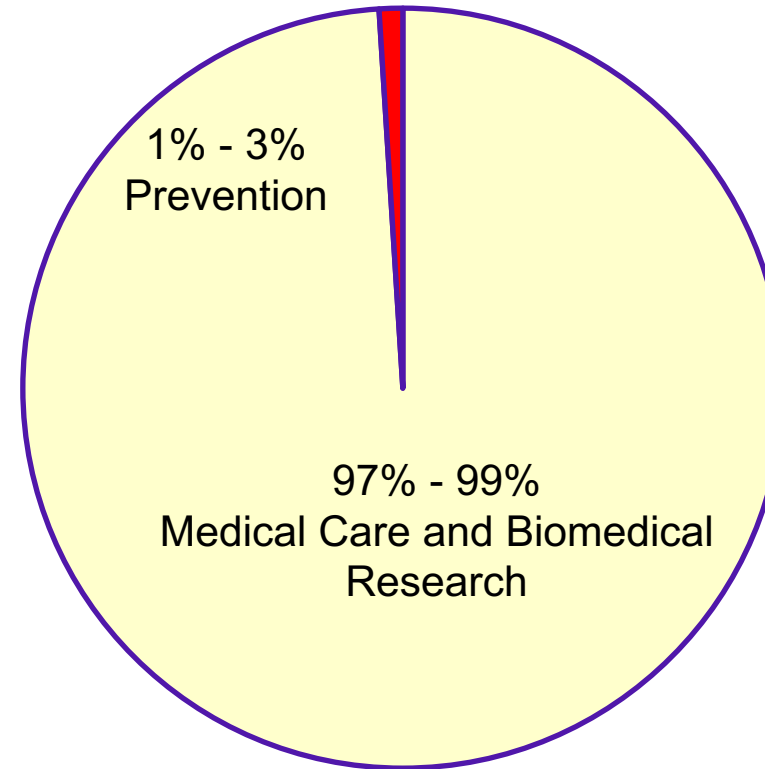
**Prevention  
and health promotion  
are major foci of  
medical education and practice**

# The U.S. spends little on prevention, even though 70% of deaths are due to behavioral and environmental factors

Causes of Avoidable Mortality



U.S. Investment in Prevention



Source: Institute of Medicine, Health Affairs, Journal of American Medical Association (JAMA)

- In 2013, dietary factors were identified as the single most significant risk factor for disability and premature death in the US
- How much of a cardiologist's curriculum is dedicated to nutrition education?

Murray CJ, Abraham J, Ali MK, et al. The state of US health, 1990- 2010: burden of diseases, injuries, and risk factors. *JAMA*. 2013; 310: 591-608.

Devries S, et al. A Deficiency of Nutrition Education in Medical Training. *American Journal of Medicine*. 2014; 127(9):804-6.





Change all  
your bad  
habits  
today

OK



**What Do You Want  
Your Health  
For?**

The University of Arizona  
Andrew Weil Center for Integrative Medicine  
Mission

“leading the **transformation of health care** by training a new generation of **health professionals** and by empowering individuals and communities to **optimize health and wellbeing** through evidence-based, sustainable, integrative approaches.”

# AWCIM Educational Programs

Medical School

Residency

Fellowship

Inter-Professional

Public



Distinction Tract  
Elective Rotation



Integrative Medicine  
in Residency

Integrative Family  
Medicine

Elective Rotation



Integrative Medicine  
Fellowship

Alumni Programs



Integrative Health & Lifestyle

Integrative Health Coaching

National Center for Integrative  
Primary Healthcare

Integrative Medicine Summit  
Dates: May 5-7, 2021



My Wellness Coach

Can HEAL

Body of Wonder

Wellness and Lifestyle

# Myth?

Integrative medicine is about incorporating  
ancient systems of medicine into  
conventional medicine

Integrative medicine is also about  
including new paradigms:

**Microbiome research**

**Impact of environmental toxicity**

**The importance of sleep**

**Genomics**

# The Integrative Medicine Fellowship Curriculum



- Philosophical foundations
- Lifestyle
- Whole Systems and modalities
  - Ayurveda
  - Traditional Chinese Medicine
  - Naturopathy
  - Homeopathy
- Emerging topics
- Research education
- Leadership
- Personal reflection
- Clinical integration

# Fellowship in Integrative Medicine

- Two-year, 1000-hour program
- Primarily taught online using faculty-mentored, interactive, evidence-based education
- Three residential weeks
  - Building community
  - Experiential learning
  - Creating a container for change

Maizes V, et al. Integrative Medical Education: Development and Implementation of a Comprehensive Curriculum at the University of Arizona. *Academic Medicine*. 2002;(77)9:851-860.

Craigie F, et al. Teaching Spirituality on the Web: Experiences from the University of Arizona Associate Fellowship in Integrative Medicine. *Explore! For the Professional*. 2007;16(2):56-62.



