



K H A R R A Z I A N
I N S T I T U T E

Kharrazian Institute — Course Syllabus

Headaches Clinical Strategies and Treatment Applications

Course Title: Headaches Clinical Strategies and Treatment Applications

General Schedule: Beginning May 25, 2025 (6 hours of lectures)

Instructor: Datis Kharrazian, PhD, D.H.Sc, DC, MS, MMSc, FACN

Location: Online livestream and on-demand video replays after the livestream

Course Description

This course will review headache pathophysiology and differential diagnosis of head and face pain. Clinical evaluation of how to evaluate headache will be presented with evidence-based clinical strategies to support these conditions with diet, nutrition, and lifestyle medicine.

Learning Objectives:

1. Understand the pathophysiology of head and face pain.
2. Review comorbidities associated with various headaches.
3. Understand the principles of individualized medicine as it applies to headaches.
4. Understand how lifestyle medicine can impact headache prevention.
5. Understand how various diets may impact headache prevention.
6. Literature review on nutraceuticals and headache conditions.
7. Review how the medical history, physical exam, and laboratory tests can be used to evaluate head and face pain.
8. Understand how to incorporate principles of lifestyle medicine, diet, and nutraceuticals to support headache conditions.

Course Schedule (6 hours of lectures)

1 HOUR — Clinical Concepts of Headaches (60 minutes)

A. Anatomical origins of headaches

- Vasculature
- Muscle tissues
- Nerve plexus
- Sinus

B. Types of headaches

- Migraine
 - o Migraine with aura
 - o Migraine without aura
- Tension
 - o Dehydration (heat, alcohol, exercise)
 - o Exertional (physical exercise, sexual activity, cough, bowel movement straining, eye strain, high-altitude, blowing nose, laughing, crying vigorously)
 - o Caffeine excess or withdrawal headache
 - o Stress
 - o Lack of sleep
 - o Drug reaction
 - o Hypoglycemia
 - o Muscle trigger points
 - o Cervicogenic
- Hypertensive headache
- Sinus headaches (allergy, infection)
- Hormone headaches (menstrual, pregnancy, postpartum, hypothyroidism)
- New daily persistent headache (NDPH)
- Medication overuse headaches (MOH) (overuse of medications to treat headaches and pain)
- Post-traumatic brain injury headache
- Cluster
- Headache secondary to pathology (intracranial and extracranial) — (vascular disease, tumor, infection CSF pressure disease, neuralgia)

C. Differential diagnosis of headaches

- Location

- Front of head
- Over the eye
- Over the sinuses
- From the neck
- Entire head
- Ipsilateral or bilateral
- Type of pain
 - Pulsating
 - Vice-like
 - Sharp/electric
- Length of headache
- Triggering event
 - A. Menstrual headache
 - B. Postpartum headache
 - C. Alcohol
 - D. Dehydration
 - E. Missing meals
 - F. Hypertension

D. The role of functional medicine with headache disorders

This presentation will review the anatomical origin of headaches, various types of headaches, and differential diagnosis of headaches. An approach will be provided to identify key features to distinguish the type of headache and its potential treatment application. The role of functional medicine in supporting headache relief and headache prevention with personalized approaches will be discussed.

1 HOUR — Clinical Features of Migraine (60 Minutes)

A. Clinical features of migraine

- Clinical presentation and categories of migraines
- Neurophysiology of migraine
- Standardized migraine assessment tools
 1. Headache diary
 2. Headache calendar
 3. Three-item Identify Migraine Questionnaire (ID-Migraine)

4. Migraine Screen Questionnaire (MS-Q)
 5. Migraine Disability Assessment Questionnaire (MIDAS)
- Comorbidities with migraine and depression, anxiety, chronic pain, sleep disturbances and obesity

B. Current management of migraine and MOH (medication overuse headaches)

C. The pathophysiological web of migraine

This lecture will review the clinical presentation of migraine and provide a review of current understandings of the neurophysiology of migraines. The use of standardized migraine assessment tools will be presented. A review of the literature regarding comorbidities and the potential role they may play with migraines will be discussed. The lecture will conclude with current guidelines for treatment of migraine and the pathophysiological web of migraine that should be considered clinically.

