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# HORIZON

VOLUME 2, ISSUE 08, AUGUST 2024

- CAFFEINE VS MIGRAINES
- REFLECTING ON OUR THOUGHTS
- THE SECRETS OF YOUR GUT MICROBIOME
- SPENDING A QUALITY SUMMER VACATION AS A MEDICAL STUDENT

# DEAN'S DESK



Dear students, we at Grodno State Medical University strive to provide students with top-quality education, but that's not it. GRSMU is also a hub for Scientific, Cultural, and Sports related activities. We wholeheartedly acknowledge that International students are an integral part of our university, and we take immense pride in that. Grodno State Medical University is glad to work with students from different countries and provide them with a stage to represent their nation and culture.



**DEAN OF FACULTY OF INTERNATIONAL STUDENTS  
DR. ALEKSANDER ALEKSANDEROVICH STENKO**

GRSMU celebrates its uniqueness in diversity, for in its true essence our university is a junction where students from various backgrounds and cultures come together as one big family. GRSMU has always encouraged students to explore further and beyond in every field they try their hands at. I hope that you like the novel concept of 'The Horizon' - a magazine that serves as a platform for the students to voice their opinions, share their takes and present their points of view.

'**The Horizon**' is a medium of extended communication where we can learn a lot from one another. I highly appreciate this initiative and personally support it. I look forward to reading the interesting blogs written by you.

# WELCOME TO THE HORIZON



“We all have fascinating stories to share!” For the longest time, I have had this idea of starting a magazine. But not just any conventional magazine, one that shall serve as a platform for the students and alumni of International faculty at Grodno State Medical University to share their stories. A platform that enables students to share their takes on various curricular and extracurricular aspects of medicine. Thus, the idea of **‘The Horizon’**, came to life.



**DR. MEHUL H. SADADIWALA, FOUNDER,  
CLASS OF 2023**

**‘The Horizon’** will be a creative intersection where students can freely give commentaries about Lifestyle, Culture, Productivity tips, and more. Throughout the years, many individuals at GrSMU have inculcated valuable skills and gained experience with a fair share of success in various disciplines. Maybe you run a successful YouTube channel or an educational website, or maybe you are a successful student-researcher or an educator, and so much more. 'The Horizon' enables students to share their personal experiences. The insights that you share will encourage other students to take further strides and explore future possibilities.

**‘The Horizon’** is supported directly by the Dean of the International Faculty, and it will operate under the supervision of the International Students' Scientific Committee. Students from 1st to 6th year, and even graduates, can submit their blogs to this magazine. The articles should directly or indirectly revolve around student life to share knowledge and the collective growth of students.

For inquiries and submissions.

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# EDITOR'S DESK



“ Reading is a critical aspect of the modern science as it enhances educational knowledge, enrich science and promote innovation.

As a person who has a love for reading and attaining new knowledge, it is an honor to be given the opportunity to provide my contribution and to work alongside with the great minds of the scientific society.

I will be acting as the Editor-in-Chief from July to September 2024, I look forward to working together with authors to provide the finest reading experience for the readers ”



**FATHIMATH JAZLA HASSAN**  
EDITOR-IN-CHIEF (JUL-SEP, 2024)

“ Are you fascinated by clinical topics that are both intriguing and innovative? well, I certainly am! My journey into the research field has given me a profound appreciation for the uniqueness of topics, the relationship between variables, and the process of the developing hypotheses. The in-house magazine “The Horizon,” encompasses not only medical topics but also lifestyle-related medical topics. It’s amazing to see the diverse range of topics and content that students produces.

As the chief editor, I can’t wait to see the thrilling content that students will come up with, I would like to extend a warm invitation to all students to share their insight on these exciting topics. Let’s explore the boundaries of knowledge together! ”



**DR. GRISHMA RAJENDAKUMAR PATEL**  
EDITOR-IN-CHIEF (JUL-SEP, 2024)

And a message to our dearest readers, we would like to invite you all, students and alumni, to share with us the blogs that directly or indirectly revolve around student life, to share knowledge and experiences that has had an impact on your growth within and outside the bounds of our university.

Concluding, let us alter the limitations of our individual efforts and collectively explore limitless Horizons.

# CAFFEINE VS MIGRAINES: IS IT A CAUSE OR A CURE?

This blog is about caffeine consumption and its effects on migraine attacks.