# Fellowship Alumni

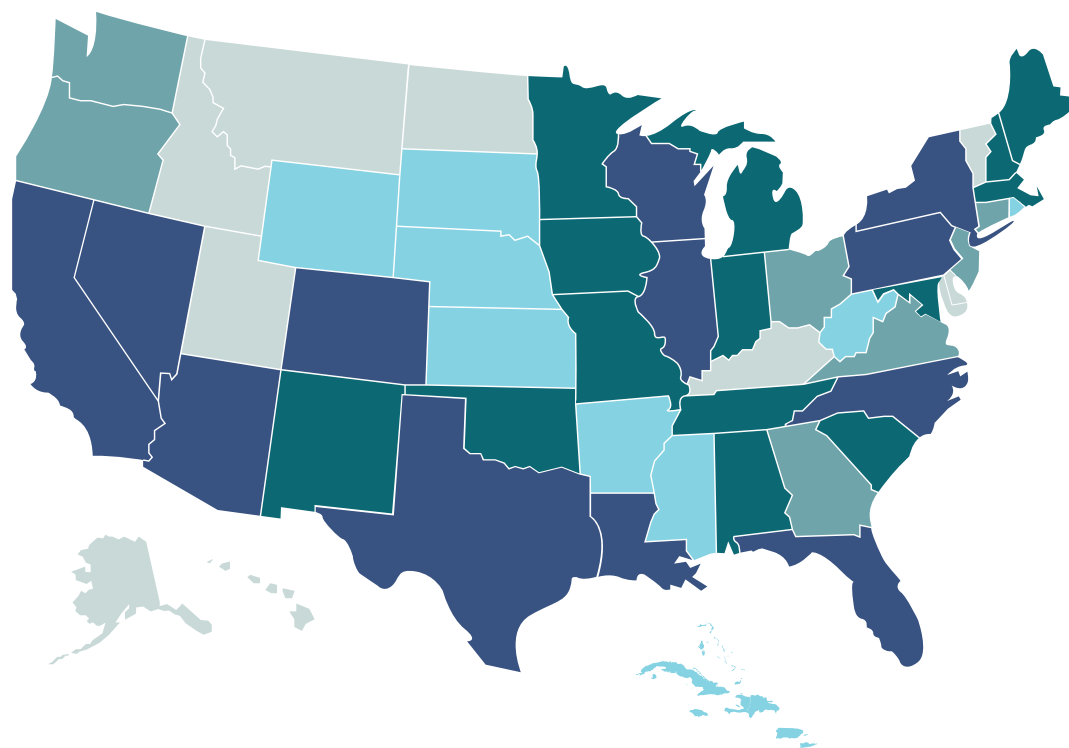
1-5 Alumni

6-10 Alumni

11-30 Alumni

31-50 Alumni

51+ Alumni



## 1-5 Alumni

Arkansas  
District of Columbia  
Kansas  
Mississippi  
Nebraska  
Puerto Rico  
Rhode Island  
South Dakota  
U.S. Virgin Islands  
West Virginia  
Wyoming

## 6-10 Alumni

Alaska  
Delaware  
Hawaii  
Idaho  
Kentucky  
Louisiana  
Montana  
North Dakota  
Vermont

## 11-30 Alumni

Alabama  
Indiana  
Iowa  
New Mexico  
Maine  
Maryland  
Massachusetts  
Missouri  
New Hampshire  
Oklahoma  
Utah  
South Carolina  
Tennessee

## 31-50 Alumni

Connecticut  
Georgia  
Michigan  
Minnesota  
New Jersey  
Ohio  
Oregon  
Virginia  
Washington

## 51+ Alumni

Arizona  
California  
Colorado  
Florida  
Illinois  
Nevada  
North Carolina  
New York  
Pennsylvania  
Texas  
Wisconsin

Australia, Bermuda, Brazil, Canada, China, Colombia, Denmark, France, Great Britain, Germany, Ireland, Israel, Italy, Japan, Martinique, Mexico, New Zealand, Nigeria, Norway, Pakistan, Palau, Philippines, Poland, Qatar, Saudi Arabia, South Korea, Switzerland, Taiwan, Thailand, The Netherlands, Turkey, United Arab Emirates, United Kingdom

**128** INTERNATIONAL  
FELLOWSHIP ALUMNI

**1,843** Fellowship Alumni

**Myth?**

“There is no evidence for  
Integrative Medicine”

## 8. METABOLIC SYNDROME: NUTRITION

## 9. Metabolic Syndrome: Supplements

## 10. Heart Failure

## 11. HF: Nutrition

## 12. HF: Supplements

## 13. Drug-Nutrient Interactions

## 14. Clinical Interactions: Nutrition &amp; CVH

## 15. Completion

## References

## Print Mode

## My Account 2

## Help

## DASH diet

## Mediterranean Diet

## Glycemic Load

## Quality of Carbohydrates: Glycemic Index and Load

One of the key nutritional aspects of metabolic syndrome relates to both the quality and quantity of dietary carbohydrates. High carbohydrate diets may promote hyperglycemia, and raise fasting triglycerides, while lowering HDL-C. But all dietary carbohydrates are not created equal; they can produce different glycemic responses depending on their chemical structure, particle size, fiber content, and extent of processing. The glycemic index (GI) is used to account for these differences. The glycemic load (GL) is a mathematical calculation derived from the GI of the carbohydrate times the serving size.

See the section on [carbohydrates](#) for a detailed explanation of glycemic index and glycemic load.

[Cinnamon and Glycemic Response](#)

## Glycemic Load and Risk of Heart Disease

Whether dietary glycemic load is associated with risk of heart disease has been examined in several studies with conflicting result. Several large epidemiological studies have found the adjusted risk for coronary heart disease ranged from 1.5-2 fold when comparing study participants in the highest vs. the lowest quintiles ([Liu, 2000](#); [Beulens, 2007](#); [Burger, 2011](#)). Conversely, when Kristo et al. reviewed the literature for studies that had investigated the impact of low vs. high GI/GL diets, the results were mixed when glucose homeostasis, serum lipid levels and inflammatory markers were evaluated ([Kristo, 2013](#)).

Although inflammatory markers were reduced with low GL diets, 2 studies found a significantly greater fasting glucose levels with low GL diets compared with high GL diets while 2 studies found no association ([Hartman, 2010](#); [Runchey, 2012](#); [Runchey, 2013](#)). In crossover studies, serum lipid levels were found to be higher as well as lower in study participants consuming low GL diets ([Shikany, 2009](#); [Zhang, 2010](#)). Additionally, a recent meta-analysis found an increased risk for CHD in women but not men with a diet high in GL/GI ([Dong, 2012](#)) while reported a linear dose-response between GL and CHD risk ([Fan, 2012](#)).

The conflicting results reported are possibly due to a variety of factors, including that many studies were of short duration, considerable heterogeneity, classified foods as low or high GL differently and had differences in ethnicity. Larger trials that include a variety of ethnicities and use a standardized definition for classifying GL of foods is needed.

## Glycemic Load and hs-CRP

Dietary glycemic load has also been found to be associated with hs-CRP. In a randomized, cross-over dietary study, Neuhouwer and colleagues found that low-glycemic load diets were

# Integrative Family Medicine

- First comprehensive program to bring Integrative Medicine curriculum into the conventional training of physicians
- Onset in 2004 in collaboration with six family medicine residencies across the United States
  - Elective track
  - Training extended to 4 years
  - Family medicine residency plus Integrative Medicine fellowship
  - >60 fellows have graduated
  - 2021: collaborations in place with family medicine, pediatric, internal medicine and psychiatry residencies

Maizes V, et al. The Integrative Family Medicine Program: An Innovation in Residency Education. *Academic Medicine*. 2006; 81(6): 583-589.

Kligler B. Competency-based evaluation tools for integrative medicine training in family medicine residency. *BMC Medical Education*. 2007; 7

Kligler B, et al. Measuring the "whole system" outcome of an educational innovation: experience from the integrative family medicine program. *Family Med*. 2009; 41(5):342-349.

