

Curriculum vitae

Dr. Raju Rana

Official Address

Department of Biochemistry, Kasturba Medical College, Manipal-576104, Manipal Academy of Higher Education, Manipal, Karnataka, India

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Education

PhD (Medical Biochemistry)

Department of Biochemistry, Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Year of Passing: 2025/10/11

MSc (Medical Biochemistry)

Kasturba Medical College, Manipal, Manipal Academy of Higher Education, Manipal, Karnataka, India-576104

Year of Passing: 2021

BSc (Chemistry Major)

Tri-Chandra Multiple Campus (Tribhuvan University), Ghantaghar, Kathmandu, Nepal-44605

Year of Passing: 2018

Research Area:

My research focuses on assessing oxidative stress markers in individuals with metabolic syndrome. I am also working on identifying simple predictive markers for the early detection of metabolic dysfunction, particularly related to liver and kidney function and dyslipidemia. Additionally, my work examines behavioral risk factor clustering in this high-risk population and evaluates metabolic syndrome in individuals with normal body mass index.

Furthermore, I am experienced in designing and conducting systematic reviews and meta-analyses of prevalence studies, including literature search strategy development, data extraction, quality assessment, and statistical analysis. I have published a systematic review in a Scopus Q1-indexed journal.

Area of Research Expertise/Skills

Participant recruitment and management

- Developing recruitment strategies and protocols, screening potential participants for eligibility
- Administering standardized questionnaires, conducting physical measurements using calibrated equipment
- Experience with informed consent procedures, maintaining participant confidentiality, following ethics committee guidelines, data entry, and management
- Experience in statistical analysis of research data using the **software Jamovi**

Basic Biochemistry Skills

- Blood sample collection from study participants/patients, processing of blood samples following standardized protocols, and aliquoting and proper labelling of specimens
- Handling of biological specimens according to biosafety guidelines, following standard operating procedures for human samples, and proper documentation of sample collection and storage
- Spectrophotometry, colorimetric assays
- ELISA

Clinical Biochemistry Skills

I) Sample processing:

- Centrifugation parameters
- Separation of serum/plasma
- Aliquoting techniques to avoid contamination
- Hemolysis, lipemia identification

II) Toxicology:

- Basic understanding related to clinical toxicology, sample handling, and processing

Teaching Experience

Provided laboratory instruction and mentorship for basic and clinical biochemistry practicals for MSc (First and Second year) and MBBS (First year) students.

Research Project Works

I) Metabolic syndrome screening among obese and non-obese in Udupi

Role

- Contribute to study design, protocol development, and manuscript preparation.
- Recruit and screen hospital patients for inclusion in the study.
- Collect and analyze serum and plasma samples for biochemical markers associated with metabolic syndrome.

II) Evaluating trimethylamine-N-oxide, ischemia-modified albumin, and microelements among obese, metabolically healthy, and obese with metabolic syndrome and healthy controls

Role

- Contribute to study design, protocol development, and manuscript preparation.
- Conducted patient screening and enrollment for a research study and participated in sample collection and analysis of biochemical markers.

III) Evaluating the relationship between insulin resistance with inflammatory markers in hypothyroidism with metabolic syndrome

Role

- Co-supervise MBBS students in designing and conducting research projects, including sample analysis and data interpretation.