1 HOUR — Clinical Management of Migraines (60 Minutes)

A. Migraine evaluation tools to determine outcomes

- Headache diary
- Headache calendar
- HURT (Headache Under-Response to Treatment) questionnaire
- mTOQ-4 (Migraine Treatment Optimization Questionnaire)

B. Migraine pathophysiology and nutraceutical strategies

- Impaired mitochondria — neurons close to threshold
- Neuroinflammation — microglia
- Kynurenine pathway
- Disrupted neuron signaling
- Neurotropic factors (GDNF, NGF, NT3)

C. Migraine clinical strategy #1 — Nutraceutical literature review

- Magnesium
- CoQ10
- Riboflavin
- Alpha-lipoic acid

- Essential fatty acids
- Vitamin D
- Melatonin
- Feverfew
- Butterbur

D. Migraine clinical strategy #2 — Systems biology approach

- Methylation dysfunction
- Insulin resistance
- Microbiome dysregulation/Gluten sensitivity
- Hypothyroidism
- Menstrual migraines
- Androgen deficiency in males

E. Migraine clinical strategy #3 — Reduce comorbid risk factors associated with migraine

This presentation will review clinical strategies to reduce migraine severity, frequency, and duration. Standardized migraine evaluation tools that can be used to monitor patient outcomes to treatment will be discussed. Evidence-based approaches to managing migraine conditions with diet, nutrition, and lifestyle strategies will be presented.

1 HOUR — Clinical Features of Non-Migraine Headaches (60 Minutes)

A. Anatomical origins of headaches

1. Vasculature
2. Muscle tissues
3. Nerve plexus
4. Sinus

B. Types of non-migraine headaches

- Tension
 - o Dehydration (heat, alcohol, exercise)
 - o Exertional (physical exercise, sexual activity, cough, bowel movement straining, eye strain, high-altitude, blowing nose, laughing, crying vigorously)
 - o Caffeine excess or withdrawal headache
 - o Stress

- Lack of sleep
- Drug reaction
- Hypoglycemia
- Muscle trigger points
- Cervicogenic
- Hypertensive headache
- Sinus headaches (allergy, infection)
- Hormone headache (menstrual, pregnancy, postpartum, hypothyroidism)
- New daily persistent headaches (NDPH)
- Medication overuse headaches (MOH) (overuse of medications to treat headaches and pain)
- Post-traumatic brain injury headache
- Cluster
- Headaches secondary to pathology (intracranial and extracranial) (vascular disease, tumor, infection CSF pressure disease, neuralgia)

C. The neurology of headaches

D. The physiology of headache triggers

E. The links between headaches and underlying imbalances in physiology

- Dysglycemia
- Dehydration and electrolyte imbalances
- Inflammation
- Allergy
- Gastrointestinal disorders
- Metabolic and endocrine conditions

This presentation will review the anatomical origin of non-migraine headaches and provide a detailed guide on how to differential diagnosis of various headaches. A step-by-step approach to identify the underlying trigger and potential causes of non-migraine headaches will be presented. Clinical considerations from the medical history, physical examination, and laboratory tests will be discussed.

1 HOUR — Clinical Management of Non-Migraine Headaches (60 Minutes)

A. Development of clinical management goals for frequency, duration, and severity of various of specific headaches

B. Development of clinical management goals for frequency, duration, and severity of various of specific headaches

C. Identifying underlying factors and triggers for specific headaches

D. Dietary, nutrition, and lifestyle strategies for specific headaches

This presentation will review clinical strategies to reduce headache severity, frequency, and duration. Standardized headache evaluation tools that can be used to monitor patient outcomes to treatment will be discussed. Evidence-based approaches to manage headache conditions with diet, nutrition, and lifestyle strategies will be presented.

1 HOUR — Review of Concepts and Clinical Red Flags with Headaches; Questions & Answers (60 Minutes)

A. Review of concepts

1. Headache presentation
2. Headache differential diagnosis
3. Headache prevention management plan

B. Clinical red flags for secondary headaches

1. Distinguishing primary versus secondary headache
2. Imaging criteria and guidelines
3. Medical referral criteria and guidelines

This lecture will summarize the key principles of headache diagnosis and clinical management strategies presented earlier in the course with an emphasis on its utilization in clinical practice. Furthermore, red flags for secondary headaches will be discussed and when to consider imaging and immediate medical referrals for headaches that may be due to underlying pathology. The role of determining headaches that may be responsive to a functional medicine approach and headaches that require further medical evaluation will be presented.