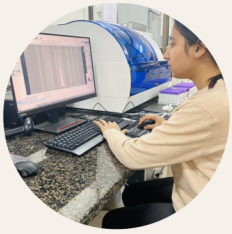
Issue no. 3 01 Sep- 31 Dec 2023

# SCISO CHRONICLES

3rd ISSUE



afmcsciso@gmail.com

## 2023 A YEAR TO REMEMBER

# 2023

## A GLIMPSE OF ENTIRE YEAR

### Jan
01 Cdt was selected for 3 months Internship at IISC Bangalore

Cbrain IISC Bangalore

### Feb
DIPS, JIPMER

03 Cdts were selected for DIPS Conference organised at JIPMER

### Mar
AFMC Team won First Prize At Bombay Medical Congress

Bombay Medical Conference

Cadets Participated in Field Research under the Dept of Internal Medicine, AFMC

SIMPLe Study

The very first issue of SciSo Chronicles was released.

Release of SciSo Chronicles

### Apr
Aidothon- IIT Ropar

LHMC Hackathon

Cadets Participated at Hackathons Organised by Various Institutions

### May
Cadets Participated in Field Research for sickle cell disease Under the dept of Internal Medicine

SMILE Study

### Jun
High Altitude Sickle Screening

Cadets participated in High Induction screening of soldiers at Shahjahanpur and Bhatinda

### Sep
07 Cadets presented their original Research work at National Conference organised by AFMS

API-AFMS Conference

### Oct
MANAS Codeathon

01 Cadet won Second Prize at a conference organised by CDAC and PSA O/o Govt of India

### Nov
03 Cadets Original Paper were selected for mini- oral presentation in National Hematology Conference

Hematocon 2023

### Dec
MUHS Avishkar

Cadets proposals were selected Under Innovation Category

Presentations

Field work

Sci Soc 2023

Teamwork



Awards

ISSUE NO. 3
1 SEP - 31 DEC

# CHRONICLES
# TABLE OF CONTENTS

# Our Mentors

**Lt Gen Narendra Kotwal, AVSM, SM, VSM**
**Dir and Comdt**
**AFMC, Pune**

**Maj Gen D Vivekanand, SM**
**Dean and Dy Comdt**
**AFMC, Pune**

**Brig J Muthukrishnan, SM, VSM**
**Sub Dean (Research) & HoD (Med)**
**AFMC, Pune**

# Editor's Note

Dear Esteemed Members and Supporters of the Scientific Society,

As we culminate the triannual journey of our scientific society's magazine for the year 2023, I am filled with immense pride and gratitude. This final issue encapsulates the dedication, intellect, and innovation of our esteemed medical college community. Throughout the year, we've delved into groundbreaking research, explored emerging trends, and celebrated the achievements of our peers.

In the face of unprecedented challenges, our resilience and commitment to advancing medical science have shone brightly. As editors, we've been privileged to witness the depth of talent and passion within our ranks, driving us to new heights of excellence.

Extend my heartfelt thanks to our contributors, readers, and editorial team for their unwavering support and contributions. Together, we have forged a platform that not only disseminates knowledge but also fosters collaboration and inspiration.

As we turn the page to a new year, let us carry forward this spirit of inquiry and collaboration, striving towards even greater accomplishments in the pursuit of scientific excellence.

**Col Y Uday - Editor in chief**
**Oi/C SciSo**
**Professor,**
**Dept of Internal Medicine**
**AFMC, Pune**

# Augmenting Decision Making to Promote Mental Wellness

M/Cdt Gaurav Jalal
G3 Batch

## SUMMARY >

**Teams Participated: 118**
**Track One: Ideation/Innovation/Gamification**
**Teams selected for final round: 28 (track one)**
**First Position: Maj Mohit and Maj AS Dhaliwal, Dept of Psy, AFMC**
**Second Position: M/cdt Gaurav Jalal, AFMC**
**Third Position: Mr. Ravi Kumar, scientist, CDAC**