# Integrative Family Medicine Limitations

- Limited scale – 8-10 residents per year
- Scope – 1000 hours during residency
- Fellowship content developed for fully trained physicians
- Elective rather than required
- Costs - 4<sup>th</sup> year salary; fellowship tuition

**Scaling  
education**



# Integrative Medicine in Residency

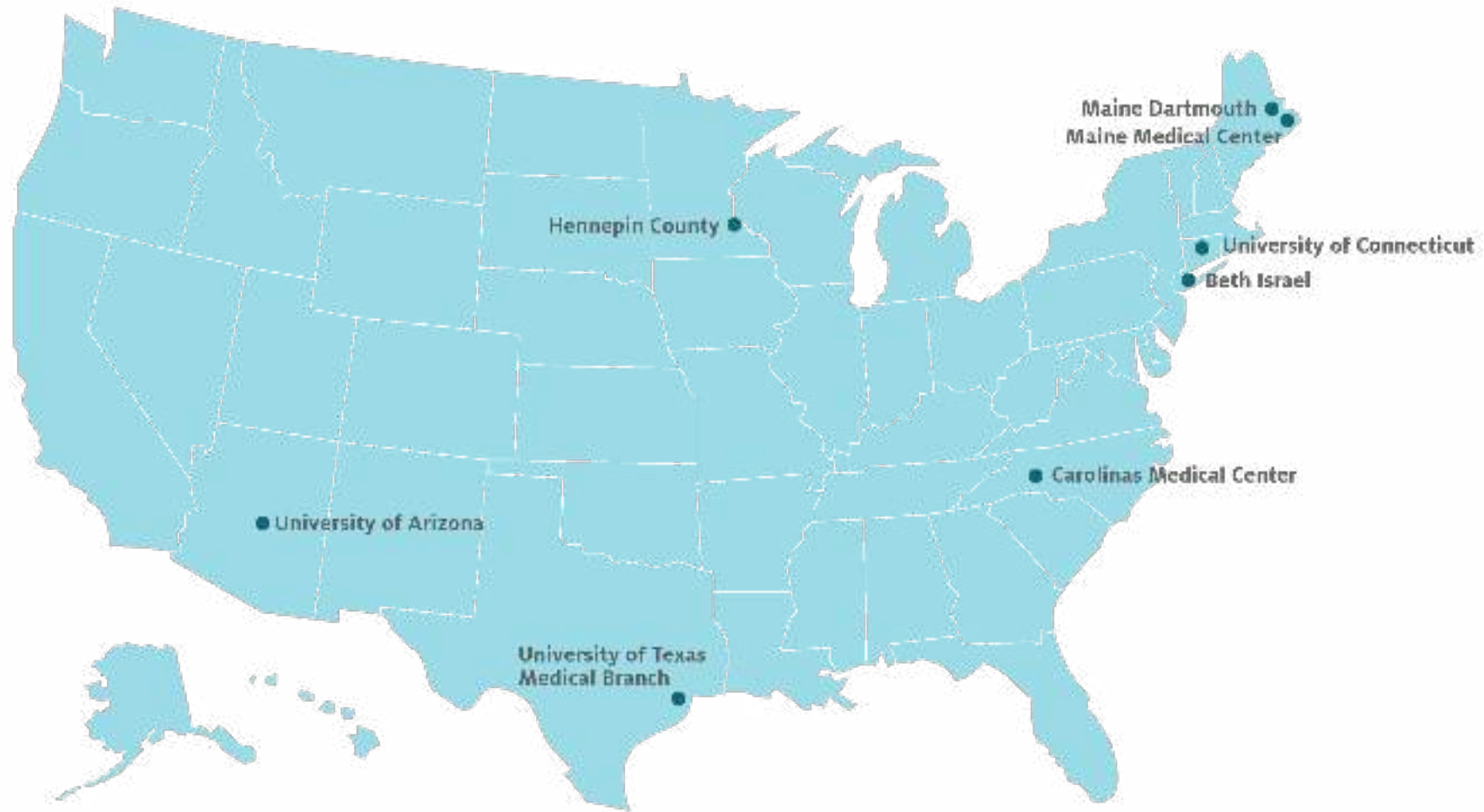


- National model addressing topics lacking in conventional medical education
- 200-hour core IM curriculum
- Modular format allows flexibility for incorporation longitudinally or as a rotation
- Seamless, online evaluation of the curriculum
- Creates a learning community across residencies
- Physician Well-Being focus
- Annual faculty development meeting



# IMR Curriculum

- Integrative approaches to prevention and chronic illness management
- Evidence-based content:
  - Lifestyle Medicine and Behavioral Change
  - Nutrition
  - Mind-Body Approaches
  - Dietary Supplements and Botanical Medicine
  - Environmental Medicine
  - Manual Medicine
  - Whole systems
- Physician self-care and wellbeing



Benn R, et al. Integrative Medicine in Residency: Assessing curricular needs in eight programs. *Family Med.* 2009; 41(10):708-14.

Lebensohn P, et al. Integrative Medicine in Residency Education: Developing competency through online curriculum training. *J Grad Med Educ.* 2012; 3(1):76-82

# Integrative Medicine in Residency Evaluation:

Feasibility and effectiveness of an online educational program embedded in residency