WRITTEN BY  
KHADHEEJA  
HAISHA  
SHAREEF  
CLASS OF 2025

## INTRODUCTION

As people who live in this fast-paced life of the 21st century, we all are very familiar with our friend caffeine. Most of us use caffeinated drinks, either for late night studies, to get us started in the morning or just for the love of the drink. Whether its tea or coffee or energy drinks we all are somewhat reliant on caffeinated drinks. Most people who are reliant on caffeine will also know about migraines. Some will argue that they drink caffeinated drinks to relieve their migraines and others may argue that caffeine usually triggers it. This has become a long-standing argument not just among the general population but also among medical professionals and scientific researchers.

## WHAT IS A MIGRAINE?

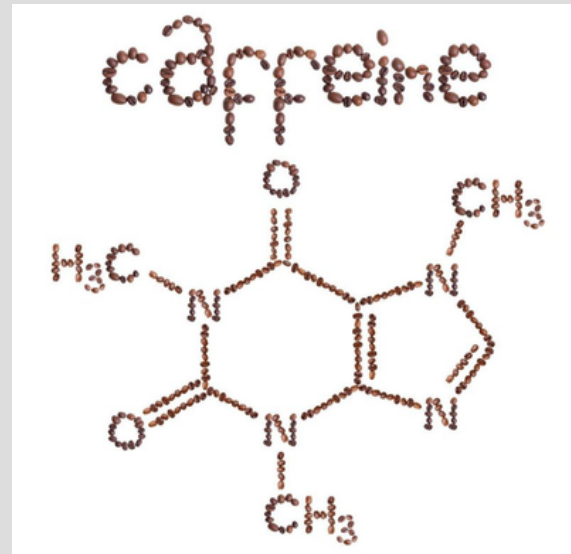
International Classification of Headache Disorders (ICHD), 3rd edition, defines migraine as a recurrent headache disorder that manifests as attacks which last between 4 to 72 hours. Typically, migraines are unilateral, throbbing and vary in intensity from moderate to severe. Migraines will usually manifest with nausea, photophobia and phonophobia and can be aggravated by routine physical activity.

A chronic migraine is a headache that occurs on 15 or more days every month for more than 3 months with the pain having the typical features of migraine for 8 days of the month.



## WHAT IS CAFFEINE AND HOW IS IT RELATED TO MIGRAINES?

Caffeine is one of the most commonly consumed psychoactive compounds around the world. It is a naturally occurring methylxanthine that can be found in wide variety of food and drinks, the most well-known being coffee, followed by teas, energy drinks and chocolates.



Caffeine affects our body through multiple mechanisms.

The main mechanism is by the inhibition of adenosine receptors in the central and peripheral nervous system.

The structure of caffeine is similar to adenosine and therefore, can attach to adenosine receptors mainly the receptors, A1 and A2A. The activation of A1 and A2A receptors leads to anti-nociceptive effect, and therefore, inhibition of these receptors by caffeine can lead to pain relief.

Studies have also shown that caffeine has inhibitory effect on leukotriene and prostaglandin synthesis which can also lead to pain relief. This mechanism of receptor antagonism together with the effect on the eicosanoid pathway could be the link to the pain relief as well as the possible trigger of migraines.

### CAFFEINE AS A TRIGGER FOR MIGRAINES

Caffeine acts as a trigger for migraines by two main mechanisms; caffeine withdrawal and caffeine overuse.

A withdrawal headache as per ICHD-3 is defined as a headache experienced by people who frequently consume caffeine (>200mg/d for >2 weeks) and then stop intake. The headache usually develops within 24 hours of last caffeine intake and usually relieved within 1 hour of ingestion of caffeine (100mg) or resolves within 7 days. This withdrawal headache is considered to be caused due to the vasoconstrictor effect of caffeine which leads to increase in cerebral blood flow (CBF).

Similar to caffeine withdrawal, overuse of caffeine especially caffeine containing medications is considered to cause migraines. Some possible reasons include:

1. The diuretic effect of caffeine which leads to dehydration.
2. Decreased magnesium levels due to increased caffeine intake.
3. Adenosine A1 receptor antagonism which leads to increased nitrous oxide levels and the consequent vasodilation.
4. A risk factor for migraine chronification (persistent headaches for >15 days/month for >3 months).

### CAFFEINE AS A RELIEF OF MIGRAINES

There have been various debates on the possible effects of caffeine on the relief of headaches.

There are various drugs for pain relief which contains caffeine including combined drugs with acetaminophen or aspirin. There are various suggested mechanisms for it and out of this which includes:

1.The antagonism of adenosine A2A receptors, which leads to the decrease nitrous oxide and therefore increase cerebrovascular resistance (CVR) and decrease CBF.