## INNOVATION>

The proposed solution involved the application of Machine Learning, specifically Deep Q Networking. The objective was to develop a model capable of aiding users in making optimal decisions for their mental wellness, incorporating principles of reinforcement learning. The methodology integrates Machine Learning, the Melbourne Decision-Making Scale, and educational modules from MANAS.
The project involved a complex machine-learning model that would be able to understand users' decision-making patterns and augment them daily meanwhile ensuring complete user-machine interaction.
This innovation in the era of personalised medicine caters to the individual aspect of an individual and modifies over time based on users' changes in behaviour and personality.


MANAS Codeathon 2023 was envisaged to sensitize the young minds towards mental wellbeing, nurture their innate potential, and give them a unique opportunity to contribute towards mental wellbeing. This was a unique opportunity to work with like-minded young individuals to create innovative solutions/design cognitively, engaging games/interactive content for mental wellness. 118 teams from different backgrounds worked together, online, to create new ideas, interactive digital and gamified content, or any other digitization of IEC materials or aids for mental wellness.

Out of 28 finalised team of doctors, scientists and UG students in track 1 of ideation, M/cdt Gaurav Jalal (under the Guidance of Dr Kalpana Srivastava, Scientist G, dept of psychiatry, AFMC) secured second position.

# API–AFMS: FIRST ANNUAL CONFERENCE & NMUD 2023

Chief Guest

**DR. JITENDRA SINGH**

Minister of State (Independent Charge) for the Ministry of Science and Technology and Minister of State for Prime Minister's Office; Personnel, Public Grievances, & Pensions; Department of Atomic Energy and Department of Space

## UG PARTICIPATION IN INAUGURAL API-AFMS CONFERENCE

**A SIGNIFICANT MILESTONE MARKS THE ANNALS OF THE ARMED FORCES MEDICAL SERVICES (AFMS) AS A DISTINGUISHED ASSEMBLY OF PHYSICIANS CONGREGATE TO INAUGURATE THE ARMED FORCES MEDICAL SERVICES (AFMS) CHAPTER UNDER THE ASSOCIATION OF PHYSICIANS OF INDIA (API).**

The inception of the API-AFMS chapter pays tribute to the unwavering commitment of AFMS physicians. This platform serves as an exclusive forum for physicians dedicated to ensuring the health and well-being of military personnel.

07 Medical Cadets presented their original research work based on the field work done in Kasurdi and Shahada village under the department of Internal Medicine, AFMC, Pune.
One of the cadets, M/cdt Aditi Mahajan was selected for final round of paper presentation and received the SCM book from the Director and Commandant, AFMC, Pune.

Cadets participated:

- M/cdt Ritwik Johari, F3 Batch
- M/cdt Aditi Mahajan, G3 Batch
- M/cdt Hetvi Aliwala, G3 Batch
- M/cdt Aditya Jayapalan, G3 Batch
- M/cdt Gaurav Jalal, G3 Batch
- M/cdt Yash Vashishth, H3 Batch
- M/cdt Celine Raphael, H3 Batch

Organized by

ISHBT

INDIAN SOCIETY OF HEMATOLOGY & BLOOD TRANSFUSION

64th HAEMATOCON 2023

BHUBANESWAR

LEARNING THROUGH NETWORKING

# 64th ANNUAL CONFERENCE OF INDIAN SOCIETY OF HAEMATOLOGY & BLOOD TRANSFUSION

03 Cadets' studies were selected for Mini- Oral Paper Presentation at the 64th Annual Conference of ISHBT 2023.

All the Cadets presented results from their field study on sickle cell disease which was conducted in a tribal population of Shahada village. The study was started and completed under the guidance of Col Y Uday, Oic Students' Scientific Society and with the support of Brig J Muthukrishnan, SM, VSM, HOD Medicine & Sub dean Research, AFMC.