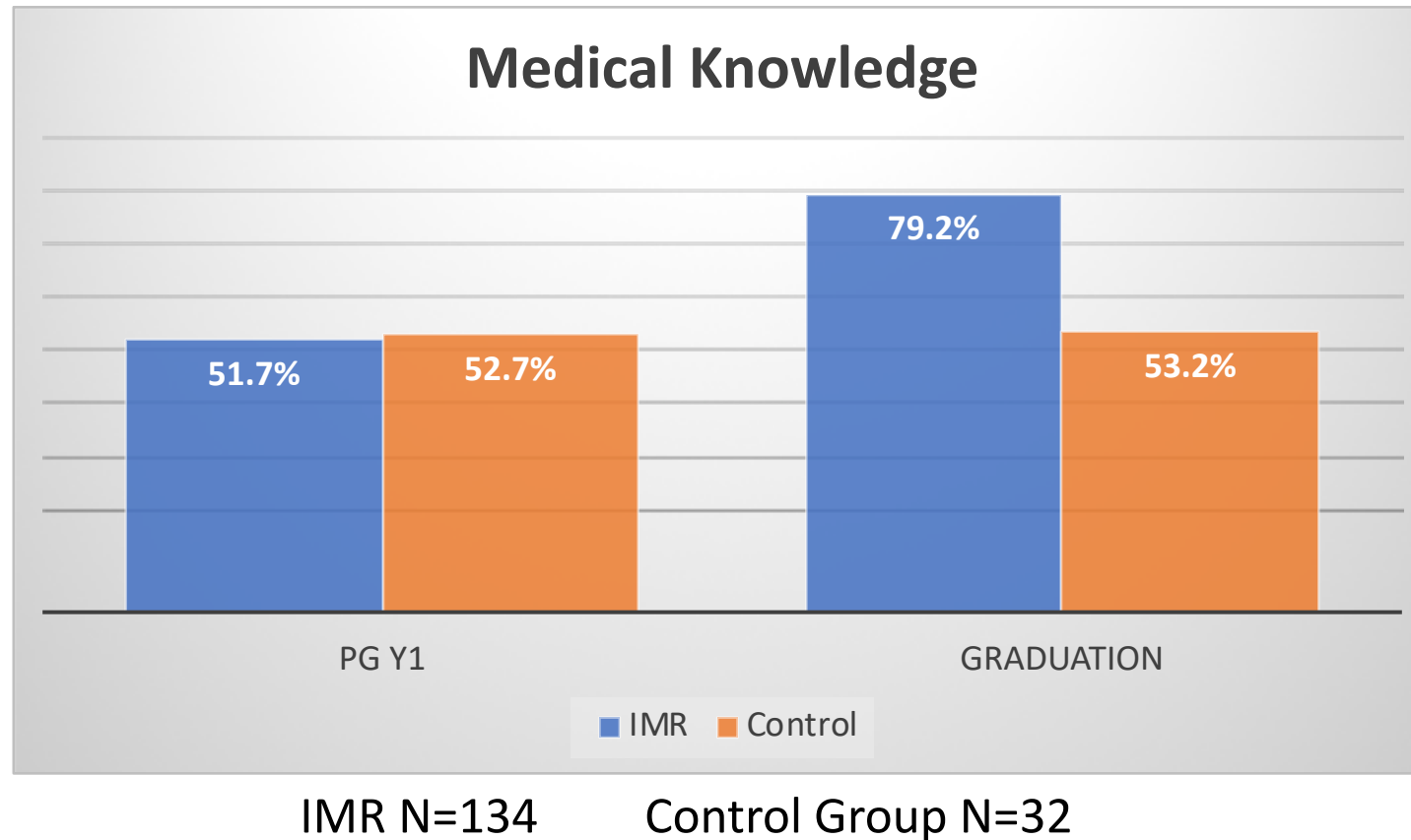
- Medical knowledge
- Self-Assessment re confidence
- IMR completion
- IMR evaluation
- Resident well-being

Lebensohn P, et al. Resident wellness behaviors: Relationship to stress, depression, and burnout. *Family Med.* 2013; 45(8):541-549.

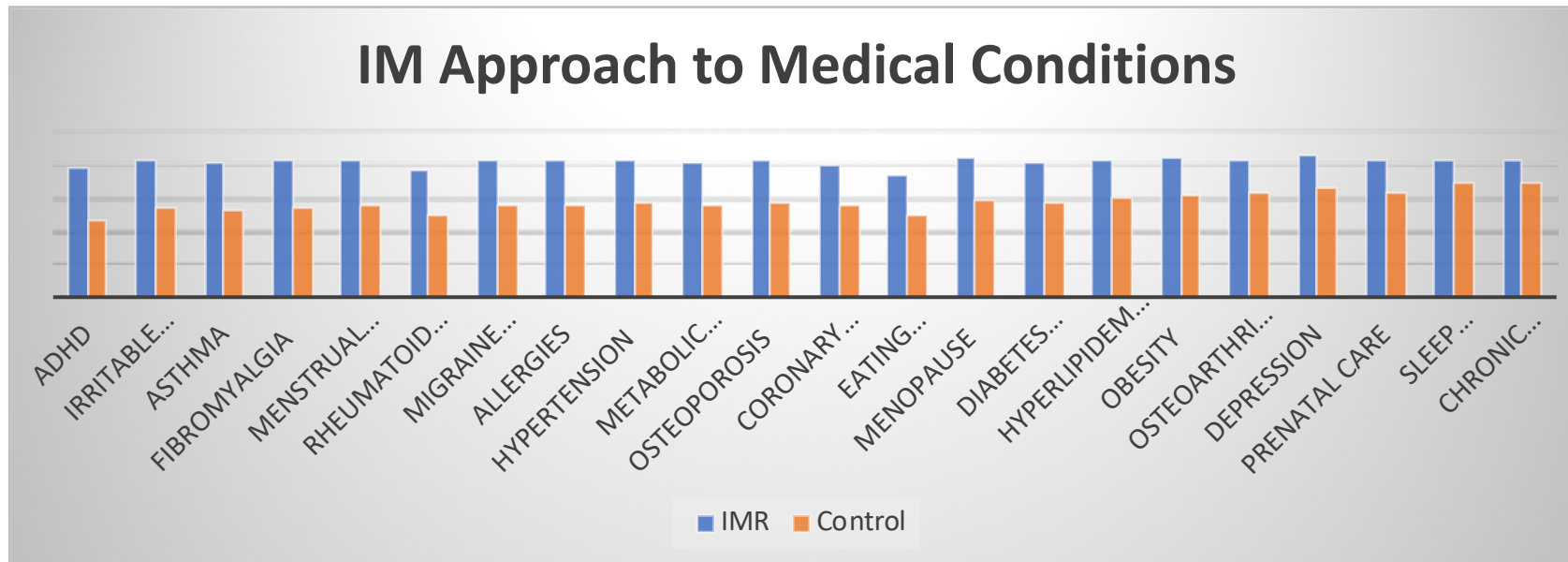
Lebensohn P, et al. Increasing resident recruitment into family medicine: Effect of a unique curriculum in integrative medicine.

*EXPLORE: The Journal of Science and Healing.* 2014; 10(3):187-192.