2.Direct effect to increase in CBF production that can lead to negative feedback and vasoconstriction.

3.Gastric stasis is considered to be one of the main signs of migraines and can be presented as nausea. Caffeine is shown to have direct effect on the GIT with increased intestinal motility and reducing intestinal transit time. This helps to relieve the nausea which occurs during migraines.

### RECOMMENDATIONS FOR CAFFEINE LOVERS!

a) Keep a diary! Those who frequently have migraines should be aware of the amount of caffeine they consume per day and also should identify various products with caffeine they intake including coffee, tea, energy drinks, chocolates and caffeine containing meds.

b) If you are a regular caffeine consumer, try to keep a consistent intake of caffeine without sudden increase or decrease of the amount. If you are trying to reduce your daily intake, it is best to reduce by small amounts over weeks.

c) Try to keep your daily caffeine intake to 200mg/day (around two servings of caffeinated drinks).

d) Know your meds! Some frequently used medications such as paracetamol or aspirin could be in combination with caffeine. If you are using caffeine-containing analgesics try to limit consumption to two days every week to prevent medication overuse headache.

### CONCLUSION

Caffeine can be both a trigger and a treatment for migraines, it all depends on your volume of intake and tolerance to caffeine. It is best to always remember that too much of something is never a good thing. The same can be said of caffeine, as used in moderation it is good for us and used too much can lead to a headache.

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# REFLECTING ON OUR THOUGHTS

This blog justifies cognitive distortions and ruminative thinking, why we engage in them and how to confront and modify them.

WRITTEN BY  
MARYAM  
ANOOSHA  
CLASS OF 2026

## NEGATIVE THOUGHT PATTERNS

Ruminative thinking or persistently negative thought patterns in our minds—is a common occurrence. Many people experience feelings of alienation and misery, which are also influenced by this way of thinking. The majority of us act in this way to some degree as a result of our worries about particular circumstances and difficulties. Unfortunately, it can become a fruitless, depression-inducing kind of brooding when these cognitive filters are present. Whatever situation we find ourselves in life, these ineffective filters make it far more difficult and anxiety-inducing.



## READ YOURSELF BY CHECKING IN AND RECOGNIZE YOUR MOST-FREQUENT DISTORTED THOUGHTS

It may be a good idea to find out which type of negative thought pattern you frequently fall into. Metacognition is crucial here. This entails reflecting on your current thoughts.

- All-or-nothing thinking: you find yourself misled by this sort of cognitive distortion when you think solely in black or white, with no shades of gray.

Example: I had a C on my last test, I am doomed to failure.

- Emotional reasoning: your feelings guide your perception of reality and you disregard the facts.

Example: I know they all despise me even though they are being nice.

- Jumping to conclusions: you establish a negative conclusion without additional evidence.

Example: she must be upset with me as she ignored my call.

- Personalization: you feel accountable for circumstances that are entirely or partly beyond your control.

Example: I was the reason we lost the game.

- Should statements: you maintain the belief that you could have or ought to have acted in a certain way in the past, even though you did not have all the information to make an informed decision.

Example: I should be better than this.

- Mental filtering: you dwell on negative incidents or thoughts, despite the presence of contradicting information.

Example: I received one negative review, I must be terrible at this task.

- Catastrophizing: you assume the worst-case scenario in every situation, no matter how unlikely it is. This is often associated with “what if” dilemmas.

Example: This rough patch on my skin is most probably cancer.



## CAUSES AND INITIATORS

Cognitive distortions may manifest as an individual's ingrained psychological biases. A person's risk of depression and unfavorable behavioral reactions are inclined by these beliefs.

According to research, instances of severe stress, especially challenging childhood events or catastrophic life experiences, may trigger cognitive thoughts. This is an evolutionary adaptation to enhance our thoughts.

Nevertheless, this response may persist into subsequent years and impact neutral instances, prompting one to interpret them unfavorably. Regardless of any opposing facts, your perception of a situation is contingent on your feelings and emotions.



## HOW DO YOU CONTEST AND ALTER THESE THOUGHTS?

You must learn to reorganize your thought processes to regulate cognitive distortions. Though challenging, this can be rectified with perseverance. Effective mental practices are just as vital as effective physical practices. We will definitely feel less isolated and anxious, if we interpret situations in an optimistic manner. Therefore, rather than allowing our thoughts and sentiments to exacerbate our anxiety, we address obstacles, challenges and feelings with an optimistic outlook.