Publication

1. **Rana R**, Kamath SU, Shastri BA, U S, Maiya GA, Kamath U, et al. Evaluation of thiol/disulfide homeostasis and ischemia-modified albumin in metabolic syndrome patients. *Adv Redox Res* [Internet]. 2025;14(October 2024):100116. Available from: <https://doi.org/10.1016/j.arres.2024.100116> (Q3)
2. **Rana R**, Kamath SU, Shastri BA, Shashikiran U, Maiya GA, Kamath U, et al. Prevalence and risk factors of metabolic syndrome in obese and non-obese South Indian adults : A population-based cross-sectional study. 2025;96(Cvd):1–10. [10.23750/abm.v96i2.16898](https://doi.org/10.23750/abm.v96i2.16898) (Q1)
3. **Rana R**, Kamath SU, Shastri BA, Maiya GA, Kamath U, Rao SR, et al. Annals of Medicine Association between triglyceride – glucose index and liver enzymes in adults with metabolic syndrome : a retrospective cross-sectional study. *Ann Med* [Internet]. 2025;57(1). Available from: <https://doi.org/10.1080/07853890.2025.2522972> (Q1, IF: 4.9)
4. **Rana R**, Kamath SU, Shastri BA, et al. Prevalence of metabolic syndrome in Nepal: A systematic review of all published studies. *Acta Biomed*. 96(4):16751. [doi:10.23750/abm.v96i4.16751](https://doi.org/10.23750/abm.v96i4.16751) (Q1)
5. Bhasin G, Dafale RS, Annapoorna K, Kamath SU, Matlani D, **Rana R**, et al. Therapeutic Yoga: A feasible complementary approach for glycemic control in individuals with impaired fasting glucose and elevated HbA1c. *Contemp Clin Trials Commun* [Internet]. 2025;45(November 2024):101493. Available from: <https://doi.org/10.1016/j.conctc.2025.101493> (Q2)
6. Shettigar L, Sivaraman S, Rao R, Arun SA, Chopra A, Kamath SU, and **Rana R**. Correlational analysis between salivary and blood glucose levels in individuals with and without diabetes mellitus: a cross-sectional study. *Acta Odontol Scand* [Internet]. 2024;83(0):101–11. Available from: <https://doi.org/10.1080/00016357.2023.2267678> (Q2)

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Conference Presentation

- “Comparative Evaluation of Trimethylamine-N-oxide, Ischemia modified albumin, Iron, and Copper among normal control, obese metabolically healthy, and obese with metabolic syndrome” at the North Zone ACBICON 2022, held between April 22-23, PGIMER, Chandigarh, India
- “Association of TyG index with various biochemical parameters in metabolic syndrome” at the International Conference on Inclusion and Integration of Persons with Disabilities across the Lifespan held at Manipal College of Health Professions, MAHE, Manipal, on 12th and 13th February 2024
- “Carbon nanomaterials: its application in diagnosis and treatment of Metabolic Syndrome (MetS) and its components. Narrative review “at the International Conference on Nanoscience and Nanotechnology held in Manipal Academy of Higher Education, Manipal, on 29th Feb and 1st March 2024
- “Prevalence of Metabolic Syndrome among Men and Women in the Last Ten Years in South Asia: A Systematic Review and Meta-analysis Protocol “at the Manipal Quest 1.0 held on June 9, 2024, MAHE Inter-health Sciences Postgraduate Research Conference
- “Ischemia-Modified Albumin and Thiol/Disulfide Homeostasis as a Markers of Oxidative Stress in Metabolic Syndrome” at the International Conference on Symphony of Medicine, Biological Sciences and Omics Technologies (SYMBIOT '24) on the 3rd and 4th of July 2024.

Certificate courses and training

- Tool development and survey data analysis using Jamovi (2023). Department of Data Science, PSPH, MAHE, Manipal
- Certificate Course in Biostatistics, Epidemiology & Research Methodology (Dept. of Statistics, MAHE, Manipal) (2023).
- Research and publication ethics (Directorate of Online Education, MAHE) (2023)
- Workshop on “Systematic Review Methods” at KMC, Manipal, Organized by Cochrane affiliate center, Clinical Epidemiology Unit, MAHE, Manipal, Department

of Nephrology, KMC, Manipal, and Department of Community Medicine, KMC, Mangalore.

- Introduction to scoping Review Methodology on 5th May 2023, organized by Public Health Evidence South Asia, PSPH, MAHE
- Introduction to systematic reviews for dental health professions, July 2022, by the Indian Council of Medical Research, provided by the Swayam portal.
- Online Certificate course on “Introduction to Medical Writing”, offered by the Centre for Digital Learning, Manipal Academy of Higher Education, Manipal, Department of Pharmacology, Manipal College of Pharmaceutical Sciences. (April 15 to June 15, 2022).
- Online Certificate course on “University Teaching”: This online course is authorized by The University of Hong Kong and offered through Coursera. (March 18, 2025)
- Systematic Review and Meta-Analysis Workshop organised by the Technical Resource Centre, in association with the Centre for Toxicovigilance and Drug Safety Department of Pharmacy Practice, MCOPS, MAHE, Manipal, held from 15th to 17th May 2025.

Other affiliation

- Life member of the Association of Clinical Biochemists of India (Membership number: 4161/LM/JOUR)

References

Dr. Shobha U Kamath

Additional Professor

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