वार्षिक प्रतिवेदन

Annual Report 2024-25







आई.सी.एम.आर – राष्ट्रीय जनजाति स्वास्थ्य अनुसंधान संस्थान जबलपुर (म.प्र.)

ICMR - National Institute of Research In Tribal Health Jabalpur (M.P.)

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Message from the Director



It gives me immense pleasure to present the Annual Report of ICMR-National Institute of Research in Tribal Health (ICMR-NIRTH), Jabalpur, for the year 2024-25. This report reflects the Institute's continued commitment to advancing research, innovation, and evidence-based public health interventions aimed at improving the health and well-being of tribal populations across India.

During the year, the Institute made significant progress in priority areas of tribal health, including sickle cell disease, tuberculosis, malaria, dengue, maternal and child health, nutrition, and emerging infectious diseases. Through a multidisciplinary approach integrating field epidemiology, molecular biology, genomics, clinical research, and implementation science, our scientists generated valuable evidence that contributes to policy formulation and strengthens national health programmes.

A major highlight of the year has been the Institute's expanding role in the National Sickle Cell Anemia Elimination Mission, including implementation research, newborn screening, molecular diagnostics, and community-based interventions in tribal areas. We also strengthened our translational research portfolio through projects in genomics, precision medicine, placental biology, and novel diagnostic development. These initiatives demonstrate our commitment to bridging basic science with public health practice.

ICMR-NIRTH continued to enhance collaborations with national and international institutions, fostering scientific exchange and capacity building. Our faculty published research in reputed journals and actively translated findings into actionable public health strategies. Special emphasis was placed on community engagement through training programmes, awareness campaigns, stakeholder consultations, and outreach activities in collaboration with state health departments, medical colleges, and local communities.

The achievements of this year are the result of the dedication and collective efforts of our scientists, technical staff, administrative personnel, field workers, students, and collaborators. I sincerely acknowledge their hard work and commitment. I also express my gratitude to the Indian Council of Medical Research for its continued guidance, support, and encouragement.

As we move forward, ICMR-NIRTH remains committed to addressing emerging health challenges through advanced technologies, community-centric approaches, and sustainable public health solutions. We aspire to further strengthen our role as a national centre of excellence in tribal health research and contribute meaningfully to India's public health goals and the vision of equitable healthcare for all.



Dr. Rajnarayan R. Tiwari

Director (Additional Charge)
ICMR-NIRTH, Jabalpur

Executive summary
&
Scientist Profile

Executive Summary

The research activities of ICMR-National Institute of Research in Tribal Health (ICMR-NIRTH) during 2024-25 demonstrate a strong commitment to advancing public health, biomedical science, and translational research, with a special focus on tribal and other underserved populations of India. The Institute's work integrates epidemiology, molecular biology, genomics, clinical research, social sciences, and health systems strengthening to address both communicable and non-communicable diseases of national importance.

A major thrust area has been tribal health research, generating critical evidence on inequities in healthcare access and outcomes. Studies highlighted the rising burden of hypertension, gaps in antenatal care utilization, undernutrition, food insecurity, and mental health challenges among tribal communities. Research on maternal mental health and child survival underscored the need for integrated maternal-child health strategies, while investigations on menstrual hygiene, healthcare accessibility, and community governance provided actionable insights for strengthening tribal health programmes.

The Institute made substantial contributions to sickle cell disease (SCD) through implementation research, newborn screening, molecular diagnostics, and community-based interventions. A multicentric framework for early diagnosis and continuum of care was developed, and studies explored the socioeconomic burden, clinical manifestations, and molecular mechanisms associated with SCD, thereby supporting the goals of the National Sickle Cell Anemia Elimination Mission.

In the field of infectious diseases, research focused on tuberculosis, malaria, dengue, leprosy, scrub typhus, HIV, and emerging viral infections. Activities included pathogen genomics, drug resistance surveillance, validation of novel diagnostic assays, vector ecology studies, and investigations on immune mechanisms and biomarkers associated with severe dengue. These efforts strengthened disease surveillance and informed public health response strategies.

The growing burden of non-communicable diseases (NCDs) was addressed through population-based studies on hypertension, metabolic syndrome, and the interaction between infectious diseases and metabolic disorders. Research on gut microbiome alterations in HIV-associated metabolic disease highlighted the dual burden of communicable and non-communicable conditions in vulnerable populations.

Important advances were also made in maternal and child health, including studies on placental biology, genome maintenance, fetal growth restriction, malnutrition, and micronutrient deficiencies. The Institute initiated innovative research on placental genomic stability and its role in pregnancy complications, contributing to the emerging field of reproductive and precision medicine.

Capacity building remained a core priority, with training programmes in molecular diagnostics, genomics, public health entomology, epidemiology, and implementation research. Outreach activities, stakeholder engagement, and collaborations with state health departments, medical colleges, and national institutes enhanced the translation of research findings into public health action.

Overall, the year's achievements reflect a cohesive strategy that bridges laboratory science, field epidemiology, community engagement, and health system implementation. The evidence generated by ICMR-NIRTH provides valuable inputs for policy formulation, programme strengthening, and innovation in diagnostics and therapeutics, reinforcing the Institute's role as a leading centre for tribal health research and public health advancement in India.

Scientist Profile



Dr. Tapas Chakma, Scientist 'G', pursued his medical education at Government Medical College, Jabalpur, starting in 1981. After earning his medical degree, he briefly worked at Divisional Railway Hospital, Jabalpur, before joining ICMR- National Institute of Research in Tribal Health (NIRTH), Jabalpur, in 1989. He later completed his post-graduation in Applied Epidemiology from SCTIMS, Trivandrum. With over 35 years of dedicated research in tribal health, Dr. Chakma has significantly contributed to understanding and addressing major public health challenges, particularly tuberculosis, fluorosis, and malnutrition among tribal communities. His pioneering work includes identifying the high prevalence of tuberculosis among the Sahariya tribe, leading to government interventions. He was the first medical doctor to enter Patalkot Valley in 1992 to study the cause of high prevalence of goiter, which later declined due to his recommendations. His extensive research on fluorosis in Madhya Pradesh identified contaminated water sources and led to policy changes and intervention programs that prevented thousands from developing severe fluorosis-related disabilities. His intervention model, focusing on safe drinking water and nutritional supplementation, influenced the National Program for Fluorosis Prevention and Control. His contributions were recognized in ICMR's "Touching Lives" publication, with a foreword by Prime Minister Narendra Modi. Dr. Chakma has published over 50 research papers in national and international journals. His work on hypertension among tribal populations revealed a significant burden, including a unique subset of lean and thin hypertensive individuals. He has served on numerous national technical committees and received prestigious awards, including the Dr. B.C. Roy Oration Award (2019) and the Thakkar Bapa Award (2022) for his contributions to tribal health. His expertise continues to shape policies and improve healthcare for marginalized communities.



Dr. K. B. Saha, Scientist 'G' at ICMR-NIRTH, Jabalpur, is a distinguished social scientist specialized in demography, anthropology, ethnomedicine, and population studies. He holds a Ph.D. from IIPS, Mumbai, and has over two decades of experience in tribal health research. His work focuses on socio-behavioural determinants of health, reproductive health, and disease epidemiology among marginalized communities. He has contributed significantly to malaria control strategies, ethnomedicine, and health-seeking behavior. Dr. Saha has led multiple projects funded by ICMR and other agencies, mentored researchers, and published widely in reputed journals, influencing public health policies aimed at improving healthcare access and outcomes.



Dr. S. Rajasubramaniam S, Scientist 'F' is skilled in Molecular biology and cell signaling. His team is currently focused on providing diagnostic services for various Hemoglobinopathies besides training and developing human resources for 19 states with Tribal population in collaboration with Ministry of Tribal Affairs. In the future, his team is aiming to develop a non-invasive diagnostic procedure for oral cancer.



Dr. Pushpendra Singh, PhD, is working as Scientist 'F' at ICMR-NIRTH, Jabalpur, India. His research focuses on Microbial Genomics, Molecular Epidemiology and Anti-Microbial Resistance (AMR). Major thrust areas of research work are on Molecular diagnostics for infectious diseases such as Leprosy, Tuberculosis, Scrub typhus and viral diseases. He is also joined in his research efforts by a team of young researchers in the Virology and Zoonoses laboratory, where diagnosis and research work on more than 20 different viruses are performed regularly. Dr Singh has contributed to establishing a research group working on Leprosy research, which is supported by 3 international funding agencies and many national and state level funding agencies such as ICMR, DHR, DBT and State Govt. He is also mentoring DBT-Ramalingaswami Fellows and DBT-BioCARe awardee Scientists at ICMR-NIRTH and has supervised ICMR-SRF and ICMR-Research Associates.



Dr Dinesh Kumar, presently working as Scientist 'F' in the Institute, ICMR-NIRTH, Jabalpur. He has completed 25 years of service with ICMR at NIRTH, Jabalpur and have experience in socio-behavioral, health system and implementation research. Dr Kumar has published several research articles in national and international journals. He has received grants for research in tribal health other than ICMR, from the Ministry of Tribal Affairs (MoTA) and the National Academy of Sciences, India (NASI) in the capacity of Principal Investigators. He has completed several National Taskforce projects like Universal Health Coverage (UHC), COVID, MCH, and AMR as PI and Co-PIs. He has been awarded 2 "International scholarships" from WHO/TRD, Thailand, for Participating in the 6th FERCAP (Forum for Ethical Review Committees in Asia and the Western Pacific), and Royal Society of Tropical Medicine and Hygiene (RSTMH), London, UK for participating in the Centenary Celebration Meeting the Millennium Development Goals.



Dr. Rituraj Niranjan, Scientist 'D' and ICMR-Talent Search Scientist at ICMR-NIRTH, Jabalpur, is an expert in cellular and molecular immunology. His research focuses on immunopathogenesis of dengue, neuroinflammation, fibrosis, and nanoparticle-based drug delivery. He has significantly contributed to understanding IL-15 in immune disorders and matrix metalloproteinases in dengue severity. He obtained his Ph.D. from JNU and completed postdoctoral training in leading US institutions. Ranked among the top 2% scientists globally, he has over 40 publications. Previously associated with IIT Kanpur and ICMR-VCRC, his current work explores novel therapeutics, autophagy, and medicinal plant-based interventions for infectious and inflammatory diseases.



Dr. Vidhan Jain, Scientist 'D' at ICMR-NIRTH, Jabalpur, leads the TB Culture & Drug Susceptibility Testing Lab and SRL-HIV. His research focuses on microbiology and immunology of major infectious diseases, particularly tuberculosis and malaria, with emphasis on biomarkers for adverse outcomes. He completed his Ph.D. at ICMR-NIRTH and has contributed to both field- and laboratory-based studies published in reputable journals such as Malaria Journal, Pathogens and Global Health, and the American Journal of Tropical

Medicine and Hygiene. He has presented at national and international forums and actively mentors students. His goal is to advance clinically relevant research in TB and malaria.



Dr. Ravindra Kumar, Scientist 'D' at ICMR-NIRTH, Jabalpur, and Assistant Professor at AcSIR, is a specialist in genetics and molecular haematology. With over a decade of experience, his research focuses on thalassemia, sickle cell disease, and anaemia, particularly in tribal populations. He has led and contributed to multiple projects funded by ICMR, DST, DBT, and NHM. Dr. Kumar has over 130 publications and actively mentors postgraduate students. Recognition of his excellence is evident in numerous awards, including the Santosh and Arjun Dev Taneja Memorial Award for Excellence (2025), the Achiever Award by Thalassemics India (2023), and the Young Scientist Award under DST-Fast Track Scheme (2012). Dr Kumar has contributed to the national Sickle Cell Anemia Elimination guidelines. His work advances molecular diagnostics and improves the management of genetic blood disorders in India. Currently, Dr. Kumar is mentoring three Ph.D students.



Dr. Anil Kumar Verma is working as Scientist 'C' at ICMR-NIRTH, Jabalpur, specializing in Life Sciences. He earned his Ph.D. from Jawaharlal Nehru University, New Delhi (2012) and holds an M.Sc. in Biochemistry. His research focuses on malaria diagnostics, infectious diseases, and public health interventions, with publications in EClinicalMedicine and Lancet Infectious Diseases, Dr. Verma has played a key role in multiple WHO, ICMR, and Industry funded projects, working on malaria diagnosis, treatment efficacy, antimicrobial resistance, and disease elimination strategies. His contributions include developing novel diagnostic tools and strengthening disease surveillance systems. He has been recognized with several prestigious awards, including the Dr. D.S. Kothari Post-doctoral Fellowship (UGC), ICMR travel grants, and CSIR-NET qualification. His academic excellence includes ranking among the top in his university. Dr. Verma remains committed to advancing research, training, and public health outcomes in alignment with the mandate of the Institute.



Dr. Suyesh Shrivastava, MBBS, MD, serving as Scientist 'C' in the Division of NCDs at ICMR-NIRTH. Dr Shrivastava specialization lies in epidemiology, non-communicable diseases (NCDs), and sickle cell disease, where he focuses on innovative clinical trials and public health strategies for tribal and urban populations. He has been involved in various outbreak investigations in various urban, rural and slums areas of central India. As nodal officer at MRHRU, Datia and Jeet, he collaborates closely with Datia Medical College on multiple projects, including an intensive population-based health survey conducted in 2025-26. His work drives evidence-based interventions to combat NCDs and hematological disorders in underserved communities.



Dr. Nishant Saxena works as a Scientist 'C' at the Indian Council of Medical Research - National Institute of Research in Tribal Health, Jabalpur, India (ICMR-NIRTH). Prior to joining the ICMR, Dr. Saxena worked with the Anthropological Survey of India. He holds a master's degree in Anthropology and a DPhil in Cognitive and Behavioural Sciences from the University of Allahabad. He is also a trained health communication expert wherein he was part of the inaugural batch of ICMR Health Communications Course. Dr. Saxena is a member of the prestigious International Union of Anthropological & Ethnological Sciences (IUAES) and its Commission on Medical Anthropology and Epidemiology. He is also an Honorary Scientific Advisor to the Institute of Translational Health Science, Mohali, Punjab and Member of the Expert Group of CSIR-TKDL Unit on Development of SOPs for Documentation of Oral Traditional Knowledge in India. His current research and academic interests lie at the intersection of traditional medicine (ethnomedicine) in tribes of India and public health system. In addition, he is also engaged in population-based health surveys and implementation research in sickle cell disease among tribes. Further, Dr. Saxena has contributed to a range of topics related to anthropological discourses on tribes of India through participation in academic dialogues like international/national conferences, seminars, workshops, etc., and through numerous publications in peer-reviewed journals with notable publications in journals The Lancet, Lancet Infectious Diseases, and the BMJ. He also has many book chapters to his credit.