# IMR Research Findings



# IMR vs. Control Group Self-Assessment at Graduation



**P < 0.001**

# IMR evaluation

- Program is highly rated
- Graduates planned to use what they learned in practice
- Many graduates planned to continue to train in IM
- Initially, well-being did not improve







# Integrative Medicine in Residency

5 Specialties: family medicine, internal medicine, pediatrics, psychiatry, OBGYN

105 residency Sites: (US, Canada and Taiwan)

Learners:

1,098 currently enrolled

1,581 have completed IMR





**Blue:**  
**Family Medicine**

**Red:**  
**Pediatrics**

**Yellow:**  
**Internal Medicine**

## Green: Psychiatry

**(as of 3/1/21)**

# IMR 10-year Impact

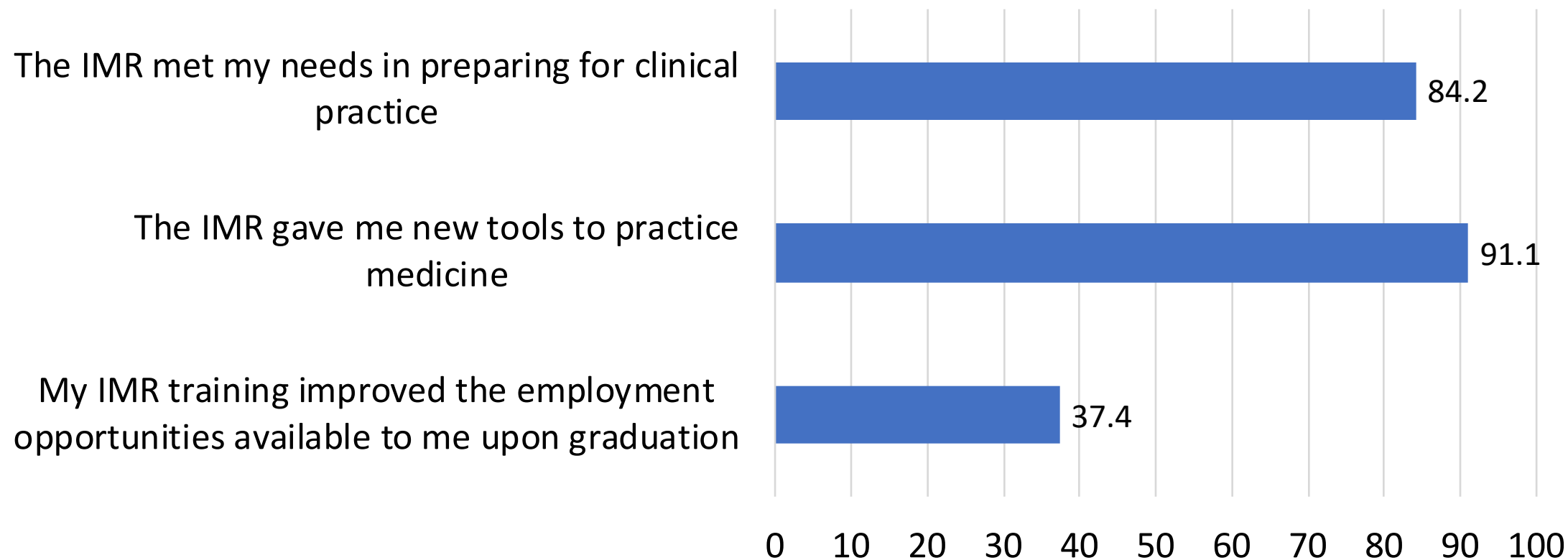
## Survey Description

- IMR impact: professionally and personally (wellness/self-care)
- IMR application:
  - Applying IM in clinical practice - interprofessional collaboration
  - Applying IM to specific health conditions
  - Impact of IM approach on patient care
  - Barriers to incorporating IM into clinical practice
- Additional IM training since graduation

# IMR Impact Professionally

N =158 responding

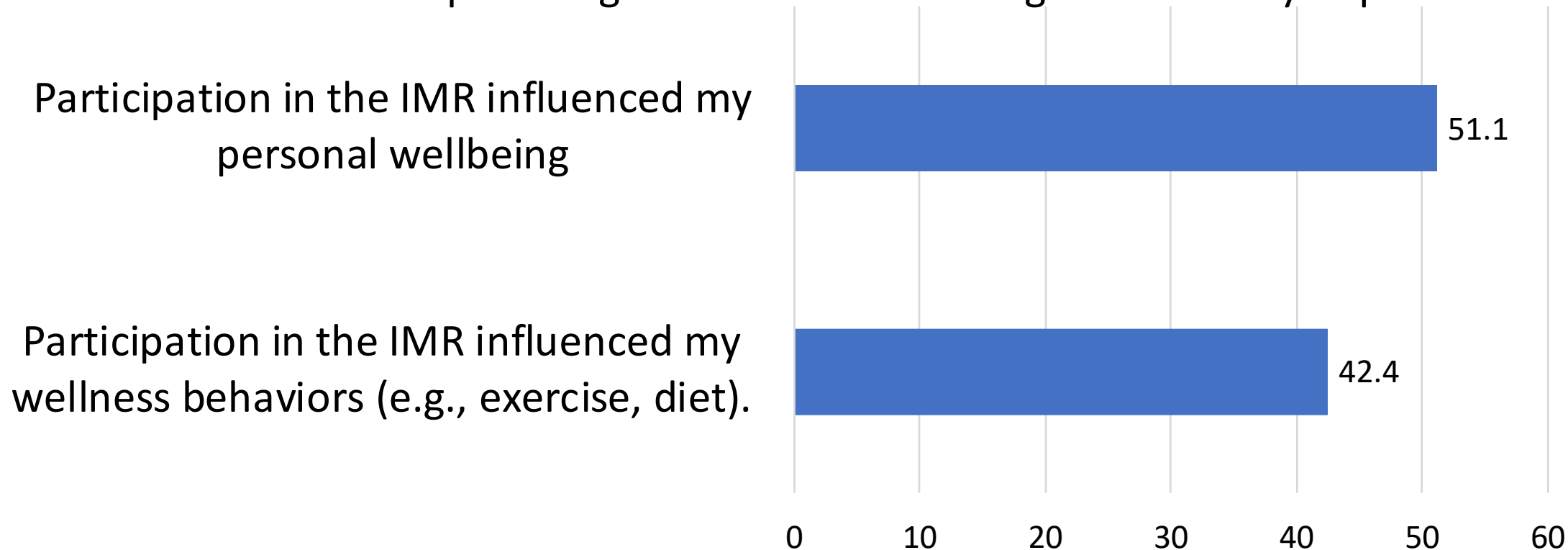
Percent Top 2 Categories - Scale: Strongly Disagree – Strongly Agree