Med/Cdt Aditi Mahajan Presented a Paper on the topic "**Prevalence and clinical correlates of Splenomegaly in Sickle Cell Anemia**" highlighting a significant finding of massive splenomegaly in most patients with Sickle cell disease contrary to the Western data. Further studies will underpin the cause of such findings in the Indian variant of Sickle Cell Anemia.

Med/cdt Hetvi Aliwala Presented a Paper on the topic "**Hyperthyroidism in Sickle Cell Anemia**" highlighting a massive 88% of the population having low T3 and T4 levels. Her study directs towards the further exploration required to understand these low levels of thyroid hormones in the study population.



Med/cdt Gaurav Jalal presented a paper on the topic "**Pubertal delay in Sickle cell anaemia**" highlighting the previously known fact of Delayed onset of puberty in the Western population. The study included both subjective and objective methods of pubertal assessment using Tanner staging and hormonal assay respectively.

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Original Article

# Sleep duration at night affects daytime wake EEG spectra

Ankit Anurag [a], Karuna Datta [b,*], Anna Bhutambare [c], Mamatha VL [d], Yogita Narawade [e], Siddharth Kumar [a]

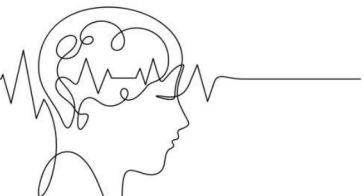
[a] Medical Cadet, Armed Forces Medical College, Pune, India
[b] Professor & Head, Department of Sports Medicine, PI, DST SATYAM & O I/C Human Sleep Lab, Armed Forces Medical College Pune, India
[c] JRF, DST SATYAM, C/o Department of Sports Medicine, (Human Sleep Lab), Armed Forces Medical College, Pune, India
[d] RA-1, DST SATYAM, C/o Department of Sports Medicine, (Human Sleep Lab), Armed Forces Medical College, Pune, India
[e] Former JRF, DST SATYAM, C/o Department of Sports Medicine, (Human Sleep Lab), Armed Forces Medical College, Pune, India

**M/cdt Ankit Anurag, published a paper on how sleep duration at night affects daytime wake EEG spectra under the guidance of Col Karuna Dutta, Prof HOD, Dept of Sports Medicine, AFMC.**

A total of 30 asymptomatic volunteers were enrolled to maintain a baseline sleep diary for fourteen days, and one daytime recording for EEG was done for the scoring of their sleep-wake using the American Academy of Sleep Medicine criteria. EEG data were analysed using a fast Fourier transform. A Python library was used to calculate power spectral density (PSD) in EEG frequency bands.

A beta band was significantly reduced in the first 45 min of the recording as compared to the baseline. K means cluster showed clustering of two groups with a significant reduction of daytime sleep delta PSD values with reduced total sleep time and time in bed the previous night. The study concluded that subjects with reduced night-time sleep duration generated significantly lesser sleep delta PSD values.

Reduced duration of night-time sleep was associated with worse nap time sleep delta PSD values and vice versa. Interestingly, good quality sleep at night correlated better with delta PSD values of daytime recording.

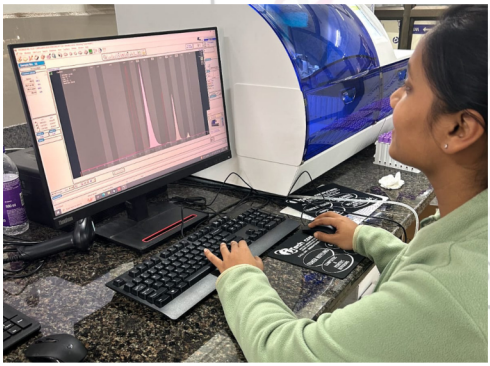


# Empathy in Action: A Transformative Journey into Sickle Cell Anemia Research in Nandurbar

M/Cdt Simran
I3 Batch

Reflection

My visit to Nandurbar for screening people with sickle cell anemia was a profoundly enlightening experience that deepened my understanding of the challenges faced by individuals affected by this condition. Nandurbar is known for its high prevalence of Sickle Cell Anemia, a genetic blood disorder that affects millions of people worldwide. The aim of the AFMC Nandurbar SCD collaborative project was to raise awareness about the disease, provide screening and diagnostic services, and offer treatment and counseling to those affected.