Dr. Qaiser Farooq Dar, Scientist 'C' is a distinguished researcher in the field of statistics & Operational Research, specializing in biostatistics. He completed his Post-doctoral Research Program at Incheon National University, South Korea, following his doctoral studies at the Department of Statistics, Ramanujan School of Mathematics Sciences, Pondicherry University. His academic journey also includes a master's degree in Statistics from the University of Kashmir, Srinagar. Prior to his current position, Dr. Dar served as a Biostatistical Scientist at the Sher-I-Kashmir Institute of Medical Sciences (SKIMs) in Srinagar. His remarkable contributions to the field have been recognized with several outstanding paper awards, including the prestigious Young Researcher and Young Scientist Award from India in 2020. Currently, Dr. Dar holds the position of Scientist-C and Assistant Professor-AcSIR at ICMR-NIRTH, Jabalpur, M.P, India. Dr. Dar is working on the project "Prediction and classification of complications in sickle cell disease patients using machine-learning algorithms: A Decision Supporting System". He actively engages with various research organizations, both nationally and internationally, and has organized numerous conferences. Additionally, he plays a crucial role as a reviewer for several esteemed scientific journals. Dr. Dar's research interests span a wide spectrum, and his prolific output includes over 35 research publications in high-impact scientific journals of international repute. His dedication to advancing statistical methodologies in the context of health research underscores his commitment to improving public health outcomes.



Dr. Satyendra Pandey is presently serving as Scientist 'C' at ICMR-NIRTH, Jabalpur, Madhya Pradesh. He has extensive expertise in entomology and vector-borne diseases, with over 14 years of professional experience under the National Vector Borne Disease Control Programme (NVBDCP), National Health Mission, Madhya Pradesh. During this tenure, he made significant contributions to vector surveillance, disease control strategies, guideline development, and programme implementation across diverse operational settings. Dr. Pandey has been awarded multiple commendations and certificates in recognition of his outstanding contributions to vector-borne disease control programmes. At ICMR-NIRTH, he is actively involved in multidisciplinary research encompassing field-based investigations and laboratory studies in entomology and public health. He also serves as the Nodal Officer for the Master of Public Health (Entomology) programme, contributing to academic coordination, training, and capacity building. . Dr. Pandey remains committed to advancing research, training, and public health outcomes in alignment with the mandate of the Institute.



Dr. Vagisha Rawal is a Scientist 'C' at ICMR-NIRTH, Jabalpur, with expertise in entomology and insect behavior. She holds a B.Sc. (Hons) Zoology, M.Sc. Zoology, M.Phil., and Ph.D. in Insect Behavior from Delhi University. Before joining ICMR NIRTH, she served as an Assistant Professor at Sri Venkateswara College, Delhi University, for eight years, gaining extensive teaching and research experience. Her research focuses on vector-borne disease control, genomic surveillance of vectors and parasites, and integrated vector management. At ICMR-NIRTH, she oversees the M.Sc. Public Health Entomology program in collaboration with Pondicherry University, teaching and supervising student dissertations. Additionally, she plays an active role in institutional committees, serving as the Nodal Officer for M.Sc. Public Health Entomology, Liaison Officer for PWDs and OBCs, and a member of the Internal Complaint Committee, Student Grievance Committee, and Staff Quarter Allotment Committee, while also managing hostel affairs.



Dr. Harshwardhan Vijay Shende is a social scientist currently working as Scientist 'B' at the Indian Council of Medical Research-National Institute of Research in Tribal Health (ICMR-NIRTH), Jabalpur, Madhya Pradesh. He holds a PhD and MPhil in Rural Development from the Tata Institute of Social Sciences (TISS), Tuljapur. His research focuses on the psychosocial dimensions of chronic diseases, particularly among tribal and marginalised populations. He has a strong academic and research interest in mental health, including anxiety, depression, psychological distress, and the role of social stigma in shaping health outcomes. His work also explores social determinants of mental health and health inequities, with an emphasis on developing culturally appropriate public health interventions. His work drives evidence-based interventions to combat NCDs and hematological disorders in underserved communities.



Dr. Vijay Pratap Singh, PhD, is a DBT Ramalingaswami Fellow at ICMR NIRTH, Jabalpur, India. Dr. Singh completed his PhD at CSIR-CCMB, Hyderabad, and Jawaharlal Nehru University, New Delhi, followed by postdoctoral research at the Stowers Institute for Medical Research, Kansas City, USA. He has contributed significantly to the field of maternal child health, publishing research articles in leading journals such as Developmental Cell, Development and authoring book chapters on reproductive health. His research focuses on genome maintenance in placental development, a critical aspect of maternal-fetal health. The placenta, a highly polyploid organ, is vulnerable to genomic instability, which can impact pregnancy outcomes, fetal growth, and maternal well-being. Using advanced molecular and genetic tools, Dr. Singh investigates key regulators of genome stability in placental cells. His work explores how DNA damage and repair mechanisms influence placental aging, parturition, and embryo development, providing new insights into pregnancy complications and their connections to aging and cancer and has been funded by DBT, ANRF and ICMR. He has presented his findings at prestigious national and international conferences and delivered invited talks on placental biology, DNA damage, and maternal health. His recent studies highlight the importance of maintaining genomic integrity for healthy pregnancy outcomes. Beyond research, Dr. Singh is actively involved in academic training and mentorship. He has received training in specialized courses such as the Placenta Biology Course at the University of Cambridge, UK. His long-term goal is to bridge fundamental research with clinical applications, contributing to maternal and fetal health advancements. By deepening the understanding of placental biology, his work paves the way for potential therapeutic interventions to improve pregnancy outcomes and address broader health challenges associated with genomic instability.

Section 1- ICMR Funded Projects

1.1 Project:

Title: Implementation research for optimizing the comprehensive Sickle Cell Anemia (SCA) care services under the national SCA elimination mission

Status: Ongoing

PI: Dr. Ravindra Kumar, Co-PI: Dr. Kalyan Saha, Dr. Nishant Saxena, Dr. Harshvardhan Shende, Dr. Suyesh Shrivastava

Year of Initiation: 2025

Funding: ICMR, New Delhi

Background with Objective: Sickle Cell Disease (SCD) is a significant public health concern in high-burden regions, requiring early diagnosis, continuous care, and efficient health system support. Despite existing national and state programs, gaps in facility preparedness and service delivery hinder optimal outcomes. This implementation project aims to strengthen health system readiness, standardize service delivery, and bridge policy-practice gaps. It focuses on improving awareness of SCD, screening, treatment, care, and welfare services for SCD patients. The development of robust capacity building and monitoring systems is the bedrock of the project. The objectives of projects are as follows:

1. To undertake formative research to optimize "National Sickle Cell Anemia Elimination mission."
2. To co-develop & co-implement the strategy with state government to optimize delivery of various components of mission.
3. To evaluate the effectiveness of the implementation strategy.

Methodology: A mixed-method study design was adopted for the study.

Work Progress: Training of staff and other stakeholders under the thematic research phase for the community participants survey has been conducted.



Stakeholders meeting and training by ICMR-NIRTH at District hospital, Chhindwara

Conclusion: During the three months from January to March 2026, sustained efforts toward awareness and skills generation among stakeholders and staff facilitated their preparedness and alignment, thereby contributing to the effective achievement of the desired outcomes of the research project.

Future directions: The preparation of tools and operationalization of the survey, with the data entry and its analysis, followed by qualitative data collection and analysis, were the planned activities under the next project period of 2025-26.

1.2 Project:

Title: Study of endothelial adhesion molecules for vaso-occlusive crises in the SCD patients.

Status: Ongoing

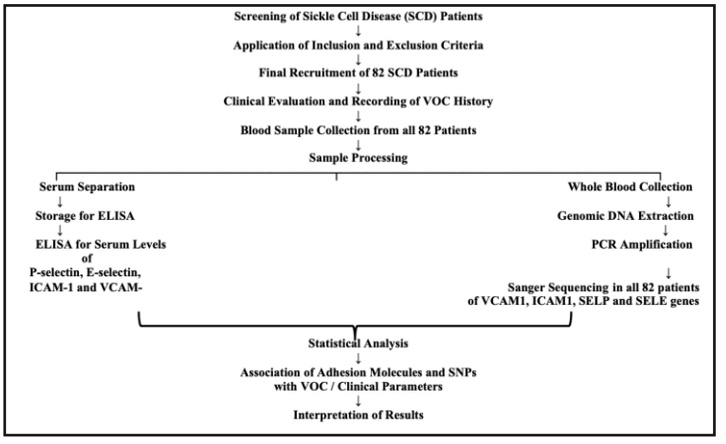
PI: Dr. Ravindra Kumar, RA Fellow: Dr. Parul Gupta

Year of initiation: 2022

Funding: ICMR, New Delhi

Background with objective: Sickle cell disease (SCD) is a hereditary hemoglobin disorder marked by recurrent vaso-occlusive crises (VOC), which are driven by inflammation and abnormal adhesion of blood cells to the vascular endothelium. Endothelial adhesion molecules such as E-selectin, P-selectin, VCAM-1 and ICAM-1 play a crucial role in the disease severity. However, variability in VOC frequency among patients suggests that circulating levels of these molecules and genetic variations may influence clinical outcomes. Therefore, this study aimed to determine the occurrence pattern of VOC in SCD patients, evaluate the association of key endothelial adhesion molecules with VOC, and investigate the relationship of common SNPs in VCAM1, ICAM1, SELP and SELE genes with their serum levels during crisis, after crises and at steady state.

Methodology: Shown in flow diagram.



Conclusion: The study observed significantly increased levels of P-selectin, E-selectin, ICAM-1, and VCAM-1 during crisis. This suggests their involvement in vascular inflammation and cell adhesion. Some genetic variants in adhesion-related genes also showed association with molecule levels and clinical severity. Overall, these findings support the role of endothelial activation in VOC and suggest that these markers may be useful in understanding disease progression.

Future directions: Further studies with larger sample size and longer follow-up are needed to confirm these findings. Functional analysis of the identified SNPs may help clarify their biological role in VOC.

1.3 Project:

Title: Connecting the unconnected: An incentive-based model to connect the Baiga traditional tribal healers to public health system.

Status: Ongoing

PI: Dr. Nishant Saxena, Co-PI: Dr. Kalyan B. Saha, Dr Dinesh Kumar, Dr Suyesh Shrivastava, Dr Harshwardhan V Shende, Dr. Brijesh Patel, DMO & DHO, Dindori, MP and CMHO, Umaria, MP

Year of initiation: 2023

Funding: ICMR TSP scheme

Background with objective: India has a large tribal population (~104 million, Census 2011) who practice their own system of medicine revolving around traditional tribal healers (TTHs) who are often the first choice of ailing tribals and provide primary care in their own way. However, they fall short of providing secondary/tertiary care for acute/emergency cases, and often a delay is caused in referring cases to the nearby health centres (HWCs/PHCs/CHCs). This is so because there is no such mechanism wherein TTHs can refer patients to nearby healthcare centres and be acknowledged for it. This unique project is an attempt to develop a model for this integration of traditional and modern health practices, which will strengthen the delivery of public healthcare to tribal communities of Madhya Pradesh, and can be a gamechanger in future for tribal health.

Methodology/ work progress/results:

The study is on the verge of completing two years, wherein the formative phase and baseline study phases have been completed in two districts of Madhya Pradesh (Dindori and Umaria) which are Baiga dominated. Thereafter, implementation of the model was carried out at the community level in 38 villages of Bajag block of Dindori district in Madhya Pradesh. After the initial round of training workshops (10 in number) and sensitization cum stakeholder meetings, the referral mechanism (using unique QR code-based referral slips) was established and carried out. This is to ensure timely channelizing of patients in tribal area from traditional tribal healers (TTHs) to nearby health posts/ASHAs and make accessible free and quality healthcare under the Ayushman Bharat Yojana. 100 TTHs along with 50 ASHA/ANM and 23 health centres (CHC, PHC, and HWCs) have participated in this model.

Conclusion: The completion of implementation phase is awaited. Thereafter, the detailed report will be submitted to the funding agency for release of grant for the last year of study.

Future directions: As soon as the grants are received, the third and final year of project will be initiated, and the endline survey will be undertaken to assess the impact and feasibility of the model. The project may culminate into the development of evidenced-based policy for systematic integration of traditional and modern health practices in tribal areas of the country which is not there at present.

1.4 Project:

Title: PAN India Antigenic Characterization of Dengue Viruses: Early warning signal for a potential pandemic.

PI: Dr. Rituraj Niranjan, (multicentric project, site PI for Jabalpur)

Status: Ongoing

Duration : 2024-2027

Funding: PM-ABHIM

Background:

Emerging and re-emerging infectious diseases caused by flaviviruses pose significant challenges to the human population all over the world. Flaviviruses (such as Dengue, Japanese encephalitis, Zika, and West Nile) are RNA viruses, transmitted mainly by mosquitoes. Genomic mutation in RNA viruses is a natural evolutionary process that promotes their survival and results in antigenic variant strains, thereby enabling escape from the host immune

response. The endemic nature of Flaviviruses in India combined with JE vaccination in certain regions of India and the looming availability of Dengue and Zika vaccines in near future, make a perfect recipe for the antigenic variance of these viruses resulting in the evolution of new strains that may result in an epidemic. Furthermore, since Dengue/JE/Zika/WNV share antigenic properties, the infection of one virus may pre-dispose the generation of antigenic variants of other viruses upon subsequent infection. Early recognition of antigenic variant strains, causing an outbreak, will facilitate rapid response before the outbreak turns into an epidemic or pandemic.

Objectives:

1. To study antigenic characteristics of dengue viruses circulating across India.
2. To develop Spatio-temporal antigenic maps on a real-time basis to indicate the antigenic evolution of dengue viruses across India.

Methodology & Results:

1. Collaborating with healthcare authorities for sample collection after obtaining all necessary permissions and ethical clearances. Ensure proper storage and transportation of the collected samples to the laboratory.
2. Confirm dengue-positive samples using various diagnostic tests, such as NS1 ELISA, IgM ELISA, and IgG ELISA.
3. Isolate the virus from the collected samples using appropriate culture methods and propagate it in suitable cell lines to obtain sufficient viral material for further analysis.

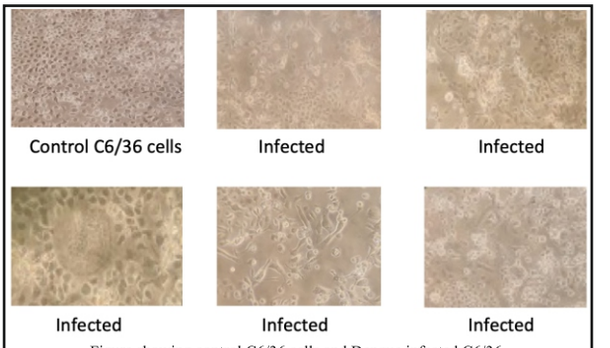


Figure showing control C6/36 cells and Dengue infected C6/36 cells showing cytopathic effect (CPE)

4. Determine the dengue virus serotype using RT-PCR as described by Lanciotti et al. (1992). Oligonucleotide consensus primers are used to anneal to conserved regions of all four dengue virus serotypes and amplify a 511-bp product by reverse transcription-polymerase chain reaction (RT-PCR). Serotype-specific primers are then used for a second round of amplification by nested PCR.
5. Determine the genetic characteristics of different dengue virus strains and serotypes using Sanger sequencing. Compare the sequences of currently circulating viruses with historical strains to identify genetic variations and potential antigenic drift.