# IMR Impact Personally – Wellness/Self-care

N=92

Percent Top 2 Categories - Scale: No Change – Extremely Improved



# Applying IM in Practice/Interprofessional Collaboration N=158

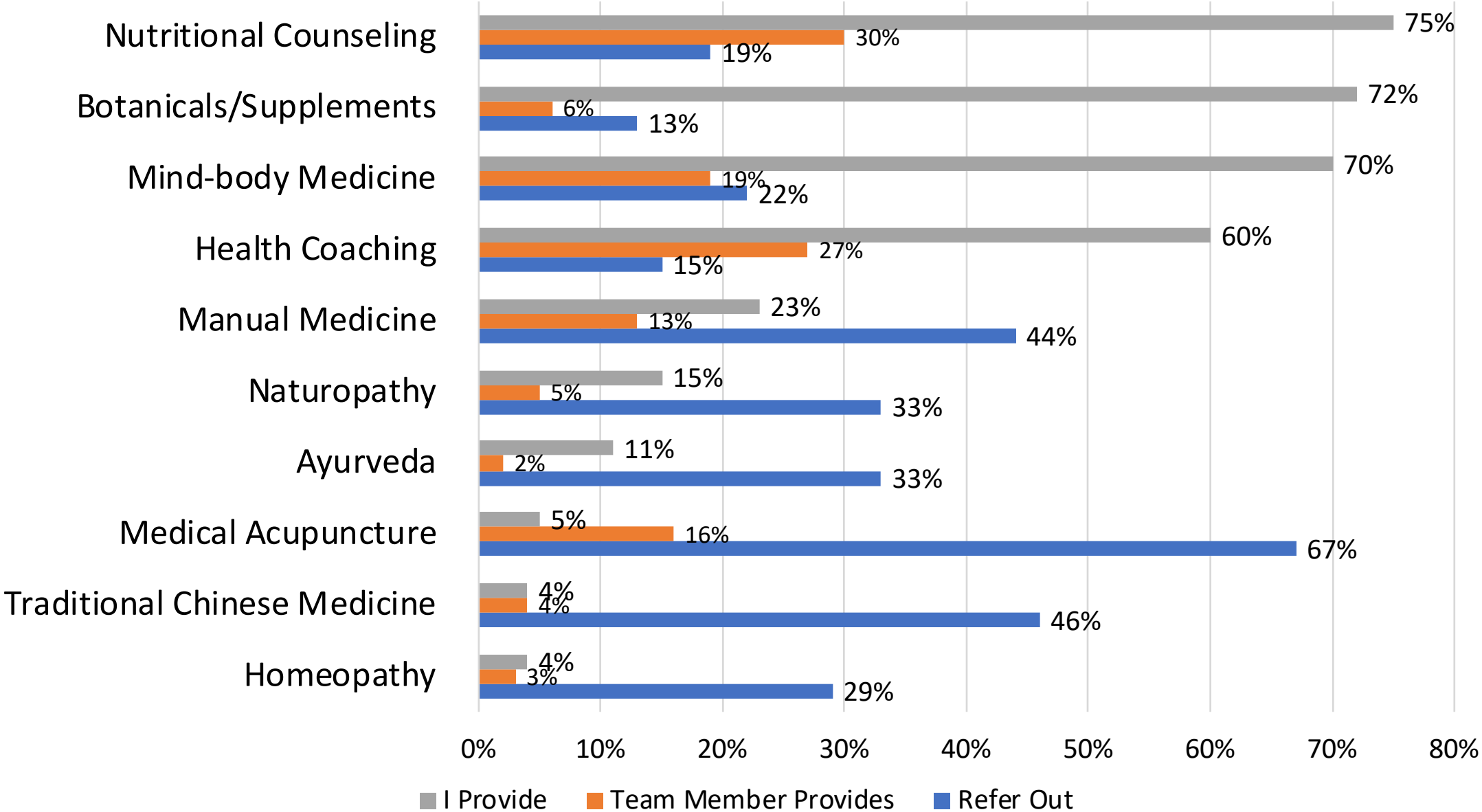
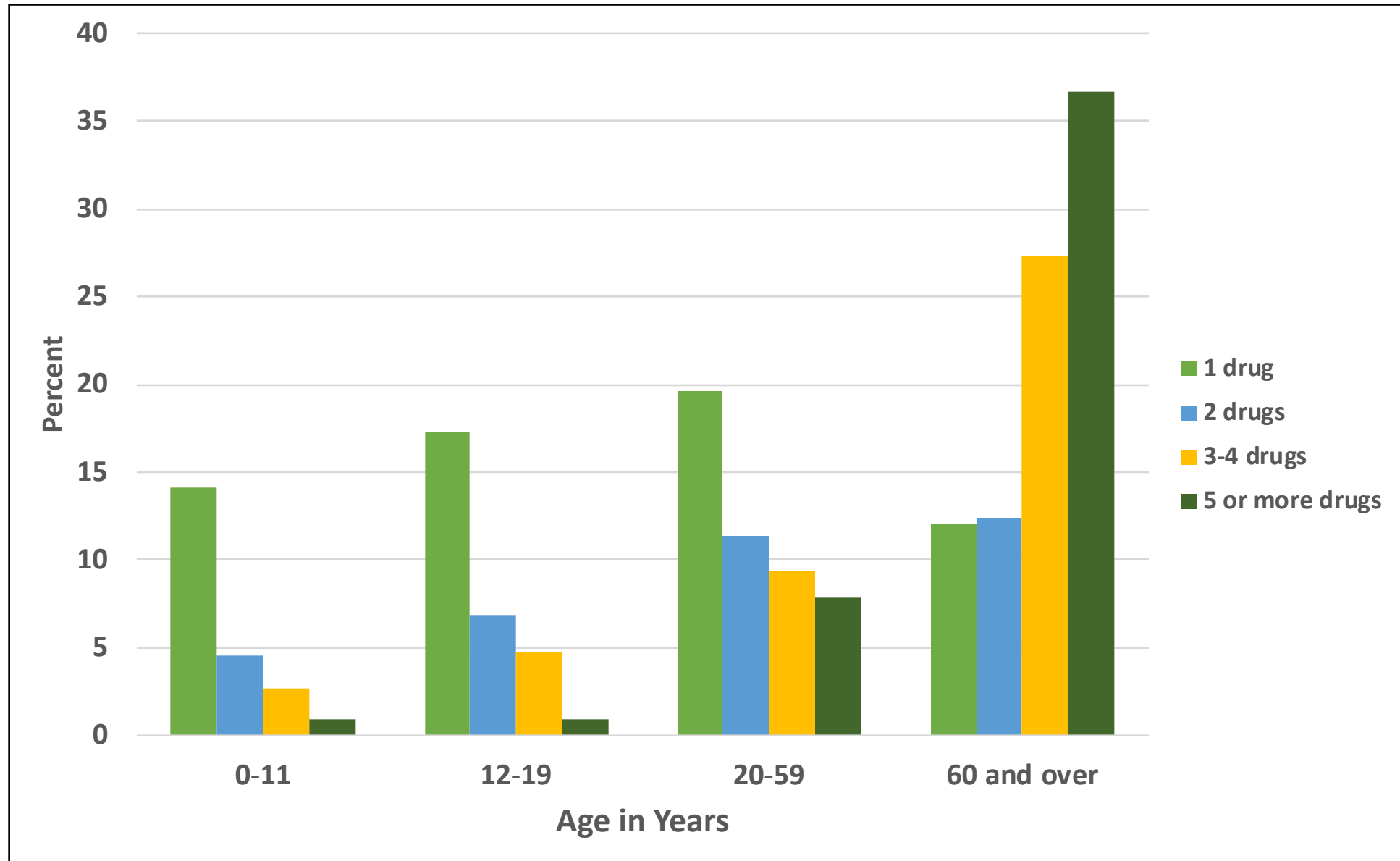
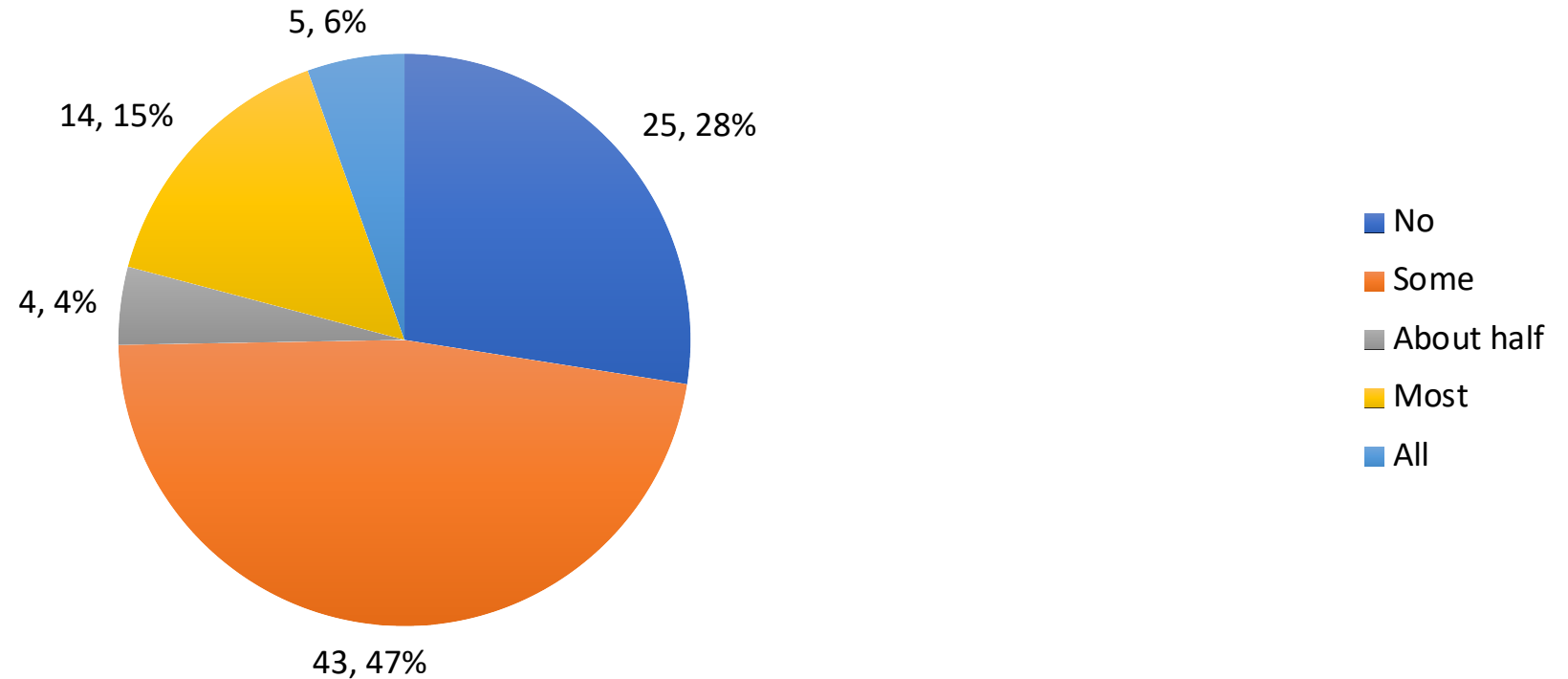