One of the most striking aspects of the program was the sheer scale of the effort. I witnessed dedicated healthcare professionals of AFMC and volunteers working tirelessly to screen the local population.

I also had the opportunity to perform phlebotomy in various schools and colleges of the district . Meanwhile also reporting the electrophoresis graphs and CBC reports for sickle cell disease, sickle cell trait and beta-thallesemia in lab setup by AFMC.

Overall, my visit to Nandurbar has left a lasting impression on me. It has reaffirmed my commitment to public health and has inspired me to continue working towards improving health outcomes for vulnerable populations. I am grateful to AFMC and Col. Y Uday for providing me with the opportunity to have been a part of such a meaningful program and for the support and guidance I have received throughout this journey.

# Empathy in Action: A Transformative Journey into Sickle Cell Anemia Research in Nandurbar

M/Cdt Preeti Thokran
I3 Batch

Reflection

I had heard a few things from my seniors about their own experiences ,which is what got me interested in research in the first place, but I had no idea what my personal research experience was going to be like. But it was a really good experience that can't be described in words.

This Research really has taught me to be open to the unexpected, and even welcome it, since being open has made me into a better researcher and student.

I think the most important thing that I went into research with was being open to anything, and not being set on one way of learning or doing things. This was beneficial since it allowed me to be able to learn something completely new and be open to doing things differently than I had done before .

Throughout the course of my research experience, I know that I have changed in many ways. I learned how to work independently, how to be more analytical in my work, and how to ask the important questions that led to discoveries.This Research has taught me to be open to the unexpected, and even welcome it, since being open has made me into a better researcher and student.