This year a total of 1100 samples have been collected from patients with acute febrile illness from various localities in nearby regions of Jabalpur, with all necessary approvals and ethical clearance. All collected samples were subjected to an initial screening using the NS1 ELISA test for confirmation of NS1 Positive samples. To obtain a sufficient viral material for further analysis, Only NS1 positive samples were propagated in C6/36 cell line which is a Mosquito-larvae derived cell line that shows great susceptibility for Dengue virus growth. These samples were passaged several times to get a high titer of virus. We have 38 successfully cultured isolates so far. To ensure the virus isolation and propagation, these harvested samples were tested with NS1 ELISA. A cell culture-based assay, TCID50 Assay methods were used to titrate the virus isolates.

RNA extraction was done by using Qiagen viral RNA extraction kit. By ensuring the quality of extracted RNA using nanodrop, this RNA proceeded to RT-PCR. Correctly sized DNA product (511 bp) was obtained for each of the dengue viruses after amplification with consensus primers Dl and D2. Each DNA product was correctly typed with a second

round of amplification with the type-specific primers. Results revealed that all four serotypes are circulating in Jabalpur and adjoining rural areas. DENV-2 being the most predominant among all. Some of the patients were found positive for co-infection (need confirmation). As a part of this project, a total of 42 samples from various locations and age groups of patients were sent to NIRBI for WGS.

Future directions:

This study has substantial translational potential, linking large-scale genomic and antigenic research with actionable public health outcomes. By generating high-resolution, Pan-India data on dengue virus genomic diversity and antigenic evolution, the project will create a robust evidence base to guide vaccine development and therapeutic strategies.

1.5 Project:

Title: Elucidating the role of nanoparticles and associated mechanisms in modulating matrix metalloproteinases activities/expressions in dengue viral disease: nanotherapeutics for dengue shock syndrome (DSS/DHF).

PI: Dr. Rituraj Niranjan

Status: Ongoing

Funding: ICMR, New Delhi

Year of initiation/ completion: 2023-2026

Background: Dengue is a rapidly expanding mosquito-borne viral infection that poses a significant global health challenge, with its incidence increasing nearly 30-fold over the past five decades. The disease is primarily transmitted through the bites of infected Aedes aegypti and Aedes albopictus mosquitoes (WHO, 2023). Clinically, dengue presents with a wide spectrum of manifestations, ranging from mild febrile illness to severe and life-threatening conditions such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), which are characterized by plasma leakage and hemorrhagic complications (Screaton et al., 2015). While the majority of patients recover following a self-limiting course with supportive treatment, a small proportion progresses to severe disease, reflecting complex host-virus interactions and immune dysregulation.

Experimental and histopathological studies have demonstrated that the immune system, liver, and vascular endothelium play pivotal roles in disease progression, with increasing evidence pointing toward the involvement of matrix metalloproteinases (MMPs) in extracellular matrix remodeling and enhanced vascular permeability (Malavige et al.,2020). Despite considerable progress, the precise molecular mechanisms underlying the progression to DHF/DSS remain incompletely understood. In this context, exploring nanoparticle-based strategies to modulate MMP activity and associated pathways may offer promising avenues for mitigating vascular dysfunction and improving outcomes in severe dengue (Yong et al., 2022).

Objectives:

1. To assess the effects of nanoparticles on the expression profile of MMPs and associated mediators on blood innate immune cells (monocytes, neutrophils and eosinophils) in dengue viral disease.
2. To investigate the autophagic or endoplasmic reticulum stress mediated mechanisms of nanoparticles associated to MMPs expressions in dengue viral disease.

3. To understand and establish the mechanisms of nanoparticles in regulating the MMPs mediated endothelial dysfunctions associated to DSS/DHF.

Methodology & Results: Overactivation of MMP may contribute to the severity of dengue pathogenesis. MMP2 is secreted by pulmonary vascular endothelium and media, is a gelatinase & involved in regulation of inflammation, migration of cells, and may trigger inflammatory cascade and neutrophil activation.

MMP-14 is essential for several biological processes, such as the development of lung cancer, activation of MMP2 restricting apoptosis, and T cell infiltration in inflammatory tissue. The present study shows higher gene expression of MMP-2 and MMP-14 in monocyte cells exposed with DENV-3 as compared to control. But, when we treated the DENV-3 exposed monocytes with increasing conc. of AgNPs at 5, 10, 15 ug/ml, we found a decrease in expression of both genes with increasing concentrations. MMP-14 shows very high gene expression in presence of dengue virus.

According to reports, MMP-8 plays a function in re-epithelialization, apoptosis prevention, and anti-inflammatory endothelial migration. This present study shows a significant increase in expression of MMP8 in the presence of DENV-3 as compared to control but in the presence of AgNPs with varying conc. along with DENV3, no such increment in expression is seen. MMP-13 inhibits apoptosis, anti-inflammation, and endothelial migration. This present study shows no significant role/expression of MMP13 in response to DENV3 and AgNPs. MMP9 is a gelatinase involved in angiogenesis &; neurogenesis. MMP9 is involved in cell migration, inflammation modulation, the induction of inflammatory cascades, and neutrophil activation. MMP-9 is thought to have a part in the dengue virus sickness by activating other cells, which may then cause DHF or DSS. This present study shows a significant increase in expression of MMP9 in the presence of DENV-3 as compared to control but in the presence of AgPs at conc. 5, 10, 15 ug/ml along with DENV3, down regulation of expression is seen with increasing conc. of AgPs. MMP7 is a matrilysins that process cell surface molecules & digest ECM components. The suspected role of MMP7 in the dengue virus is that it may cause cite-specific inflammation and other immune cell activation. We found no significant expression of MMP7 in monocyte cells in response to DENV3 and AgNPs. This present study shows a significant increase in expression of MMP7 in the presence of DENV-3 as compared to control but in the presence of AgPs with varying conc. along with DENV3, no such increment in expression is seen. According to reports, MMP-1 plays a function in re-epithelialization, keratinocyte migration, apoptosis prevention, and anti-inflammatory endothelial migration. This present study shows a significant increase in expression of MMP1 in the presence of DENV-3 as compared to control but in the presence of AgNPs with varying conc. along with DENV3, no such increment in expression is seen. This present study shows a slight increase in expression of MMP 1 in the presence of DENV-3 as compared to control but in the presence of AgNPs with varying conc. along with DENV3, there is a significant decrease in expression is seen.

Overactivation of MMP2 plays important role in dengue severity. It is reported that MMP2 may induce apoptosis of cells &; activation of other cells that may cause DHF/DSS. In this study we confirmed the expression of MMP2 gene expression in response to dengue virus exposure, which has been done by reverse transcriptase and found upregulated expression of MMP2 gene. ELISA was performed to check the virus titration in the supernatant of THP-1 cells infected with all four dengue serotypes (because from this DENV-3 supernatant, we treat later monocytes along with AgPs, which is the basis of the whole experiment). It was scientifically analysed, that IL-13 is significantly increased during the period in dengue exposure as compared to control samples.

Future directions: The findings of the present study indicate that matrix metalloproteinases play an important role in dengue-associated inflammatory responses and may contribute to disease severity. Future investigations will focus on

elucidating the molecular pathways through which silver nanoparticles modulate MMP expression and activity in dengue virus-infected immune cells. Additional studies will evaluate the effects of nanoparticle formulations on autophagy, endoplasmic reticulum stress, and endothelial dysfunction associated with DSS/DHF. Validation of these findings in primary immune cells and suitable animal models will be undertaken to assess translational applicability. Furthermore, optimization of nanoparticle dosage and formulation will be carried out to facilitate the development of novel therapeutic interventions against severe dengue disease.

1.6 Project:

Title: Deciphering the immunological, molecular and genetic mechanisms of "Antibody Dependent Enhancements (ADE)" of dengue virus particles: relevance for immunopathogenesis and vaccine developments.

PI: Dr. Rituraj Niranjan, **Co-I:** Dr. Anil Kumar Verma

Status: Ongoing

Funding: ICMR, New Delhi

Duration: 2023-2026

Background:

Dengue is one of the key health problems, that affects massive population world-wide and is an emerging disease of the tribes in India. In some cases, secondary infection is more severe than primary due to the already existing antibodies, this mechanism is called antibodies dependent enhancements (ADE). Antibody-dependent enhancement (ADE) may drive higher viral loads in these secondary infections and is purported to result from antibodies that recognize dengue virus but fail to fully neutralize it. However, the exact mechanism of ADE of dengue virus is completely unknown and need extensive investigations. FcγR is understood to be a key regulator in the mechanism of ADE however its role on innate immune cells is not clearly understood in dengue virus replications. Autophagy is believed to participate in the virus replications and intracellular mechanisms. Therefore, the present study is planned to understand the mechanism of antibody-dependent enhancement of dengue virus replication.

Objectives:

1. To investigate the Fcγ receptor (Fcγ-R) expressions patterns (constitutive and inducible) in immune cells in dengue patients samples.
2. To understand the serotype specific mechanisms in Fcγ receptor mediated ADE in immune cells and its pathological perspective.
3. To elucidate the role of autophagic pathway in antibody dependent enhancements (ADE) of dengue virus particles replication.

Methodology & Results:

To study the mechanism of ADE we have developed an in-vitro model of monocytes culture system. To chive the mechanism of anti-body dependent enhancements in response to dengue virus we have exposed the monocytes with all four serotypes till four successive generations passaging and estimated the virus concentrations using NS1 ELISA. We

have observed that there is sequential decrease in the virus concentrations in all four generations of monocytes cell cultures. We have also tested the expression profile of Fc R receptor gene in response to virus antigen and its inhibition by atorvastatin. We have observed that NS1 antigen of dengue virus serotype 2 has significantly increased the expression profile of Fc R receptor gene expression which was inhibited by atorvastatin in dose dependent manner.

In general, virus-specific antibodies are considered antiviral and play an important role in the control of virus infections in several ways. However, in some instances, the presence of specific antibodies can be beneficial to the virus. This activity is known as antibody-dependent enhancement (ADE) of virus infection. The ADE of virus infection is a phenomenon in which virus-specific antibodies enhance the entry of virus, and in some cases the replication of virus, into monocytes/macrophages and granulocytic cells through interaction with Fe and/or complement receptors. These viruses share some common features such as preferential replication in macrophages, ability to establish persistence, and antigenic diversity. For some viruses, ADE of infection has become a great concern to disease control by vaccination.

Consequently, numerous approaches have been made to the development of vaccines with minimum or no risk for ADE. It is known that antibodies to dengue viruses at sub neutralizing concentrations enhance dengue virus infection of Fc gamma Rt cells. This phenomenon called antibody-dependent enhancement (ADE) occurs when virus-antibody complexes bind to the Fc gamma R via the Fc portion of the Ig. It has been hypothesized that ADE may be responsible for the pathogenesis of the severe manifestations of dengue virus infection including dengue hemorrhagic fever/dengue shock syndrome. In the present study we have observed that, the virus Fc R receptor expression is increased in response to virus antigen which indicate that its activation and increased response towards ADE in monocytes cells. This means that further exposure with the virus will leads to high replication and increased virus production or titre.

Future directions: In the present study we have observed that, the virus Fc R receptor expression is increased in response to virus antigen which indicate that its activation and increased response towards ADE in monocytes cells. This means that further exposer with the virus will leads to high replication and increased virus production or titre.

1.7 Project:

Title: Dengue Shock Syndrome (DSS): Study on the role of blood matrix metalloproteinase-14 (MT1-MMP/MMP-14) associated to innate immune cells and its contribution to endothelial.

PI: Dr. Rituraj Niranjan

Status: Completed

Funding: ICMR Extramural

Duration: 2021-2025

Background:

Objectives:

a) To explore the expression profile of MMP-14 and associated mediators on innate immune cells (monocytes, neutrophils and eosinophils) in response to dengue virus/antigens.

b) To investigate the role of MMP-14 in angiogenesis or apoptosis mediated endothelial dysfunctions associated to plasma leakage in DSS/DHF.

c) To understand the effects of anti-MMP-14 molecules and their role in regulating MMP-14 mediated endothelial dysfunctions associated to DSS/DHF.

Methodology & Results: We have standardized the in-vivo mice model of plasma leakage (DSS/DHF). To accomplish this, BALB/c mouse (8 to 12-week- old were given a single dose of NS1 antigen (50 ug/ml) for a period of 6 hours. Control mice received the saline alone. Intraperitoneal lavage was collected after the 6 hours of injection and done. We have found that protein concentration in NSl treated mice was protein estimation was significantly high that the saline alone treated mice, suggesting that there is profound plasma leakage in the NS1 treated mice. In addition of plasma leakage, we have also collected the other organs of mice and different parameters of inflammation and immune parameters will be done in it.

Next, we did the VEGF estimations in the plasma samples obtained from the dengue patients' samples. We found that VEGF significantly up regulated in the dengue patients' sample. This phenomenon suggests that MMP-14 mediated cleavage of VEGF in the patient's blood samples may get involved in the severe form of Dengue Hemorrhagic Fever/Dengue Shock Syndrome (DHF/DSS). In addition of MMP-14 we have further measured the expression profile of MMP2 in dengue patients` blood samples to understand its role in dengue pathogenesis. We found very high levels of expression of MMP-2 in dengue patients whole blood samples. However, its detailed role is still needing to be investigated.

Collectively, we have obtained MMP-14 and MMP2 expressions in dengue patients' samples. We also measured the MMPs expression profile in the in vitro cultured immune cells and found that MMP-2, 14 and 9 are upregulated in response to dengue antigen. Further we obtained that, NS-l antigen of mice significantly upregulates the plasma leakage in the mice model of disease altogether it can be said that MMPs are profoundly involved in the pathogenesis of dengue viral disease and mediate pathogenesis in the severe cases (DHF/DSS). We are expecting a very good number for publications and patents to be generated by this proposal in due course.

Further, HL-60 cells differentiated into neutrophils, dengue patients' samples and primary human umbilical vein endothelial cells (HUVECs), were used in this study. qPCR was performed for expressions analysis of genes in response to NS1 antigen of the DENV. Expression analysis of the genes responsible for the apoptosis or angiogenesis was done in response to purified MMPs. Measurements of cell viability by MTT, cytokines by ELISA, mRNA expressions by qPCR, was done.