Starting with minor adjustments can be beneficial. Here are some pointers:

### 1. Analyzing your thoughts

If anything brings you distress, try to remove yourself from the situation and concentrate on the narrative you are telling yourself about it.

### 2. Substituting absolutes

After you pay attention to your thoughts and identify a pattern, envision substituting phrases like "nothing" and "always" with phrases like "sometimes" and "this".

### 3. Defining oneself and those around you

Consider giving the behavior an appellation. Consider saying to yourself, "I just didn't clean today," rather than calling yourself "lazy" for not cleaning today. You are not defined by one action.

### 4. Seeking positive aspects

Identify at least three positive aspects in each scenario even if it appears overwhelming at first. Despite it may not seem natural at first, but will ultimately develop into a spontaneous practice.

### 5. Does evidence reinforce your negative view?

To make sure you have all information possible before reaching a conclusion, think about inquiring, researching, and interrogating both yourself and others. Strive harder to accept these realities.

## WITH SOME ATTENTION AND INTENTION, CHANGE IS POSSIBLE!

### Mindfulness

Practice mindfulness or meditation, if you are having trouble recognizing your negative thoughts. Give your thoughts space to exist rather than ignoring them. Think of your thoughts passing by like clouds or as though you are watching them go by from the window of a train.

### Journaling

Write down your thoughts in a stream of consciousness and set a 10-minute timer. Check your entry once again after the timer goes off. Circle any negative thoughts and write down three helpful alternative thoughts.

### Sit with the discomfort

Your reliance on particular behaviors to ease your discomfort may be the result of a negative thought. For instance, you think someone is angry with you (the thought) and then you phone them repeatedly (the behavior).

### Direct that energy elsewhere

You might find it beneficial to alter your actions if negative thoughts are taking over your head. You could phone a friend, take deep breaths, step outside and go for a stroll.

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# THE SECRETS OF YOUR GUT MICROBIOME

This blog focuses on the significance of Gut Microbiome, its' link to a plethora of chronic diseases (Inflammatory bowel disease, cardiovascular diseases, mental health, obesity, diabetes, cancer etc..) and how we as medical students can manipulate this ecosystem by simple measures to pursue a healthier lifestyle.

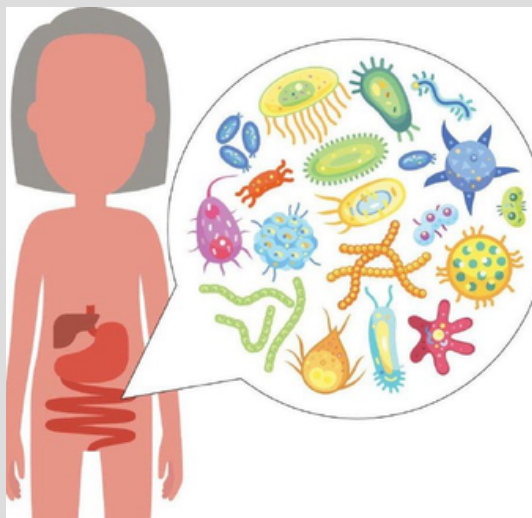
WRITTEN BY  
RISHNI XAVIER  
CLASS OF 2025

## DIVING INTO THE BASIC FUNCTIONS OF GUT MICROBIOME

The Gut Microbiome consists of trillions of microorganisms that co-habit in our intestines establishing a non-pathogenic symbiotic relationship. Some of the functions are mentioned below.

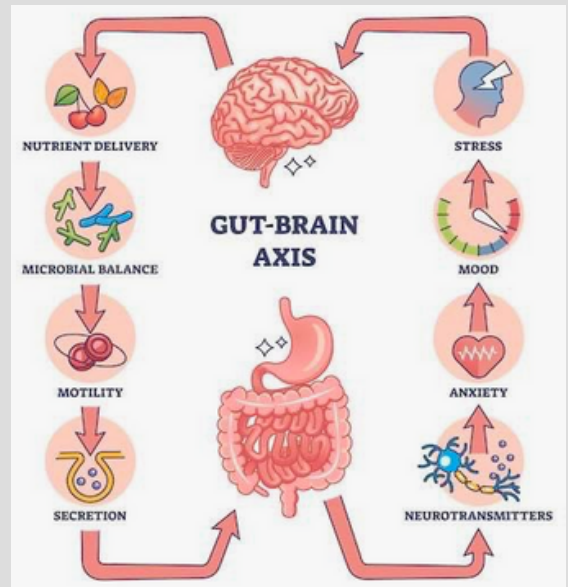
1. Metabolic function: gut microbiome produces vitamins, synthesizes amino acids, carries out biotransformation of bile, converts non digestible carbohydrates (resistant starch, cellulose, pectins, oligosaccharides that bypass digestion) from which energy and nutrition are supplied for the growth and proliferation of gut bacteria.