Figure 2. Percentage of prescription drugs used in the past month, by age: United States, 2007-2008



# Decline in Prescription Use

Have you seen a decline in prescription use in the patients you provide integrative care to? N=91





# **Broadening the Paradigm**



# NCIPH National Center for Integrative Primary Healthcare

FOCUSING ON INTERPROFESSIONAL EDUCATION, COLLABORATIVE PRACTICE, AND EVALUATION.

Kligler B, Brooks, AJ, Maizes, V, Goldblatt E, Klatt M, Koithan MS, Kreitzer M, Lee JK, Lopez A, McClafferty H, Rhode R, Sandvold I, Saper R, Taren D, Wells E, Lebensohn P. Interprofessional Competencies in Integrative Primary Healthcare. *Global Advances in Health and Medicine*, 2015; 4(5):33-39.

# Pilot Sites - Characteristics

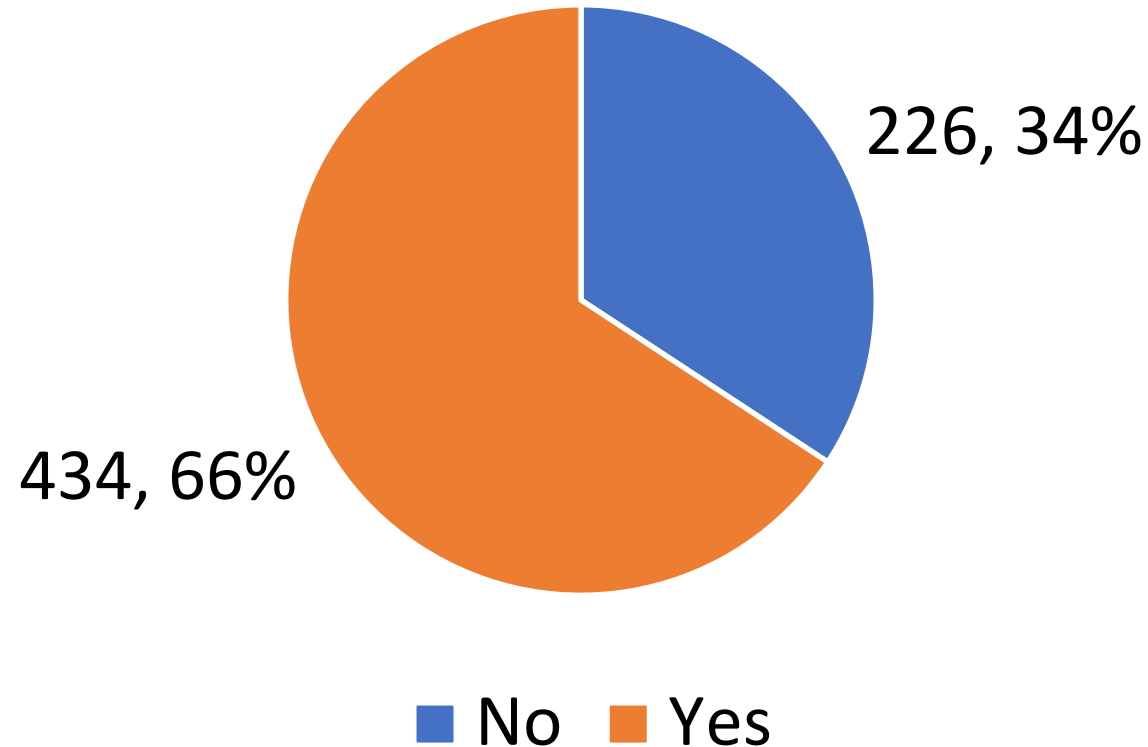
- 79 Sites Enrolled
- 2,328 Participants
- 22 Specialties

Characteristic	N	%
Educational Sites	1337	57%
Clinical Sites	991	43%
Faculty	507	22%
Trainee	1821	78%

# Foundations in IH Course - Units

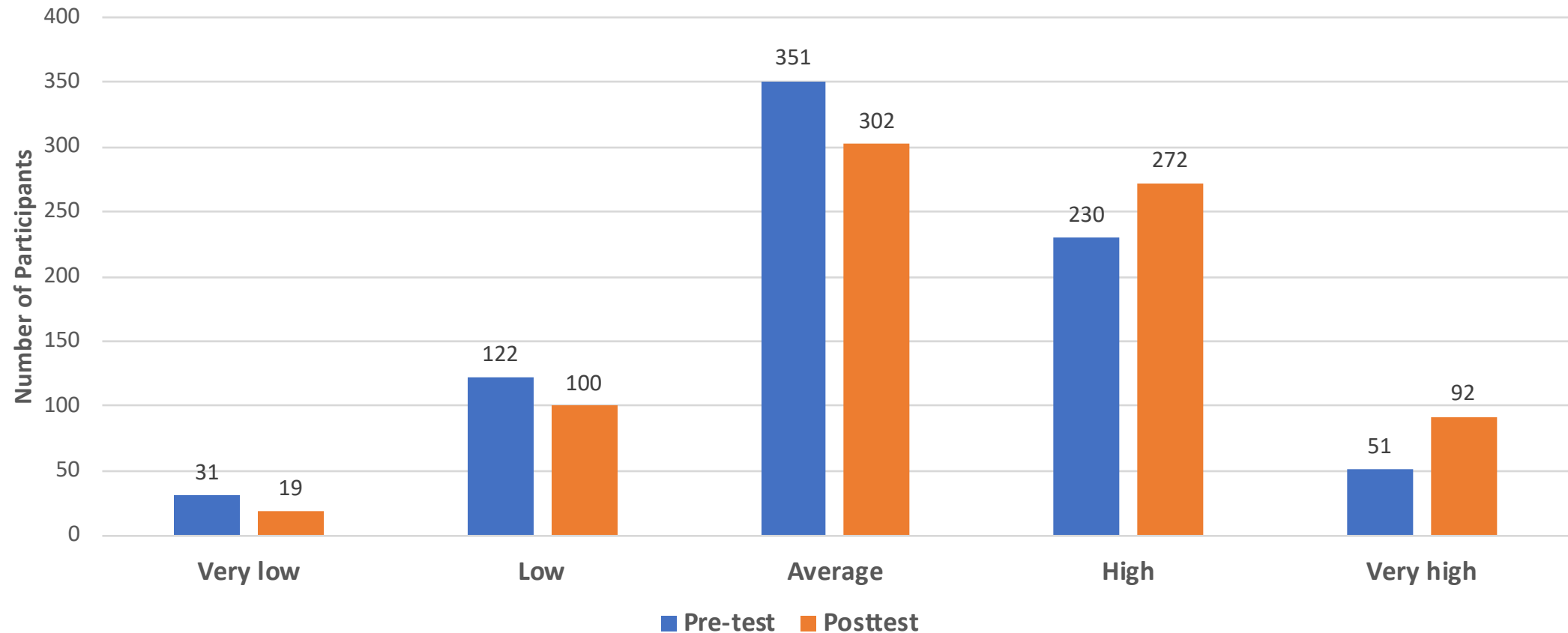
- Introduction to Integrative Health in Primary Care
- Prevention and Lifestyle Behavior Change
- Healthcare Professional Wellbeing
- Addressing Patients through an Integrative Lens in Primary Care
- Integrative Interventions
- Community Settings & Systems at Large
- Final Reflection

**Have you incorporated new self-care practices into your life since the course began based on what you have learned in the course?**



# NCIPH: Dispositional Resiliency Scale Hardiness

Total Score (pre-post course) N=785



**p < .001**

# ABOIM

- American Board of Integrative Medicine (ABOIM) is housed within the American Board of Physician Specialties (ABPS)
- First ABOIM certification exam administered in 2015
- There are approximately 1000 ABOIM diplomates of the Integrative Medicine certification
- Eligibility: US and Canadian Physicians (MD and DO). Must have completed a residency and be board certified in a specialty.
- Ayurveda training eligibility
  - MD or DO who has graduated from a Practitioner or Doctoral Ayurveda training program and has passed the NAMA Ayurvedic Practitioner Certification exam



# National Coaching Certification

- The National Board for Health & Wellness Coaching (NBHWC) collaborated with the National Board of Medical Examiners (NBME) to create a board certification examination
- 4100 national Board-Certified Health & Wellness Coaches
- 2019, the AMA granted category III CPT codes for health & wellness coaching



**N B H W C**

THE NATIONAL BOARD FOR  
HEALTH & WELLNESS COACHING

approved  
training  
program



**“If you want to get there fast – go alone.  
If you want to go far, go together.”**

**African Proverb**