We have assessed the MMPs expression profile in human patient's blood samples as well as in innate immune cells (neutrophils). We found that, MMPs (MMP-14 and MMP-9) expressions is significantly upregulated in response to dengue virus/antigens. However, what exactly these MMPs (MMP-14 and MMP-9) do to the endothelial cells and mediate the plasma leakage is not known. Therefore, we have assessed the effects of MMP-14 and MMP-9 on endothelial cells. In order to study the effect of MMP-14 and MMP-9, on primary human umbilical vein endothelial cells (HUVECs), the qPCR expression studies were performed for control and treated samples for a range of angiogenic as well as apoptotic markers. Angiopoietin-1 is important in maintaining the endothelial cell barrier integrity. It increased in the presence of MMP-14 (10 ng/mL and 100 ng/mL). Angiopoietin-2 is associated with endothelial permeability and is elevated in severe plasma leakage. Ang-2 expression increased with MMP-14

irrespective of the concentrations. In the presence of MMP-9 (10 ng/mL) Ang-1 is slightly upregulated. Ang-2 expression increased 2-fold in MMP-9 treated HUVECs. VEGFA was downregulated at higher concentration (100 ng/mL) of MMP-9 and MMP-14. VEGFA expression was higher when HUVEC cells were treated with 10 ng/mL of MMP-9 and MMP-14. VEGF-C expression was higher when HUVEC cells were treated with 10 ng/ml of MMP-9 and MMP-14. VEGF-D expression increased with increasing concentrations of MMP-14. In adding to angiogenesis, we have also assessed the effects of MMPs on apoptosis of endothelial cells. Caspase-3 levels (a marker for apoptosis) almost remained the same with MMP-14 treatment. Caspase-6 increased 2-fold at higher concentration of MMP-14. Caspase-6 expression increased in both the concentration of MMP-9. Caspases slightly decreased in pro-MMP-9 treatment Bad (Bcl-2 antagonist of cell death) increased expression was observed in all MMPs. Higher expression of DAPK-1 (Death-associated protein kinase 1) was observed at low levels (10 ng/mL) of MMP-9 and MMP-14. Prox-l (Prospero homeobox protein 1) induce endothelial differentiation. Prox-1 increased in MMP-14 treatment (10 ng/mL and 100 ng/mL) There was no change observed Prox-1 expression for MMP-.9 exposed endothelial cells. Therefore, the effect of MMP-9 and MMP-14 treatment on HUVECs were determined and evaluated in conclusion, it may be said that activated innate immune cells express MMPs expressions MMP 14 and MMP-9) which are involved in the induction and execution of endothelial cell distress or apoptosis. This endothelial dysfunction may be responsible for plasma leakage in DSS pathophysiology of severe dengue viral disease.

This project particularly focuses to understand the roles of matrix metalloproteinases MMP-14 MMP-9 and MMP-2) on immune cells and their effects on endothelial dysfunctions in dengue viral disease. We have started this project recently and found that, MMP-14 is a very specific to the dengue positive patients and associated with the severity of the disease Leads from the project: An important lead about this project is that MMP-14 can be a very selective marker for the serious cases of the dengue disease. In future MMP-14 based diagnostic marker can be developed.

Future directions: Future work will focus on elucidating the precise molecular mechanisms through which MMP-14, MMP-9, and MMP-2 contribute to endothelial dysfunction and plasma leakage during severe dengue infection. Large-scale validation studies using dengue patient cohorts will be performed to assess the diagnostic and prognostic utility of MMP-14 as a biomarker for disease severity. Additional investigations involving endothelial cell models and animal studies will evaluate the therapeutic potential of MMP-targeted interventions. These studies are expected to facilitate the development of novel diagnostic tools and therapeutic strategies for preventing dengue hemorrhagic fever and dengue shock syndrome.

1.8 Project:

Title: Determination of resistance frequency and intensity among field populations of malaria vectors to public health insecticides in use in endemic districts of Madhya Pradesh and Maharashtra (India).

Site-PI: Dr. Anil Kumar Verma

Status: Completed

Year of initiation/completion: 2023-2025

Funding: ICMR, New Delhi

Background with objective: Vector control using chemical insecticides remains to be one of the most effective measures to prevent transmission of vector borne diseases, particularly malaria, in India. The principal objective of

vector control is to reduce malaria morbidity and prevent mortality by interrupting and reducing the levels of transmission. Insecticide-based vector control methods vary considerably in their applicability, cost and sustainability. In India, currently, malaria vector control relies largely on wide-scale use of insecticide-treated bed nets and indoor residual spraying (IRS). However, one of the major impediments to the effective implementation of vector control interventions is the development of resistance in vectors to the insecticides

Objectives:

1) To detect insecticide resistance and determine its intensity among malaria vectors in Madhya Pradesh and Maharashtra (India).

2) To develop an updated database on insecticide resistance frequency and intensity among malaria vectors for planning insecticide use in malaria elimination programme.

3) To facilitate capacity building at institutional level for conducting studies on insecticide resistance.

Study Sites: The study was conducted in selected villages of Baihar, Birsa and Lalburra CHCs of Balaghat district of M.P. and Kurkheda, Aheri and Dhanora CHCs of Gadchiroli district in Maharashtra.

Methodology/ work progress/results: Balaghat (M.P.): Field-collected wild Anopheles culicifacies sl. from various villages in the Baihar, Birsa, and Lalburra block of Balaghat district (M.P.) were tested to assess their susceptibility to discriminating doses of different insecticides. The species exhibited varied levels of resistance, particularly resistance to DDT 4% and Malathion 5.0% across all populations in all the villages tested. Possible resistance was observed against Alphacypermethrin (0.30%) in all tested villages. Resistance was observed against Deltamethrin (0.05%) in all tested villages. In the intensity assay, Anopheles culicifacies population from Baihar, Birsa, and Lalburra, Balaghat district registered 98-100% mortality against both Deltamethrin (DC 5x) and Alphacypermethrin (DC 5x) indicating low level of resistance; thus, further evaluation at a higher concentration (DC 10x) was not required. Gadchiroli (Maharashtr a) Field-collected wild Anopheles culicifacies from various villages in the Kurkheda, Aheri and Dhanora blocks of Gadchiroli district (M.H.) were tested to assess their susceptibility to discriminating doses of different insecticides. Anopheles culicifacies exhibited resistance against DDT and Malathion in all three selected blocks of the district. While possible resistance was observed against Alphacypermethrin (0.3%) in all the tested villages of Kurkheda, and Dhanora Blocks. The mortality rate ranged from 95 to 96% However, the population of Anopheles culicifacies in villages of Aheri was susceptible (mortality 98.91%) to Alphacypermethrin (0.3%). In the intensity assay, Anopheles culicifacies population from Kurkheda, Aheri and Dhanora, in Gadchiroli district registered 98-100% mortality against both Deltamethrin (DC 5x) and Alphacypermethrin (DC 5x) indicating low level of resistance; thus, further evaluation at a higher concentration (DC 10x) was not required.

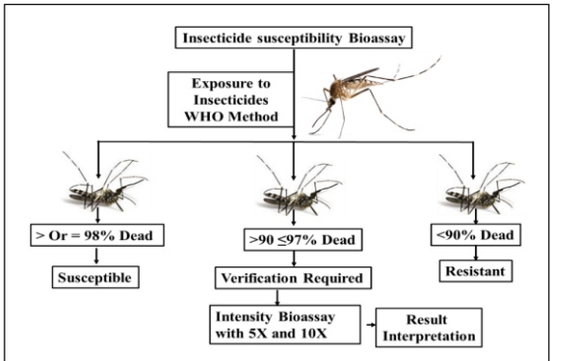


Figure showing schematic representation of methodology for WHO tube test to measure the susceptibility or resistance of adult mosquitoes

Future directions: The results suggest that the existing insecticide intervention is unlikely to cause control failure and can be continued for vector control interventions.

1.9 Project:

Title: Molecular characterization, genome sequencing, comparative analysis of different strains of Orientia tsutsugamushi from Central India.

PI: Dr. Pushpendra Singh, Co-PI: Dr. Manjunathachar HV

Status: Completed

Duration: 3 Years

Funding: ICMR, New Delhi

Background and objectives: Scrub typhus is an emerging zoonotic infection transmitted by the larval trombiculid mites (chiggers) and is caused by the obligate intracellular bacterium Orientia tsutsugamushi. The disease imposes a considerable burden in endemic regions, particularly in South and Southeast Asia. In India, O. tsutsugamushi has been identified as a key etiological agent responsible for a large proportion of undifferentiated febrile illnesses (AUFIs), and it is a significant cause of acute encephalitis syndrome (AES). The Orientia tsutsugamushi genome shows high genetic variability and plasticity, influencing strain-specific virulence and clinical outcomes. In Central India, data on circulating strains and their genomic features are lacking, limiting effective surveillance and control. This study aims to address this gap through whole-genome sequencing of clinical isolates from this region. In this study, whole blood samples will be collected from clinically suspected scrub typhus patients for initial serological screening to determine seropositivity. Seropositive samples will then undergo molecular testing using conventional PCR and quantitative PCR (qPCR) to detect and quantify Orientia tsutsugamushi DNA. Positive DNA samples will be further processed for bacterial isolation using Vero cell lines to culture O. tsutsugamushi under controlled laboratory conditions. Pure bacterial DNA will be extracted from cultured isolates and subjected to WGS to characterize the genomic features of circulating strains.

Objectives:

1. Serological and molecular diagnosis of scrub typhus among acute febrile cases from tertiary care units.
2. To study the changing pattern in sero-epidemiology of scrub typhus and its associated risk factors.
3. To study the circulating/novel genotypes of O. tsutsugamushi in central India by genome sequencing and comparative genomic analysis.

Results:

A total 7716 samples were serologically tested during the July 2021-Oct 2025 and 12% (870) positivity of scrub typhus infection was found in Central India region. The seropositivity and associated risk factors for scrub typhus were analyzed, revealing a higher risk of exposure among females compared to males. Individuals residing in rural areas exhibited a greater risk of infection compared to those in urban settings. Additionally, adults were found to have a higher chance of exposure to scrub typhus compared to children. An analysis of the incidence of scrub typhus in relation to rainfall patterns indicated a marked increase in cases following periods of heavy rainfall. Phylogenetic analysis of the 56-kDa type-specific antigen (TSA56) gene on 133 clinical samples revealed that the majority of samples were classified as Gilliam strains (n = 75, 56.3%), followed by Karp-like strains (n = 54, 40.6%), and a smaller proportion as Ikeda-like strains (n = 4, 3.0%). This clearly indicates that Gilliam and Karp-like strains are the major

circulating genotype of O. tsutsugamushi in this region. An investigation was conducted to assess the presence of scrub typhus and leptospirosis in wild rodent populations captured from Jabalpur, Bhopal, Sidhi, Umaria and Narmadapuram districts of Madhya Pradesh. A total of 42 rodents belonging to multiple species were tested for these infections. Molecular screening revealed that 6 rodents (15%)- including Tatera indica, Mus musculus, Rattus norvegicus, Rattus rattus, and Suncus murinus were positive for Orientia tsutsugamushi. Additionally, 17 rodents were found positive for Leptospira interrogans. Co-infection with both pathogens was detected in 11 rodents, while 8 rodents tested negative for both infections. These findings highlight the role of rodents as important reservoirs for scrub typhus and leptospirosis and underline the risk of zoonotic transmission in endemic regions.

O. tsutsugamushi genotype characterization in Rodents and Chigger: 56kDa tsa gene was amplified by nested PCR using 129 samples from 32 Rodents. Two samples, IDSP ST 50 and UMR ST 15, showed amplification for the 56kDa gene. Sanger sequencing was done. Phylogenetic analysis revealed that one sample (UMR-ST-15) from the Umaria district was similar to the Kato strain of Orientia tsutsugamushi, and another sample, IDSP-ST-50 (Chigger sample) from Bhopal, was found to be similar to the Gillam strain. The IDSP-ST-50 showed 98% sequence similarity with the Isolate A5 NIRTH from Ratlam, Madhya Pradesh (Sequence obtained from rodent samples and submitted from our previous study from M.P). Whole genome sequencing of n=6 samples was done. In addition, we have also obtained preliminary results from NGS-based sequencing. However, downstream sequencing analysis revealed a very low proportion of O. tsutsugamushi reads, with the majority of sequencing data dominated by host (human) genomic DNA.

1.10 Project:

Title: Population-Based Health Survey (PBHS): Data-Driven, Digital, Decentralized and Disease-Surveillance (4D) for Comprehensive Rural Health Assessment at MRHRU Badoni, Datia.

Status: Ongoing (DHR Multi-centric Initiative)

PI: Dr. Aparna Mukherjee (Scientist F, DHR)

Co-Investigators (Central): Dr. Tanu Anand (Scientist E), Dr. Kumar Vikram (Scientist C)

Site PI: Dr. Suyesh Shrivastava

Site Co-PI: Dr. Pushpendra Singh

Nodal Officers: Dr. Suyesh Shrivastava & Dr. Pushpendra Singh, MRHRU Badoni, Datia

Year of initiation: 2024 (Field survey commenced from 1 October 2024).

Funding: Department of Health Research (DHR), Ministry of Health & Family Welfare, Government of India through the MRHRU Programme.

Background with Objectives: The project aims to establish a comprehensive, standardized population-based health surveillance system across Model Rural Health Research Units (MRHRUs) in India. It is designed to generate reliable epidemiological data on communicable and non-communicable diseases, maternal and child health, nutrition, mental health, ageing, injuries and environmental health to guide evidence-based public health planning and policy.

Methodology: Study Design: Community-based cross-sectional health survey.

Study Population: Approximately 6,000-8,000 rural residents of MRHRU Badoni, Datia.

Conclusion: The Population-Based Health Survey provides a robust baseline database on the health status of rural communities in Datia. The standardized methodology will facilitate disease surveillance, identify priority health problems and strengthen evidence-based healthcare planning at district, state and national levels.

Future Directions: The project will focus on longitudinal follow-up of surveyed households, expansion of serosurveillance and laboratory investigations, integration with national health information systems, development of disease prediction models using digital health data, generation of district-level health indicators for evidence-based policy formulation, and implementation research to evaluate and strengthen public health interventions.

1.11 Project:

Title: Strengthening cause of death statistics: a study in select ICMR Model Rural Health Research Units (MRHRU) Districts in three states of India.

Status: Completed (Project duration: 07 December 2022 - 06 June 2025, including six-month no-cost extension)

PI: Dr. Vishal Deo, Scientist C, ICMR-NIRDHDS, New Delhi, Co-PIs: Dr. Tapas Chakma, Dr. Suyesh Shrivastava

Year of initiation/completed: 2022-2025

Funding: Indian Council of Medical Research (ICMR) through ICMR-National Institute for Research in Digital Health and Data Science (ICMR-NIRDHDS) under Project No. Adhoc/195/2022/SBSHR.

Background with Objectives: The project was undertaken to strengthen India's Civil Registration and Vital Statistics System (CRVSS) by improving the completeness and quality of Cause of Death (CoD) information, particularly in rural districts. Accurate mortality statistics are essential for health policy, disease surveillance and monitoring Sustainable Development Goals (SDGs). The objectives were to: (i) assess gaps in the CRVSS.

Methodology: An uncontrolled before-after implementation study was conducted at MRHRU Datia (Madhya Pradesh) and MRHRU Tigiria (Odisha) to strengthen the Civil Registration and Vital Statistics System (CRVSS); implementation at Ghatampur (Uttar Pradesh) could not be undertaken due to administrative delays. Key activities included baseline assessment, 40 key informant interviews (30 baseline and 10 endline), review of 457 Medical Certification of Cause of Death (MCCD) forms, a Training of Trainers (ToT) programme, and six physician orientation workshops involving 423 participants. Endline evaluation demonstrated improved physician awareness, better documentation practices, and enhanced quality of MCCD reporting, highlighting the value of continuous training, monitoring, and inter-sectoral coordination.