2. Immunologic function: About 70% of the immune cells reside in the gut where the epithelial lining of the intestine acts as the main interface between our immune system and the outer world.



Gut microbiome competes for attachment sites and nutrients hence limiting pathogens colonizing in the gut-competitive exclusion effect. The gut bacteria also produces certain antimicrobial substances like bacteriocin to inhibit their competitors' growth.

3. Gut brain-axis : a bidirectional communication system which links gut microbiota to the brain by means of neural, hormonal and immunological signals.



## THE LINK TO CHRONIC DISEASES

The interest in gut microbiome studies have advanced a lot recently and a large number of anecdotal reports, large cohort studies, research papers have emerged linking microbiome and chronic diseases.

How are they linked ? Let's find out below with a few examples !

Patients with Rheumatoid Arthritis showed a decrease in the diversity of gut microbiome compared to the healthy control group. Patients showed an increase in *Prevotella* species and a decrease in the beneficial microbe *Faecalibacterium*. An abundance of *Collinsella* was found as well, and interestingly the inoculation of *Collinsella* into susceptible mice induced severe arthritis.

In Type 1 diabetes research studies done on animal models, it has been found that when nonobese diabetic mice were given special diets which results in the bacterial releases of butyrate and acetate, it almost completely protected them because of the immune modulating effects of short chain fatty acids.

In patients with atopic Asthma, it has been found that the number of histamine secreting bacteria are higher than in the non-asthmatic volunteers.

Recent studies have revealed a clear demarcation between the gut microbiota of patients with Inflammatory Bowel Syndrome and that of the healthy control group where protective microbiomes like *Faecalibacterium prausnitzii* which have anti-inflammatory properties have been reduced.

Gut microbiota modulates the Gut brain axis in many ways. It produces many metabolites like neurotransmitters, short chain fatty acids and amino acids which can directly act on the enteric nervous system or enter circulation affecting the brain directly. The alterations in the levels of these metabolites are linked to neuroactive catabolites which are associated with Parkinson's disease, Anorexia Nervosa, Chronic depression, Autism, Alzheimer's disease. There is also an increase in *Lactobacillus* sp. and *Bifidobacterium* sp. in ADHD and Schizophrenia.

## MANIPULATING AN ECOSYSTEMS VIA OUR DIET AS STUDENTS

As students, we tend to overlook our diet, not give it much importance, resort to a packet of instant noodles every chance we get because it is "easier". But in addition to all the chronic diseases mentioned above, poor gut health is also associated with fatigue, sleep disorders, poor memory performance, impaired cognitive abilities etc.. and these will in turn affect our lives as students.

How can we improve our gut health?

1. Eat the rainbow! - fill your diet up with plenty of colorful fruits and vegetables.
2. Consume Probiotic rich food like yogurts and Kimchi.
3. In order for the probiotics to flourish, we need to feed them with prebiotics which are essentially fibers present in mangoes, leeks, almonds, apples, strawberries etc..
4. Avoid processed foods
5. Cut back on sugar and artificial sweeteners.
6. Limit your alcohol intake.
7. Opt for brown rice, whole wheat bread, oats, tempeh, lentils, chia and flax seeds.

Changing your diet all at once might be difficult, instead incorporate just some of these food habits into your diet and work your way up to healthy eating habits. Your body and mind will thank you !



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# SPENDING A QUALITY SUMMER VACATION AS A MEDICAL STUDENT

This blog is about spending the summer vacation in a useful and effective manner. As I spent my summer vacation in my home country I will include all my experiences.

WRITTEN BY  
FATHIMA ZAHRA  
CLASS OF 2026

## INTRODUCTION

The textbooks are shut, the exams are (hopefully) aced, and summer stretches before you like a glorious, unscheduled anatomy diagram. But wait – for a med student, is "summer break" really a break? Can we have both the beach and the books?



Taking a break as a medical student is crucial for maintaining both mental and physical health. The demanding nature of medical education can lead to burnout, stress, and fatigue which can negatively impact academic performance and personal wellbeing. A well-deserved break allows students to recharge, reflect, and regain their energy. It offers an opportunity to relax, engage in hobbies and spend quality time with loved ones, ultimately fostering a balanced and healthy lifestyle. By stepping away from their rigorous routines, medical students can return to their studies with renewed focus, motivation, and a clearer perspective, ready to tackle the challenge ahead.