# MUHS AVISHKAR

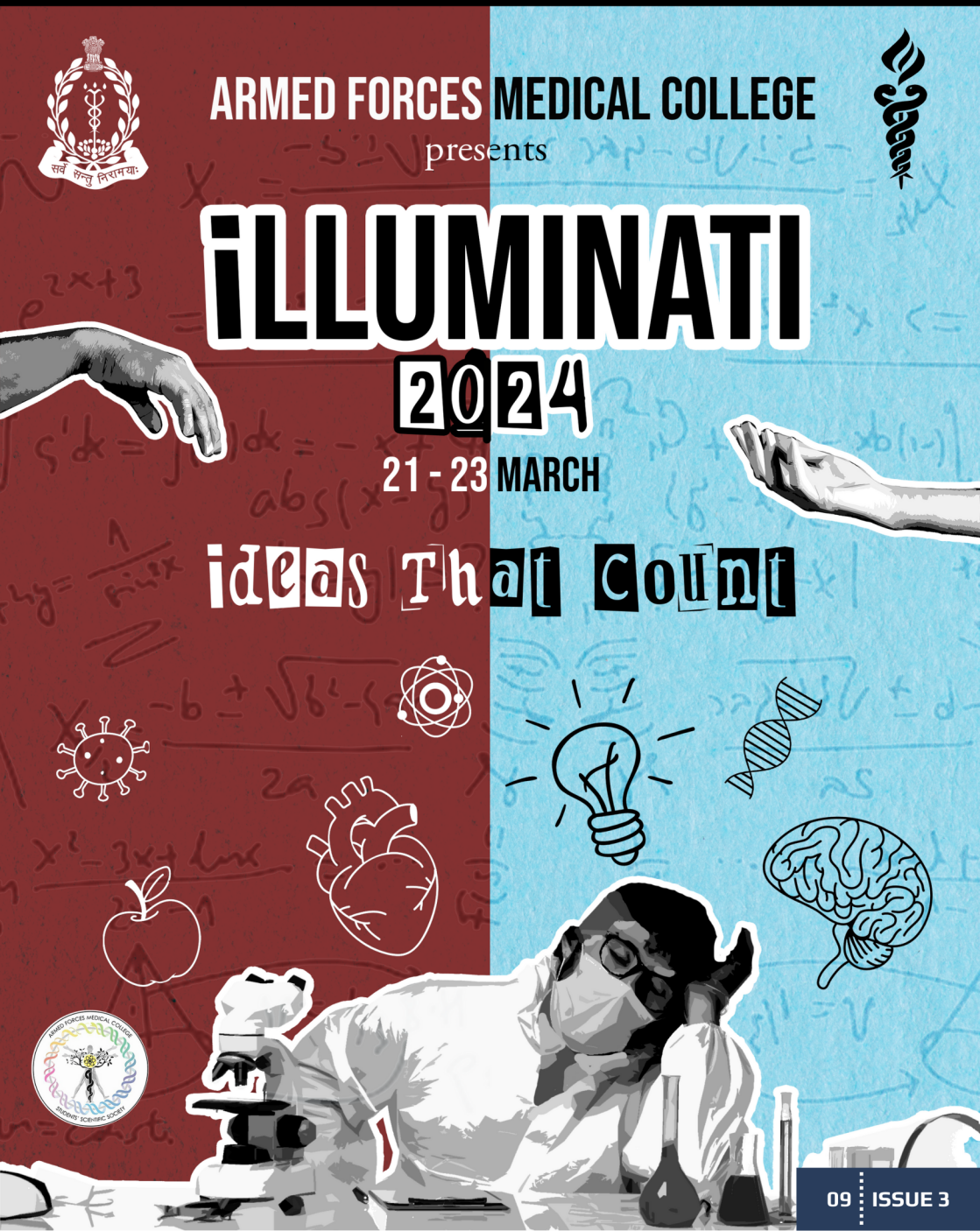
## ~Accepted Projects 2023

| sno. | Title | Cadet | Mode of Presentation |
|---|---|---|---|
| 1. | *Relive wave development of a holistic approach to enhance active participation in the rehabilitation process of spinal cord injury.* | *M/cdt Lalitha Yalagala Kishore* | *Poster* |
| 2. | To develop a device for timely replacement of HME/HEPA Filters in Ventilator systems | *M/cdt Avdhoot Padhwal* | *Poster and Model* |
| 3. | *A novel design for maintaining Cold Storage using Liquid Cooling Technology* | *M/cdt Gaurav Jalal* | *Poster* |
| 4. | *To develop the glucose-activated Neo Glycemic control Amenity (GANGA), A novel implant to address challenges faced by Diabetic Individuals using Insulin Medication.* | *M/cdt Sushrut Mokashi* | *Poster* |
| 5. | *Disaster management in a Flood-Hit Riparian Village* | *M/cdt Roopika Peela* | *Poster* |
| 6. | *RNA Interference method in Humans* | M/cdt Santosh Kumar Ganesh | *Poster* |

INNOVATION

GEARS BACKGROUND

# Mark the Dates...



# Thank you...

> Attention medical cadets! We cordially invite you to contribute your scientific work to our Tri-annual magazine/newsletter. Share your valuable insights, research findings, and discoveries with our esteemed readership. Join us in fostering knowledge exchange and collaboration within the scientific community.


ISSUE EDITORS

Med/Cdt Gaurav Jalal

Med/Cdt Chaitanya Agrawal

CHIEF-EDITOR

Col Y Uday

TRIANNUAL ISSUE

# SCI-SO

## CHRONICLES


A YEAR TO REMEMBER

01 Sept - 31 Dec

3rd ISSUE