Conclusion: The study demonstrated that a structured model comprising baseline assessment, capacity building, regular monitoring and stakeholder coordination can substantially strengthen cause-of-death reporting in rural India.

Future Directions: The project will focus on longitudinal follow-up of surveyed households, expansion of serosurveillance and laboratory investigations, integration with national health information systems, development of disease prediction models using digital health data, generation of district-level health indicators for evidence-based policy formulation, and implementation research to evaluate and strengthen public health interventions.

1.12 Project:

Title: Understanding availability of Essential Diagnostics in Health Care Systems: Identifying barriers and facilitators (NEDL).

Status: Completed

PI: Dr. Kamini Walia, Site PI: Dr. Suyesh Shrivastava Site Co-I: Dr. Dinesh Kumar

Year of initiation: 2022

Funding: ICMR, New Delhi

Objectives:

I. Assess the availability and accessibility of essential diagnostics for communicable diseases, including tuberculosis, HIV, hepatitis, malaria, dengue, and chikungunya, across different levels of the healthcare system.
II. Evaluate the availability of diagnostics for non-communicable diseases (NCDs), including diabetes, cardiovascular diseases, cancers, and other chronic conditions.
III. Examine the provision of essential diagnostic services for maternal and child health, including pregnancy monitoring, neonatal screening, and nutritional assessment.
IV. Assess the preparedness of healthcare facilities to diagnose emerging and re-emerging infectious diseases, such as COVID-19, Nipah virus, and other outbreak-prone infections.

Methodology: Developed in alignment with the World Health Organization's Essential Diagnostics List (WHO EDL), the NEDL is adapted to India's epidemiological profile and healthcare needs. It identifies the essential diagnostic tests required at different levels of the healthcare system, from primary health centres to tertiary care institutions. The NEDL serves as a guiding framework for the procurement, availability, and rational use of diagnostic tests, helping to strengthen health systems, improve clinical decision-making, reduce disparities in access to diagnostics, and support India's progress towards Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs).

Conclusion: All project-related activities have been successfully completed, and the final project data have been shared with the National Health Systems Resource Centre (NHSRC).

1.13 Project:

Title: A non - inferiority randomized trial to assess the efficacy of 10 mg/kg/day versus 20 mg/kg/day Hydroxyurea in the treatment of sickle cell disease of tribal and non-tribal areas in India.

Status: Ongoing

PI: Dr. S. Rajasubramanium, **Co-PI:** Dr. Suyesh Shrivastava

Year of initiation: 2022

Funding: ICMR NIIH

Objectives:

Primary objective: To determine the efficacy of low dose 10 mg/kg/day hydroxyurea vs. standard dose 20 mg/kg/day hydroxyurea in treatment of SCD patients.

Secondary Objectives:

I. To measure the incidence of vaso-occlusive crises, transfusion requirements, requirement of hospitalizations, infections and growth of children in both the arms.
II. To compare the adverse effects of low dose hydroxyurea with standard dose Hydroxyurea.
III. To look at the role of genetic modifiers in ameliorating the disease severity.

Methodology: This will be a prospective non- inferiority trial to assess the low dose(10mg/kg/day) hydroxyurea treatment vs. standard dose(20mg/kg/day) hydroxyurea in children with sickle cell disease, using a randomized open labelled treatment assignment with allocation concealment.

Conclusion: During 2024-25, a total of 83 participants were enrolled in the study (41 in Arm 1 and 42 in Arm 2), with 79 participants remaining after three withdrawals. Key investigations, including TCD, ultrasonography, echocardiography, chest X-ray, and iron studies with Vitamin B12 assessment, were conducted as per protocol. The study identified clinically relevant findings, including splenic, hepatobiliary, and minor cardiac abnormalities, while chest X-rays were normal. Overall, 7 serious adverse events (SAEs) and 17 adverse events (AEs) were recorded and managed according to the study protocol, reflecting effective participant follow-up and safety monitoring.

Future Directions: Till June 2027 we will follow all 74 patients including all recommended tests.

1.14 Project:

Title: Diet and Biomarkers Survey in India (DABS-I)

Status: Completed

PI: Dr. Tapas Chakma

Year of initiation: 2023

Funding: ICMR, NIN

Objectives:

Primary objectives:

I. To assess the food and nutrient intake among different age/ gender/ physiological/ physical activity groups by using quantitative 24-hour dietary recall among both urban and rural populations across all the states and UTs of India.
II. To assess the nutritional biomarkers (blood) in the selected households of all the states and UTs of India.
III. To assess the food composition in commonly consumed 'total diets' (cooked foods) from each state/ UT.

Secondary Objectives:

I. To assess the nutritional status in terms of anthropometry, clinical examination in the selected households of all the states and UTs of India.

II. To assess the burden of hypertension and diabetes including cardio-metabolic risk factors among adolescents (9-10 years), adults (19-65 years) and geriatric age groups (> 65 years) of all states and UTs of India.

III. Develop a prediction model to predict individual level nutrient intake from expenditure data on monthly purchase of food items and household level food consumption recalls.

IV. Regional recipe database creation for nutrient intake calculation from 24h recall.

Methodology: The project will be carried out in two phases covering 18 states/UTs in each phase from 6 months.

Conclusion: The study generated robust estimates of anemia among urban and rural populations using state-of-the-art biomarker techniques and, for the first time, developed comprehensive region-specific nutrient composition data for both cooked and uncooked foods across India. The findings provide critical evidence to strengthen national nutrition policies, support targeted interventions, enhance food composition databases, and improve nutrition and public health planning in the country.

Section 2- Extramural Funded Projects

2.1 Project:

Title: Mission Program on Pediatric Rare Genetic Disorders

Status: Ongoing

PI: Dr Ashwin Dalal, CDFD, Hyderabad, Site PI: Dr Ravindra Kumar, Co-PI: Dr Asha Tiwari, NSCB, Medical College, Project Co-ordinator: Dr K. Thangraj, Director, CDFD.

Year of initiation: 2022

Funding: DBT, New Delhi

Background with objective: India has one of the world's largest populations affected by rare genetic disorders, with nearly 70 million individuals estimated to suffer from conditions rooted in inherited mutations. Despite this high burden, a significant proportion of pediatric cases remain undiagnosed due to limited access to genomic testing, reliance on conventional methods, and the absence of an Indian-specific reference database for genetic variants. Advances in next-generation sequencing, especially whole-genome sequencing, now offer powerful tools to identify disease-causing mutations, including those in non-coding and complex genomic regions. The aim of the project is to establish a nationwide, integrated program to diagnose, study, and manage pediatric rare genetic disorders, thereby improving clinical outcomes and supporting precision medicine in India. The specific objectives are as follows:

Objectives:

1. Recruitment of patients with Pediatric rare genetic diseases.
2. Genomic analysis for diagnosis of rare genetic disorders.
3. Database development and analysis.
4. Functional validation of novel variants/novel genes.
5. Screening for genetic diseases under DBT-UMMID programme.
6. Awareness programme in rare genetic diseases.

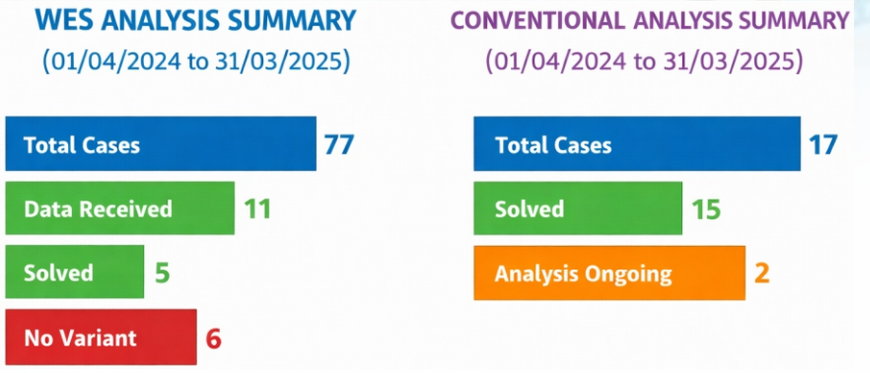
Methodology

Patients with suspected rare genetic disorders were recruited through collaborating centers after informed consent and detailed clinical evaluation. Blood samples were collected and initially screened using conventional genetic methods such as TP-PCR, MLPA, enzyme assays, karyotyping, and Sanger sequencing based on clinical indications. Cases remaining unresolved were further analyzed using Whole Exome Sequencing (WES) or Whole Genome Sequencing (WGS). Sequencing data were processed through standardized bioinformatics pipelines for variant identification, annotation, and interpretation, followed by confirmatory testing, genetic counseling, and clinical reporting.

Work Progress

All 94 enrolled cases were evaluated using the established workflow, beginning with clinical assessment and moving through exome sequencing, conventional testing, and downstream analyses.

Results:



Conclusion: The project has demonstrated steady progress in establishing an integrated workflow for diagnosing pediatric rare genetic disorders using both conventional and advanced genomic approaches.

Future directions: In the next phase, the project aims to expand patient recruitment, with a focus on increasing WGS submissions to capture complex variants and structural alterations missed by exome sequencing.

2.2 Project:

Title: General health screening with special focus on selected disease conditions (Tuberculosis, Anemia, Haemoglobinopathies & Malnutrition) and Ayurvedic management of Anaemia & Malnutrition in students at Eklavya Model Residential Schools (EMRS).

Status: Ongoing

PI: Dr. Ravindra Kumar, Co-PI: Dr. Suyesh Shrivastava

Year of initiation: 2024

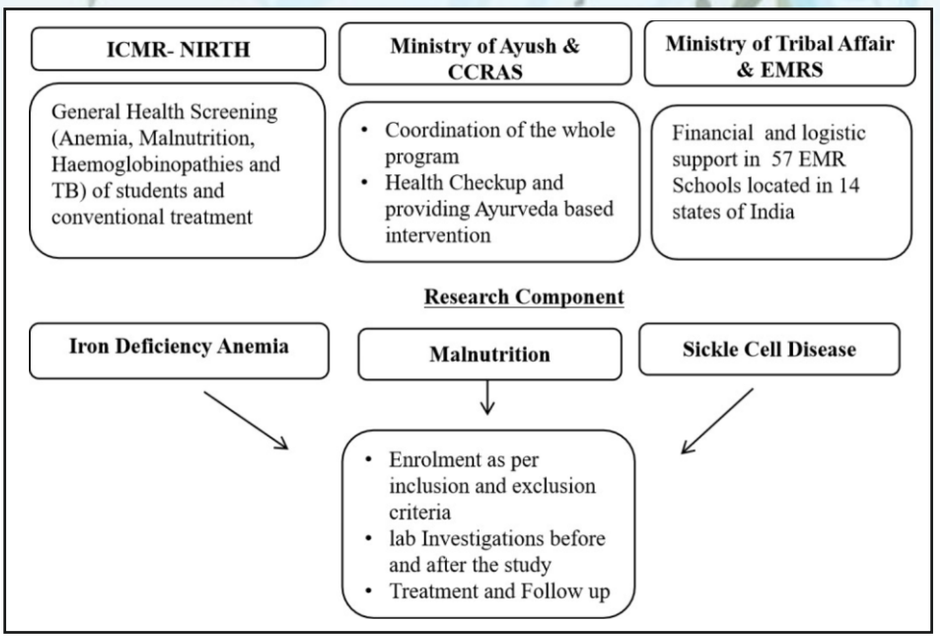
Funding: CCRAS, New Delhi

Background with objective: Children in tribal populations have a high but often undetected burden of disease, which adversely affect their growth and development. Integrated school-based screening is essential for early identification and management of the disease. Additionally, evaluating Ayurveda-based interventions may provide a complementary, accessible approach for managing anemia and malnutrition in these settings. The project aims to cover the students of 57 EMRS functioning under the Ministry of Tribal Affairs across 14 states of India. The objectives of the project are-

1. To screen the general health condition of the students of EMRS with special focus on Anemia, Malnutrition, Haemoglobinopathies and Tuberculosis
2. The management of Anemia and Malnutrition through Ayurveda interventions as a standalone/add-on.

Methodology: Stakeholder meeting and training program for investigators and project personnel were conducted at CCRAS-Regional Ayurveda Research Institute, Nagpur, prior to the initiation of the screening at Eklavya Model Residential schools.

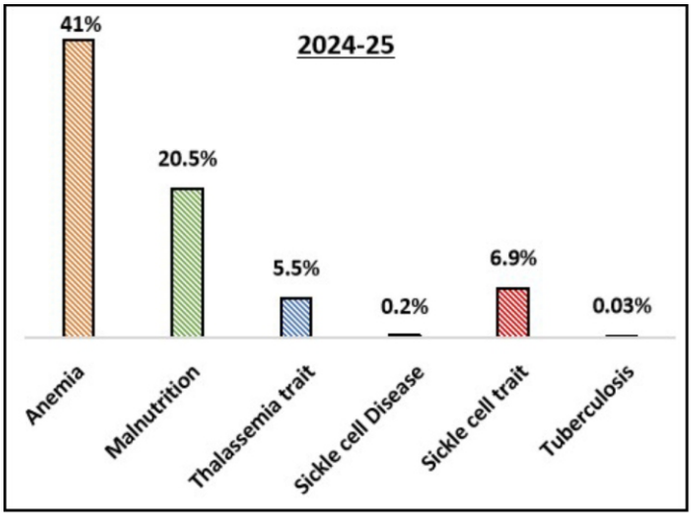




Work progress/results:

A total of 7271 students from 21 EMRS were screened during 2024-25 across Maharashtra, Madhya Pradesh, Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh.

Conclusion: Early identification of Anemia, Malnutrition, Haemoglobinopathies and tuberculosis among tribal students which enables timely treatment, improving hemoglobin levels and overall health. This initiative also supports the establishment of comprehensive health database while promoting awareness and genetic counseling for Sickle cell Disease prevention. Consequently, this program leads to improved academic performance among students and strengthens public health strategies for tribal communities.



Future Direction: Expanding screening coverage, integrating digital health records for continuous monitoring and strengthening partnerships with healthcare providers to ensure sustained care.

2.3 Project:

Title: DBT UMMID - Screening of Pregnant Women and Newborns in Aspirational Districts for Preventable Genetic Disorders and Their Management.

Status: Ongoing

PI: Dr Rajasubramaniam S, Co PI: Dr Ravindra Kuma

Year of initiation: 2024

Funding: DBT, New Delhi

Background: Due to the high birth rates, a very large number of infants with genetic disorders are born every year (Verma, 2000). In the absence of diagnostic facilities, affected children are identified late cause an enormous burden on the family and health infrastructure. The study aims to screen newborns for five genetic disorders and antenatal screening for hemoglobinopathies in aspirational districts.

Objectives of the Proposal:

1. To undertake a newborn screening program for- Sickle cell anaemia, Thalassemia, G6PD Deficiency, Galactosemia, Biotinidase deficiency, Congenital Hypothyroidism, Congenital adrenal Hyperplasia.
2. Impart genetic testing and genetic counselling to antenatal mothers carrying fetuses with high risk of genetic disorder.