## PRIORITIZE SELF-CARE

Prioritizing self-care during summer vacation is essential for medical students to maintain their well-being and prepare for the upcoming academic year.

### REST AND RELAXATION

- Sleep: Catch up on sleep and establish a healthy sleep routine to recover from the demanding academic schedule.
- Relaxation: Engage in activities that promote relaxation. As an example, reading, watching movies or spending time with family and your friends.

### MENTAL HEALTH

- Mindfulness: Practice meditation to reduce stress and improve mental clarity.
- Hobbies: Spend time on activities. As example, I did gardening and riding a bicycle during my vacation.

### PHYSICAL HEALTH

- Exercise: Incorporate regular physical activity, whether its yoga, swimming or going to the gym. As for me, i have done some daily routine gym exercises at home.
- Nutrition: Focus on balanced, nutritious meals to fuel your body and mind. I have focused on meals that I can not get in Belarus, specifically jack fruit, green leaves, etc.

### PERSONAL GROWTH

- Self-reflection: Take time to reflect on personal and academic goals and plan for the upcoming year. You can make a timetable for the upcoming semester.
- New skills: Learn something new or pursue and interest that is unrelated to medicine to foster a well rounded personality. I have attended classes that are focused on learning for the ERPM exam (examination for foreign graduate students based in Srilanka)

## GAINING CLINICAL EXPERIENCE

Summer vacation is an excellent time for medical students to gain valuable clinical experience without the pressure of academic responsibilities.

### SHADOWING PHYSICIANS

- **Hands on learning:** Shadowing experienced doctors in various specialities provides firsthand insight into different medical fields. As an example, if you are in to paediatrics you can learn under a paediatrician in a specific hospital.
- **Networking:** Build relationships with professionals who can offer guidance, mentorship, and potential future opportunities.

### INTERNSHIPS IN HOSPITALS

- **Practical experience:** Participate in medical internships to apply classroom knowledge in real real-world settings. For example, if you visit a hospital ward take patient history, and investigations and compare and apply them to things that you have learned in medical university.
- **Skill development:** Develop practical skills and gain exposure to patient care, medical procedures and hospital operations. As an example, you can assist for suturing in a certain operation and gain experience.

### VOLUNTEERING

- **Community service:** Volunteer at local clinics, hospitals, or health camps to give back to the community while enhancing your clinical skills.
- **Broaden perspectives:** Experience healthcare delivery in different environments and understand diverse patient needs.

### RESEARCH OPPORTUNITIES.

- **Clinical research:** Join research projects or assist in clinical studies to contribute to medical advancements and enhance your research skills.
- **Publications:** Work towards getting your research published, which can be beneficial for your medical career and residency applications. As an example, you can work under certain physicians in your regional hospital and work on research.

## ACADEMIC ENRICHMENT

Summer vacation offers a valuable opportunity for medical students to engage in academic enrichment without the pressure of regular coursework.

### ONLINE COURSES AND WORKSHOP

- **Specialized classes:** Enroll in online courses or attend workshops on specialized medical topics according to the exams you are targeted on. I have attended online courses related to ERPM examination medicine and surgical topics.
- **Skill development:** you can enroll in practical classes that teach maneuvers of medical procedures. I have enrolled in a pediatric practical session.

### READING AND RESEARCH

- **Medical journals:** keep up with the latest advancements and research in your field by reading medical journals and articles.
- **Books:** Explore medical textbooks and books by renowned authors to deepen your understanding of complex topics. Examples- Netter's Flashcards, Oxford Clinical Medicine, Bailey and Love Surgery books, etc.

## TRAVEL AND EXPLORATION

Summer vacation provides a perfect opportunity for medical students to travel and explore new places, offering a refreshing break from academic rigors and a chance to gain unique experiences.

### ADVENTURE AND RELAXATION

Balance your travel itinerary with adventurous activities and relaxation to destress and recharge. I have went to camping in Ella, that was a memorable and adventurous experience to me.

### HISTORICAL AND CULTURAL SITES

Visit historical landmarks, museums, and cultural sites to broaden your knowledge. I have visited the planetarium in Colombo as apart from medicine, I'm interested in astronomy. So, grab your sunscreen, pack your curiosity, and prepare for a rejuvenating and strategically brilliant summer. Happy summer, med students!

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