Methodology: Blood samples were collected from the pregnant women visiting to Damoh district hospital with informed consent. Haemoglobin variant analysis was performed using High-Performance Liquid Chromatography (HPLC) at the ICMR-NIRTH, Jabalpur. Identified carriers were counselled and data were recorded for epidemiological mapping.

Results: The following summarizes sample analysis for the period 2024-2025:

Period	Total Samples Screened	Normal (HbAA)	Carrier (HbAS)	HbAA2	AD	AF	SCD
2025	1458	1345 (93%)	45 (3%)	58 (4%)	3 (0.2%)	6(0.4%)	1(0.7%)

2.4 Project:

Title: Role of genome maintenance in placental development and pregnancy complications.

Status: Ongoing

PI: Dr. Vijay Pratap Singh

Year of initiation/ completion: 2023- 2028

Funding: Department of Biotechnology, India

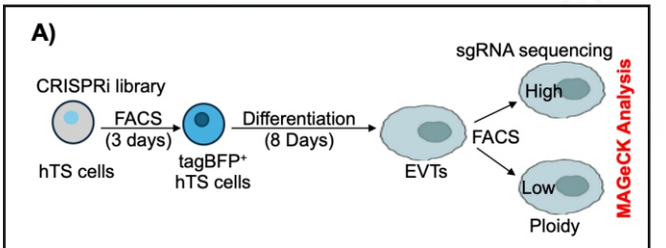
Background with objective: Globally, approximately 20 million infants are born small for gestational age (SGA), contributing significantly to infant mortality, and lifelong morbidity. Placental abnormalities are leading cause of pregnancy associated disorders such as SGA, preterm birth and pre-eclampsia. Placental cells regulate ploidy in spatiotemporal manner and changes in ploidy can significantly affect placental/fetal development. The overall objective of this grant is to understand role of genome maintenance in placental development and pregnancy complications.

Following are the objectives for this project-

1) To identify molecular regulators of polyploidy in the placental development.
2) To understand how polyploidy drives DNA damage and senescence.
3) To understand the role of senescence in premature and preterm birth.

Methodology/ work progress/results:

To identify the molecular regulator of polyploidy in the placental cells we are using human and mouse trophoblast stem cell culture in combination with CRISPRi approach (Figure). In CRISPRi we express modified version of Cas9 (dCas9-KRAB-MeCP2 containing repressor domain) along with guide RNA (sgRNA) for the gene of interest in the cell and this technique has been used extensively for large scale screening. We have established both human and mouse trophoblast stem cells expressing dCas9-KRAB-MeCP2 and using gene specific sgRNA we can knockdown our gene of interest.



Screening of molecular regulators of polyploidy in trophoblast stem cells. A) hTS cells expressing dCas9-KRAB-MeCP2 was transduced with pCRISPRia-v2-library containing one lakh sgRNA (20K genes). Transduced cells expressed tagBFP and was FACS sorted. After eight days of differentiation to EVTs, cells were FACS sorted for EVTs marker (using anti HLA-G antibody), and ploidy (using DRAQ-5 nuclear stain). Enrichment of sgRNA was analysed after next generation sequencing using MAGeCK analysis pipeline.

Conclusion: We established four clones and clones BTS-5-KRAB-C1and BTS-5-KRAB-C4 gave maximum overexpression of dCas9-KRAB-MeCP2. Using DDX24 and SERBP1, sgRNA (a kind gift from Bazzini Lab, Stowers Institute for Medical Research, USA) we validated knockdown efficiency of both the clones and observed that BTS-5-KRAB-C4, hTS clone gave consistent knockdown and efficient differentiation to EVTs.

Future directions: In future we are performing a genome wide screen to identify molecular regulators of polyploidy using pCRISPRia-v2-library from Jonathan Weissman lab MIT, USA.

2.5 Project:

Title: Monitoring and strengthening of tuberculosis elimination in India -District level sentinel surveillance (Madhya Pradesh).

Duration: 2024-2025

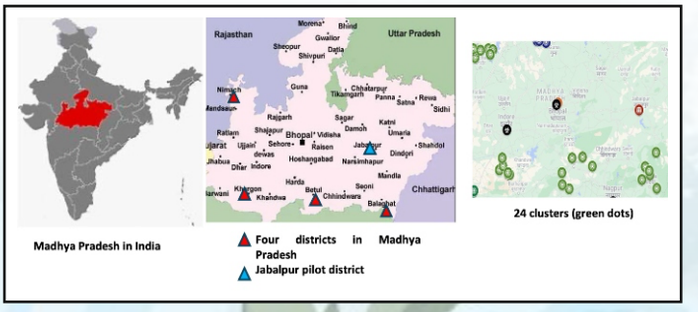
Funding: ICMR-NIRT, Chennai

PI: Dr. Mukesh (Sc. C, ICMR-NIRT), Co-PI - Dr. Shriram S (Sc. E, ICMR-NIRT), Site PI - Dr. Vidhan Jain

Objective: To monitor national trends of TB prevalence, TB infection, health seeking behaviour, using community-based sentinel survey.

Method:

As part of the project four districts (Neemuch, Khargone, Balaghat and Betul) were selected in Madhya Pradesh. In each district, 6 clusters were selected (24 clusters), with screening target of 500 persons per cluster (3000 per cluster, total 12,000 population in 24 clusters). Out of 24 clusters 5



were urban and 19 were rural. Sputum eligibility criteria was symptoms suggestive of TB, history of TB, and abnormal chest X ray carried out using handheld device (remote reading). From each sputum eligible participant one spot sputum sample (on site for CBNAAT) and one morning sputum sample (for smear, culture, line probe assay and DST at NRL, Bhopal) was collected. Verbal autopsy was done using ODK collect v2024.2.4. Cy-TB (advance tuberculin skin test based on ESAT-6 and CFP-10 antigens of MTB) was administered intradermally in the forearm of participants in four clusters (one in each district). Hb (mission Hb, POC), random blood sugar, height, weight, BP have been measured of each participant. Staff (32 members) was trained (two teams consisting of lab technicians, X ray technicians, field investigators, site investigators) before the start of work. Pilot testing was done in two villages of district Jabalpur. Data collection has been done after updating 2011 CEB maps provided by Census department, Bhopal, MP.



Results - In pilot screening, 85 persons were screened and 84 X rays were taken (98.8%). Out of 85, 16.5% were symptomatic. Eleven persons (12.9%) were tested by CBNAAT and 2.4% (2 cases) were positive for MTB. In district Neemuch 5 clusters were completed. In these 5 clusters 2,380 individuals were screened, and 2,355 X rays were taken (98.8%). Fifty-nine individuals were sputum eligible by interview (2.5%) and 324 (13.8%) were eligible based on chest X ray reading. Based on interview and chest X ray 370 individuals were eligible for sputum screening. Out of these 303 individuals (81.9%) were screened by CBNAAT. CBNAAT positivity was two percent (6 patients) whereas culture positivity was 10% (31 patients). In district Betul, two clusters were completed. In these two clusters 972 individuals were screened, and 940 X rays were taken (96.7%). A total of 187 were found eligible for TB screening in interview (19.2%), 54 individuals were found sputum eligible based on chest X ray. Based on interview and chest X ray 226 individuals were eligible for sputum screening. Two hundred individuals were screened by CBNAAT, out of which only 3 were positive (1.5%). Cy-TB testing was one in one cluster which revealed 73/433 (16.9%) had positive wheel size (>=10 mm).

2.6 Project:

Title: Assessment on the role of coded drug AYUSH PJ7 and other plants-based molecules/drugs against matrix metalloproteinases-mediated immunopathogenesis of dengue viral disease and establishment of their mechanisms of actions.

PI: Dr. Rituraj Niranjan, **Co-PI:** Dr. Anil Kumar Verma

Status: Ongoing

Funding: CCRAS, ministry of AYUSH, New Delhi

Duration: 2024-2026

Background: Dengue virus infection remains a major public health concern worldwide, particularly in tropical and subtropical regions. Severe manifestations of dengue, including dengue hemorrhagic fever and dengue shock syndrome, are associated with dysregulated immune responses and increased expression of matrix metalloproteinases

(MMPs), which contribute to endothelial dysfunction and vascular leakage. Current treatment strategies are largely supportive, highlighting the need for novel therapeutic approaches. Medicinal plants and their bioactive constituents have long been used in traditional systems of medicine and possess diverse antiviral, anti-inflammatory, immunomodulatory, and antioxidant properties. AYUSH-PJ7 and other plant-derived formulations may offer promising therapeutic potential against dengue virus-induced immunopathogenesis. However, their mechanisms of action, particularly with respect to regulation of MMP expression and immune cell responses, remain poorly understood. Therefore, the present study aims to evaluate the role of plant-based molecules in modulating MMP-mediated pathways and to establish their mechanisms of action in dengue viral disease.

Objectives:

Overall objective: To assess the role of plant-based extracts/molecules against matrix metalloproteinases mediated immunopathogenesis of dengue viral disease.

a) **Primary objective:** To investigate role of plant-based drug "Ayush-PJ7" or their components on immune cells and their mediators in the dengue viral disease.

   To understand the mechanisms of plant-based molecules/drugs or their components associated to the expression of matrix metalloproteinases on immune cells in dengue viral disease.

b) **Secondary:** understanding of effects of various combinations to elucidate synergistic effects of some plant's extracts.

Methodology & Results:

The collection of medicinal plants has been done by field visits to different areas. The collected plants were given to botanist for authentication of same. The processed plant extracts were subjected to extraction procedure. Various parameters like quantity of plant material, volume of solvent and its ratio, time and temperature were standardized for extraction procedure. The powder form of plant was then processed for extraction by maceration. The cell lines of A549 cells (human lung adenocarcinoma cell line) were maintained by passaging it regularly &; maintaining proper conditions for its growth. To check the cytotoxicity of plant extract MTT assay was performed with the prepared plant extract. Further as the project involves checking effect of drug against matrix metalloproteinases mediated immunopathogenesis in dengue, we started standardization of MMP with the use of standard laboratory protocols for measuring MMP activity, including common assay methods like PCR. The standardization involved following procedures. The different MMP genes like MMP 1, MMP 2, MMP 7, MMP 8, MMP 10 & MMP 13 were selected for standardization. Also, GAPH was used as reference gene which serves in normalization with sample variation quality. For plant extract Immuno 0014 the % cell viability was observed to be increased form 64.63% to gradually 172.63% with decreasing concentration. While in case of Immuno 0015 the viability was observed to be decreased from 140% to 100% with decrease in concentration.

In case of MMP standardization experiment, the RNA isolation was performed from the DENV (1, 2, 3, & 4) infected samples. The highest concentration of isolated RNA was 1452.9 ng/ul which was associated with DENV2. After normalization of synthesized RNA, the c DNA synthesis was performed. The cDNA dilution ratio was also standardized. The annealing temperature of primers was taken into consideration. It was then followed by RT-PCR in which GAPDH was used as reference. The RT-PCR product was then analyzed by gel electrophoresis. From the gel electrophoresis results it was inferred that expression of MMP-14 and MMP-9 was increased in DENV2 exposed cells.

No visible bands were seen in case of MMP-10 which indicate mild or no expression of MMP-10 in cells infected with all different DENV. In case of MMP-2 the prominent expression was observed against all the 4 serotypes infected cells. On other hand MMP 7 expression was observed to be negligible. Also, for the MMP 8 & MMP 13 the no expression was observed. Further the expression of GAPH was observed to be more prominent in case of DENV 2 infection while for DENV 3 & DENV 4 a quite low expression was observed.

Future directions: Future studies will focus on evaluating the antiviral and immunomodulatory efficacy of AYUSH-PJ7 and selected plant-derived molecules in dengue virus-infected cell culture models. The effects of these formulations on MMP expression, inflammatory mediators, cytokine production, and endothelial dysfunction will be investigated in detail. Bioactive compounds responsible for the observed therapeutic effects will be identified and characterized. Furthermore, combination studies will be conducted to determine synergistic interactions among different plant extracts, thereby facilitating the development of evidence-based plant-derived therapeutics for dengue management.

2.7 Project:

Title: Vector incrimination studies for Japanese Encephalitis virus in central India.

Status: Ongoing

PI: Dr. Satyendra Pandey, Co-PI: Dr. Pushpendra Singh

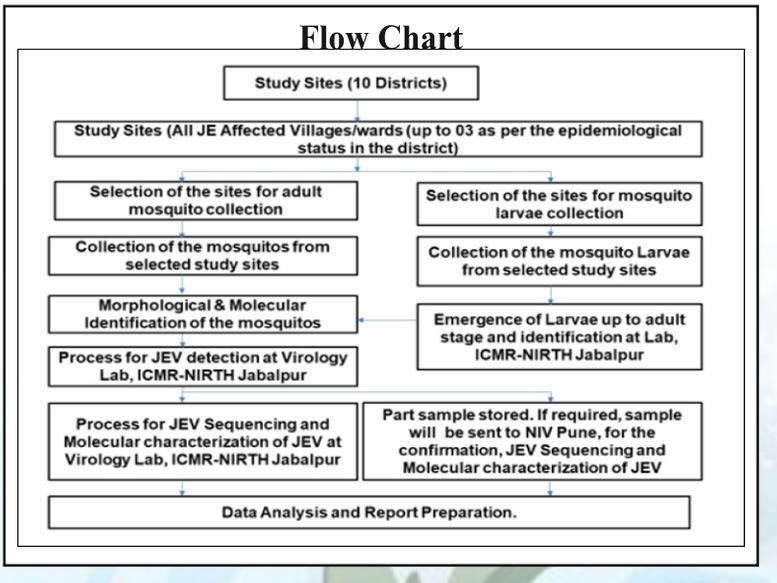
Year of initiation/ completion: August 2024

Funding: Extramural NHM, VBDCP, M.P.

Background with objective: Japanese encephalitis, caused by the Japanese encephalitis virus, continues in Madhya Pradesh; limited vector incrimination data in central India require systematic studies to identify local vectors and circulating strains for effective control planning.

Objective:
1. To identify vectors of Japanese encephalitis (JE) in the study area.
2. To detect JEV from vector mosquito species in the study area.
3. To perform molecular characterization of JE virus.

Methodology/ work progress/results: Following due communication with state authorities and coordination meetings, the study has been initiated in the identified districts and is presently ongoing.



2.8 Project:

Title: Descriptive: Malaria vector surveillance and monitoring of insecticide resistance in endemic districts (Neemuch and Balaghat) of Madhya Pradesh.

Status: Ongoing

PI: Dr. Satyendra Pandey **Co-PI:** Dr. Anil Kumar Verma, Sci D

Year of initiation: 2024

Funding: Extramural NHM, VBDCP, M.P.

Background with objective: Malaria remains a major public health threat in Madhya Pradesh; assessing local vector species and insecticide resistance is critical to optimize targeted control strategies and support elimination efforts.

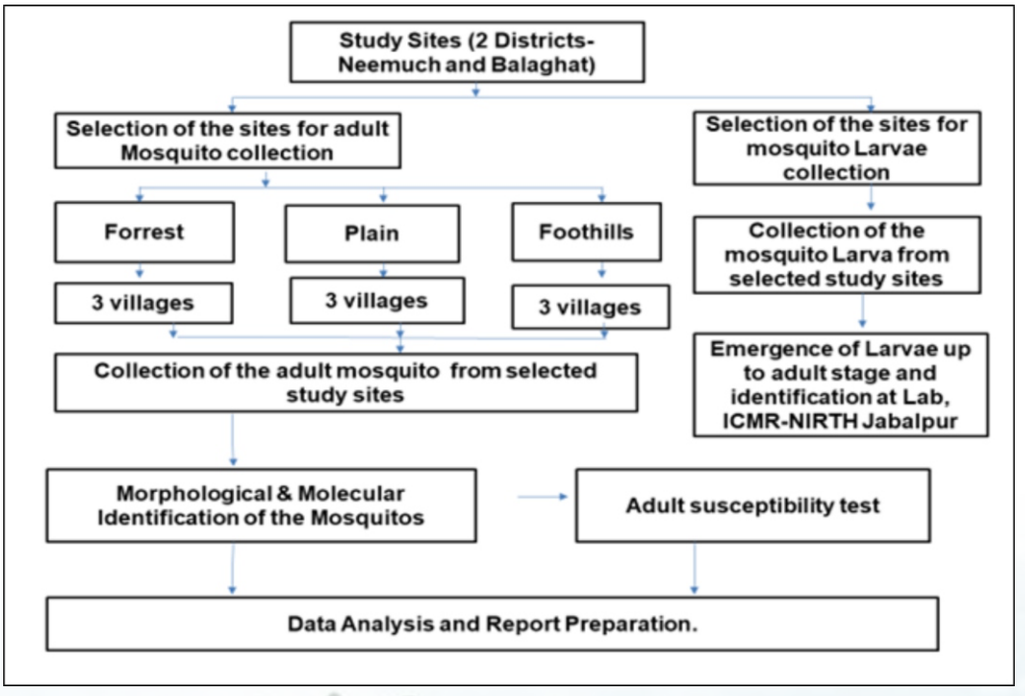
Objective:

1. To determine the prevalence of malaria vectors in the study area.

2. To determine the status of the insecticide resistance in malaria vector of the study area.

Methodology/ work progress/results: Following due communication with state authorities and coordination meetings, the study has been initiated in the identified both districts and is presently ongoing.

Flow Chart



Section 3- Activities at VRDL and MRHRU

3.1 State level- Virus Research and Diagnostic Research:

Title: SL-VRDL

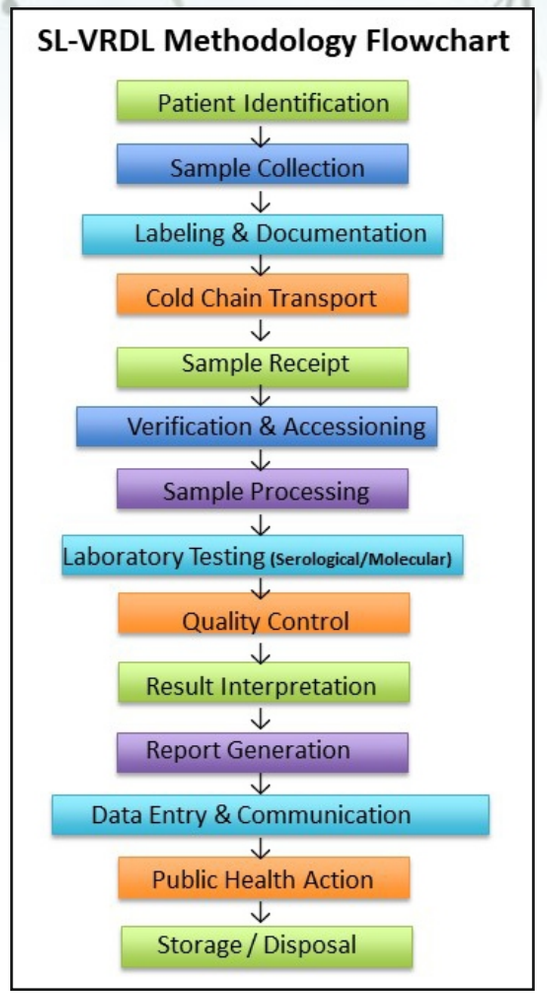
Status: Ongoing

PI: Dr. Pushpendra Singh, **Co-PI:** Satyendra Pandey

Year of initiation/ completion: 2019 - ongoing

Funding: DHR

Background: The **DHR-ICMR VRDL network** was established to decentralize India's viral diagnostic capabilities. By creating a tiered infrastructure, the project ensures rapid response to emerging pathogens, reducing reliance on central institutes and strengthening regional public health preparedness.



Objectives:

a) Rapidly identify viral infections using **Real-Time PCR, NGS, and ELISA** to reduce morbidity.

b) Act as sentinel sites for **viral mapping** and early detection of unusual clusters.

c) Study **viral pathogenesis and genotypes** while validating diagnostic kits for local strains.

d) Provide evidence-based data for **national monitoring** and state-level health policy.

Methodology/Work progress:

The SL-VRDL project has successfully established a robust diagnostic infrastructure, currently coordinating extensive viral surveillance and genotype identification across 65 districts in Central India. Furthermore, the laboratory is actively advancing regional healthcare through specialized research on viral infections in vulnerable populations and the implementation of technical workshops for laboratory personnel.

Results: As shown in table.

Pathogen	Total Tested	Positive Cases	Positivity Rate (%)
Influenza A (H1N1)	249	138	55.42%
Varicella zoster virus (VZV)	3	1	33.33%
RSV-A	39	11	28.21%
Mumps virus	21	5	23.81%
Cytomegalovirus (CMV)	22	5	22.73%
Scrub typhus	3,778	386	10.22%
Dengue virus	3,037	318	10.47%
Hepatitis A virus	2,358	229	9.71%
Japanese encephalitis	426	41	9.62%
Measles virus	3,657	344	9.41%
Leptospira	3,407	284	8.34%
Chikungunya virus	1,749	145	8.29%
Hepatitis E virus	1,090	69	6.33%
Hepatitis B virus	3,005	173	5.76%
Rubella virus	3,663	95	2.59%
Hepatitis C virus	2,965	68	2.29%

Conclusion:

The SL-VRDL has successfully strengthened regional health security by providing rapid, high-quality diagnostic monitoring and timely identification of viral outbreaks. Through consistent participation in the national network, the laboratory ensures sustainable capacity building and evidence-based data for effective public health interventions.

Future directions: In future any outbreak investigation will be performed along with testing of above mention viruses.

3.2 TB C DST lab, SRL-HIV and ICTC lab

Title: TB Lab

Status: Ongoing

PI: Dr. Vidhan Jain

Year of initiation/ completion: ongoing

Funding: NHM, Govt. of MP and CTD, New Delhi

Summary of work: A total of 17,401 samples (14,451 for first line LPA, 487 for second line LPA, 1,220 for culture follow-up and 1,243 for CBNAAT testing) were received in TB C and DST lab ICMR-NIRTH, Jabalpur in the year 2024. Out of 1,220 follow-up samples, 108 samples (8.9%) were MTB positive. In CBNAAT, 321 samples (25.8%) were found MTB detected. Out of all received and processed samples 11,080 were tested for FL-LPA, 1,075 for SL-LPA as per the algorithm as many smear negative and scanty bacilli samples were also turned out to be culture negative. In LPA testing, Rif resistance/resistance inferred was recorded in 429 cases (3.9%). Further, high INH resistance/resistance inferred was recorded in 762 cases (6.9%). Low INH resistance/inferred resistance were detected in 247 (2.2%) cases. Out of 845 SLLPA tests, 33.3% showed resistance to levofloxacin, 18.2% showed resistance to moxifloxacin and 1.5% to SLIDs.

Title: SRL-HIV and ICTC lab

Status: Ongoing

PI: Dr. Vidhan Jain

Year of initiation/ completion: ongoing

Funding: PSACS Bhopal and NACO

Summary of work: A total of 2,655 samples were tested for EQAS. In EQAS 94 samples were positive for HIV. A total of 281 patients were screened for HIV in ICTC Jabalpur out of which 72 were positive (51 male, 19 female, 2 transgender). Out of 72 positive cases, 86.1% were aged 26 years and above. Eight patients (11.1%) were between 15-26 years and 2.8% were between 6-14 years.

Both the TB lab and SRL HIV were NABL accredited in 2024-2025.

3.3 MRHRU- Datia

During 2024-2025, MRHRU, Badoni, Datia achieved significant milestones in research, capacity building, and public health outreach. The unit successfully organized several academic and training programs, including the Amucon Pre-Conference Workshop on Basic Molecular Techniques, Workshop on Research Methodology, Training on Medical Certificate of Cause of Death (MCCD), and a Hands-on Workshop on Sequencing Technologies. Public health awareness initiatives such as World Heart Day, World TB Day 2025, and the 'Swasth Nari Shashakt Pariwar' Campaign were conducted to promote community health and preventive healthcare practices. The research output of the unit remained commendable, with **10 scientific publications,** while **9 research projects** received approval during the period. Additionally, **1 LRAC meetings** were successfully conducted to strengthen research governance and monitoring. Under the Population-Based Health Study (PBHS), a substantial number of biomarkers were assessed, contributing valuable scientific data and ensuring strong representation of MRHRU Badoni among the network of MRHRUs across India. These achievements collectively highlight the unit's commitment to advancing biomedical research, public health, and community engagement.





Awareness on Breast Cancer and Cervical Cancer, including demonstration of selfdetection techniques for early identification of breast cancer ‘Swasth Nari Shashakt Pariwar’.



Technical session on Medical Certification of Cause of Death (MCCD) by Dr. Tapas Chakma, Scientist-G, ICMR-NIRTH, Jabalpur, in the presence of Dr. (Prof.) Deepak Singh Maravi, Dean, GMC Datia, and Dr. Manohar Bhatia during the MCCD Training Workshop organized by MRHRU, Badoni, Datia (25-26 July 2024).



आचरण दतिया 04

एमआरएचआरयू में ओपन स्कूल डे आउटरिच कार्यक्रम सम्पन्न

विद्यार्थियों में दिखा वैज्ञानिक अनुसंधान के प्रति उत्साह

■ आचरण संवाददाता

दतिया। मॉडल रूरल हेल्थ रिसर्च यूनिट (एमआरएचआरयू) बड़ौनी दतिया में ओपन स्कूल डे आउटरिच कार्यक्रम का आयोजन डॉ. पुष्पेंद्र सिंह, डॉ. सुरेश श्रीवास्तव एवं आईसीएमआर-एनआईआरटीएच जबलपुर के निदेशक के मार्गदर्शन में सफलता पूर्वक सम्पन्न हुआ। कार्यक्रम का समन्वय डॉ. निशांत सक्सेना, वैज्ञानिक-सी, जबलपुर ने किया। यह पहल स्वास्थ्य अनुसंधान विभाग (डीएचआर) एवं भारतीय आयुर्विज्ञान अनुसंधान परिषद (आईसीएमआर), नई दिल्ली द्वारा डिज़ाइन की गई थी।

आईसीएमआर के डायरेक्टर जनरल डॉ. राजीव बहल ने रिकॉर्डेड वीडियो संदेश के माध्यम से छात्रों को संबोधित करते हुए कार्यक्रम की आवश्यकता, व्यापकता और प्रमुख उद्देश्यों पर प्रकाश डाला। इस अवसर पर संदीपनि स्कूल, बड़ौनी के प्राचार्य शहजाद खान, शिक्षकगण पंकज खरे, सुनील कुमार सक्सेना, सतीश अहिरवार, देवेंद्र सिलारपुरिया, विनय पाण्डेय, मुकेश शर्मा, विपत्तिराम शाक्य सहित बड़ी संख्या में छात्र-छात्राएं उपस्थित रहे। प्रयोगशाला भ्रमण के दौरान विद्यार्थियों ने विभिन्न वैज्ञानिक उपकरणों, जैविक नमूनों की जांच एवं स्वास्थ्य अनुसंधान की कार्यप्रणाली को प्रत्यक्ष रूप से देखा और समझा। एमआरएचआरयू टीम के जीतेंद्र, आनंद, आकाश, प्रशांत, रामकिशोर, गौतम खेही, सागर खरे, मिस सानिया, श्रीमती प्रियंका कुटार, श्रीमती पूजा लोधी, श्रीमती रोहेड़ी अहिरवार एवं महेंद्र राजपूत ने छात्रों को स्वास्थ्य अनुसंधान की उपयोगिता, ग्रामीण स्वास्थ्य चुनौतियों और वैज्ञानिक प्रक्रियाओं की जानकारी सरल और प्रभावी तरीके से दी।

"MRHRU, Badoni, Datia (M.P.) actively participated in ICMR-SHINE 2025 (Science & Health Innovation for the NextGen Explorers), providing school students with firsthand exposure to biomedical research, public health activities, and scientific innovation."



"MRHRU, Badoni, Datia (M.P.), recognized as one of the leading research sites in India, successfully implemented the field activities of PBHS Phase-I (2024–2025)."

3.4 MRHRU- Jheet

Nodal Officer: Dr Ravindra Kumar

Co-Nodal Officer: Dr. Harshvardhan Shende

After the recommendations and approval, four projects were initiated. The data collection of all these four projects has been completed. The details report of the projects are as follows:

1. The project **"Psychological impact of COVID 19 in population of Jheet"** was initiated at MRHRU, Jheet. This cross-sectional survey aims to assess the effect of COVID-19 on depression, anxiety, and stress in rural areas. Generalized Anxiety Disorder Assessment (GAD-7), Patient Health Questionnaire (PHQ-9), and Impact of Events Scale-Revised (IES-R) were used to evaluate the depression, anxiety, and post-traumatic stress disorder among families with at least one member having been affected by COVID-19. A total of 431 participants were interviewed from Durg district of Chhattisgarh state. One-third of participants experienced death among one or more family members due to the pandemic. Out of 431 individuals, 26.2% of participants showed signs of PTSD, while 11.8% exhibited symptoms of anxiety, and 14.8% had depression. The death of family members due to COVID-19 was significantly associated with a higher risk of mental distress (OR=4.975, 95% CI: 3.145-7.874, p-value <0.001). In contrast, higher education was associated with a lower risk of distress. Depression and anxiety were more prevalent among the elderly population and less prevalent among individuals living in nuclear families. Scarcity of food and changes in income were linked to higher levels of anxiety. The study points to the significance of socioeconomic factors like education, food security, and income stability in shaping mental health outcomes during crises. Further research and targeted support to specific demographic groups such as the elderly and those affected by COVID -19 deaths, may be warranted to address these mental health concerns effectively. Manuscript for the project data has been communicated for publication.



MRHRU-Jheet staff with Anganwadi workers, CHC Charoda nursing staff and AIIMS-Raipur staff visiting the households in Charoda village for COVID-19 project data collection.

The project of **Assessment of Health-Related Quality of Life of Individuals of Sickle Cell Trait and Disease** was carried out in CHC Jheet, during the month of November 2022 to June 2023. The population from villages of Durg district were taken. study the tools included Sociodemographic information (age, gender, marital status, educational level, number of siblings, occupation, employment, monthly family income), clinical status (diagnosis, date of diagnosis, relevant personal history, age at first symptom, number of hospital admissions, number of blood transfusions, number of hospital admission due to episodes of pain crisis, presence of complications and health problems related to the disease, Anthropometric measurement (Height/weight) and use of medications) and SF-36 Health-related quality of life questionnaire of study subjects. MRHRU project staff conducted an awareness program at different Anganwadi centre (PHC/CHC) Centre's and distributed posters regarding sickle cell awareness. Data analysis is being under process.

2. **A study on the prevalence of metabolic syndrome in tribal and non-tribal population of Patan block of Chhattisgarh state:** A pilot study was undertaken. The study was conducted by visiting certain villages with the assistance of sarpanch health staff, Anganwadi workers, etc., Jheet and their surrounding villages, Ghughuva, Mahuda, Ufra, and Jamgoan village. With their consent, blood samples were collected for biochemistry and haematology testing. In a total sample population of 290, 149 belonged to the tribal ethnic group and 141 were non-tribal people. 14.8% of the tribal population had Metabolic Syndrome and 17.7% of the non-tribal population had the same. Data analysis has been done. Drafting of manuscript is being underway.



MRHRU - Jheet staff during the collection of blood sample and demographic survey in Ghughowa village, block - Patan (left). Awareness program on Metabolic syndrome signs and symptoms and recommendations, held in Ufra Village by the MRHRU -Jheet staff (right).

3. **Prevalence and Characteristics of Chronic Kidney Disease (CKD) in Supebada village of Devbhog block and Piperkhutta village of Manpur Block in Gariyaband District.** Data of 261 individuals were taken with household surveys and analysis of the samples was done in AIIMS Raipur. This project was started in the month of May 2023. The data collection part of the project has been successfully completed and currently is in the stage of data analysis.



MRHRU- Jheet staff during data and morning blood sample collection for the study of prevalnce of Chronic Kidney Disease in Supebeda Village, Block Devbhog, Chhattisgarh.

4. **Population-based health survey at Model Rural Health Research Units, India (Round 1) was** implemented by Model Rural Health Research Unit (MRHRU), Jheet, Chhattisgarh initiated on 18 October 2024 under the guidance of DHR, ICMR-NIRTH, Jabalpur. The project was designed to generate comprehensive, community-level health data from rural and tribal populations, covering overall health status, chronic diseases, reproductive health, and children's health, and to inform planning of health interventions and policy decisions. The survey employs multiple modules, implemented through both community-based and facility-based approaches to ensure wide coverage and reliable data collection. The community-based modules include the Household module, which

collects demographic and socio-economic information; the Individual module, which captures age-, sex-, and behaviour-related health information; the Children module, assessing paediatric health, growth, nutrition, and development; and the Biomarker module, which involves collection of blood samples for complete blood count (CBC), liver function tests (LFT), kidney function tests (KFT), along with blood pressure measurements to assess cardiovascular health. The facility-based modules are conducted at CHC Patan, CHC Jheet, and CHC Bhilai, and include the HTDM module, focused on hypertension and diabetes with blood pressure and blood glucose measurements, and the Reproductive Health module, which collects maternal, obstetric, and related health information and provides follow-up and counselling where needed.

The PBS is conducted using a rigorous mixed-method approach, which combines door-to-door household visits by trained Mitanins and ASHA workers with structured assessments at health facilities, ensuring that every segment of the community is reached and included. This dual approach not only guarantees comprehensive and high-quality data collection but also fosters active participation and trust within the community, bridging the gap between households and the formal healthcare system. Each participant received a personalized health report detailing their laboratory and clinical findings, including blood tests (CBC, LFT, KFT, sickle cell screening) and blood pressure readings, enabling individuals to understand their health status clearly. This process enhances health awareness, encourages timely follow-up, and empowers participants to take informed decisions about their health, making the survey not just a research exercise, but a directly beneficial health intervention for the community.

Round 1 of the PBS projects, completed on 10 November 2025, covered a total a total of 5565 individua have been interviewed under Module-1 (Household Information), and 2,330 households have completed full household-level interview sets. Within population-based respondent modules, 509 children under 5 years, 2,419 males, 3,146 females, and 964 elderly persons (≥60 years) were interviewed. Under the sub-survey facility-based screening, 640 eligible individuals underwent diabetes and hypertension (HT&DM) screening, while 578 participants were surveyed under the 15-49 year & infant age-group in community and facility-based assessment. Additionally, 2,619 biomarker samples were collected and processed, for the eligible population as per requirement. reflecting the extensive reach of the survey and its successful implementation in the selected villages. This integrated approach provides a holistic understanding of population health, strengthens evidence for planning interventions, and ensures that individuals benefit directly through diagnostic feedback and health education.



Door to Door Physical Health Screening, Blood Collection and Questionnaires.
(Community Based Public Healthy Survey)



Health Screening and Sample Collection at Health Centres
(Facility Based Public Healthy Survey)

Section 4: Academic Activities and Awards

4.1 I CMR-NIRTH Academy of Scientific Innovation and Research (AcSIR) Activities:

The AcSIR-ICMR PhD Programme at ICMR-NITHR, Jabalpur, commenced with the August 2024 session. Dr. Kalyan B. Saha, Scientist-G & Professor, was designated as the coordinator of the programme. This rigorous, multidisciplinary doctoral research program in biomedical and public health sciences aims to develop high-quality researchers equipped to address complex health challenges, with a specific focus on tribal and underserved populations. It has since seen continuous progress in its research activities and student intake; notably, during its inaugural year, admissions were successfully organized across two distinct sessions. There were four intakes in the August 2024 session and two intakes in the January 2025 session. The academic activities formally begin with the Orientation session.



Orientation Program: Session Aug 2024



Orientation Program: Session Jan 2025

4.2 M.Sc. Public Health Entomology:

Nodal Officer(s): Dr. Anil Kumar Verma, Dr. Satyendra Pandey, and Dr. Vagisha Rawal,

Year of initiation/Completion: 2022-2025

Background: On instruction of the DG, ICMR-New Delhi, the Director, ICMR-VCRC, Puducherry, expanded the M.Sc. Public Health Entomology Course to other ICMR institutes with the capacity and mandate to conduct research on vector borne diseases. Accordingly, the Director, ICMR-VCRC invited us to join the network of institutes to offer master's degree course at ICMR-NIRTH centrally be coordinated by ICMR-VCRC, Puducherry with the objective.

Broad Objective: To create a pool of public health entomologist in the country for research and public health work on vector borne diseases.

Brief outcomes: A M.Sc. Public Health Entomology Course was initiated in year 2022 in coordination with ICMRVCRC and with affiliation of Pondicherry University. Out of 10 seats (5 for category -I +5 for category-II) approved by Pondicherry University, a total of Seven (7) candidates (6 Cat-I +1 Cat-II) were admitted at ICMR-NIRTH, Jabalpur in 2022-24 session. The study of Third and fourth semester for Batch-I was completed in 2024. Further, a total of 8 (6 for category -I +2 for category-II) took admission in Batch-II in ICMR-NIRTH Jabalpur in Session 2023-25. The course for theory and practical for third semester (Batch-II) has been completed. The semester exams were held in March 2025. All the students completed their dissertation by august 2025 and their viva-Voce exam was held on September 2025. Students with arrear paper has given the exam and result is awaited.

Total Students Admitted to MPHE	Batch	Session	Total No. of students Passed Pass (arrear)
7	I	2022-2024	6 (1 with arrear)
8	II	2023-2025	3 (5 with arrear in one paper)



Photo: Students of M.Sc. Public Health Entomology, Batch-II (2023-25) participating in field training with faculty at Baihar, Balaghat, Madhya Pradesh.



Photo: Students of M.Sc. Public Health Entomology, Batch-II (2023-25) after Viva Voce exam with External and internal Faculty.

4.3 Other Activities:

Dr. Ravindra Kumar participated in:

1) MP-PEDICON 2024 Organized by NSCB Medical College, Jabalpur from 21 to 22 Dec 2024.
2) Unmukt National conference on sickle cell disease organized by NASCO on 26 and 27 Sept 2024.
3) 2nd National Thalassemia & Sickle Cell Conference organized by Thalassemia Jan Jagran Samiti M.P. on 24 and 25 Aug 2024.
4) Webinar on Thalassemia organized by FOGSI on 8 May 2024.



5) Awareness Program and CPD on Thalassemia and Hemoglobinopathies organized by Nizam's Institute of Medical Sciences and Center for DNA Fingerprinting and Diagnostics on 4 May 2024.
6) Awareness Program on SCD on 19 Jun 2024 at NSCB Medical College.
7) Attended stakeholder meeting at District Hospital Ranchi.

Dr. Dinesh Kumar participated in:

1) Resource person in the three-day workshop on 'Application of Biostatistics in Medical Research' organised by ICMR- National Institute of Research, Ministry of Health and Family Welfare, Govt. of India, held from 12th to 14th June 2024.
2) Webinar for the workshop on "Persons with Disabilities and their Rights" on 3rd July 2024, conducted by ICMR, HQ, Delhi.
3) Participated in the Accessibility & Sensitization Training Workshop for ICMR Nodal Officers at AMTZ, Vishakhapatnam on 25th & 26th July 2024 of PwDs in July 2024.
4) The webinar "Understanding Accessibility and Inclusion Training Session on disability rights" on 4th October 2024, conducted by ICMR, HQ, Delhi.
5) Attended the "Interpreting Published Scientific Evidence" webinar on 11th October 2024, conducted by the Department of Health Research, Delhi.
6) Attended Capacity Building Programme for the Nodal Officers of Indian Council of Medical Research on 'National Building Code of India 2016-Accessibility in Buildings and Built Environment' held during 11-12 November 024 at the National Institute of Training for Standardization, Noida conducted by Bureau of Indian Standard.

Dr. Nishant Saxena participated in:

1) I participated in the World Anthropological Union (WAU) 2024 Congress in Johannesburg, South Africa, 11-15 Nov, 2024 wherein I Convened a scientific panel (PN84) and presented a paper. The participation was supported by ICMR and DST-SERB.

2) Participated as NCO in the Communications Strategy Consultation and Training Workshop for NCOs at ICMR-HQ, New Delhi and ICMR-NIMR Delhi, 2-3 May, 2024.

3) Invited as a Judge for adjudicating the TEER-25 Awards during the First International Symposium on Tribal Health-25 (FIST-25) at AIIMS Nagpur and MUHS Nagpur, 31.1.25 to 2.2.25.

4) Delivered invited talk (online) entitled "The emic vs. etic divide on health of tribes in India: A grounded approach" at the conclave of CIET-PRAM, McGill University, Montreal, Canada on 12-02-25.





Dr. Nishant Saxena during his participation in WAU Congress 2024 at Johannesburg, South Africa.

5) Delivered invited talk entitled "Achieving self-reliant tribal health: Leveraging health communication strategies to reach the unreached tribes of India" at 54th Annual Conference of the Indian Anthropological Society organized at Amity University Noida Campus, Uttar Pradesh, 26-27 September, 2024.

Dr. Anil Verma participated in:

1) Attended workshop on "Development of Protocol for Evaluation of Public Health Pesticides for Vector Control" held on 7-8th May 2024 at ICMR-NIMR, New Delhi.

2) Attended workshop on "Application of Biostatistics in Medical Research" held on 12-14 June 2024 at ICMR-NIRTH, Jabalpur.

3) Attended webinar on Bioproduct laced vector feeding traps offer an innovative and selective solution for a safer future" by Prof Noushin Emami, Liverpool school of Tropical Medicine, United Kingdom held on 20/06/2024 organized by ICMR Hq.

4) Attended a workshop on" Rights and regulations for Persons with disability" held on 03/07/2024 at ICMR Hq.

5) Webinar on "Back Pain - Prevention to Cure" Hindi Section ICMR Time: Jul 3, 2024, 03:00 PM.

6) Attended Malaria Microscopy workshop as resource person in MP-Tropacon-2024, organized on 2-3 August 2024 by Department of Microbiology, NSCB Medical College, Jabalpur.




Photo: Dr. Shruti Asati, Asst. Prof. NSCB Medical College, Jabalpur Welcoming Dr. Anil Kr. Verma (left) and **Photo:** Dr. Anil Kr. Verma and Mr. Surendra Jhariya conducting Malaria Microscopy workshop at NSCB Medical College, Jabalpur (right)

7) Attended a two day Orientation workshop on Phase-III trial of Hilnet at ICMR-VCRC, Puducherry from 18 March 2025-21 March 2025.

8) Delivered an invited lecture during a training programme for Malaria Inspectors and Malaria Technical Supervisors of Madhya Pradesh (Jabalpur Division) under the National Vector Borne Disease Control Programme (NVBDCP), with special emphasis on vector biology and key vector control strategies for malaria elimination and other vector-borne disease control activities. The session was held on 12 March 2025 at Hotel Welcome, Jabalpur, and was organized by the District Malaria Officer under the guidance of the State VBDCP, Madhya Pradesh, with participation of 95 trainees.

9) Delivered an invited lecture and contributed to the Divisional Level Task Force Meeting and Training organized by the District Malaria Officer (DMO), Jabalpur, and Incharge Entomologist, Jabalpur Zone, for sensitization of District Malaria Officers, Malaria Inspectors, and Malaria Technical Supervisors of Jabalpur Division under the National Vector Borne Disease Control Programme (NVBDCP), focusing on the National Framework for Malaria Elimination (NFME) and National Strategic Plan (NSP) for Malaria Control and Elimination, held on 16 January 2025 with 31 participants..

10) Delivered an invited lecture on World Environment Day (5 June 2024) at the Zoological Survey of India (ZSI), Central Zone Regional Centre, Jabalpur, Madhya Pradesh, under the Ministry of Environment, Forest and Climate Change, Government of India, attended by 20 participants, thereby contributing to awareness on environmental conservation.

4.4 Training organized:

1) Training on Management of Sickle Cell Disease on 16 Jan 2025.



2) Three-day workshop on Application of Biostatistics in Medical Research, 12 to 14 June 2024.



3) Workshop on Diagnosis of Thalassemia and Inherited Blood Disorders on 8 May 2024.



4) ANC HSS workshop has been conducted from January 2 to 10, 2025 with support of MPSAC, Bhopal. Workshop was attended by medical officers, counselors and technicians from 25 districts.



5) Two trainings were organized for DLSS staff for enumeration, screening, measurement of blood sugar, HB etc. and CBNAAT from 22 October 2024-27 October 2024 and 2 March 2025 to 7 March 2025.

6) Convened a scientific panel, "Reimagining anthropological knowledge: connecting the less connected traditional knowledge systems of medicine of the tribes in the post-colonial era" in World Anthropological Union (WAU) 2024 Congress, Johannesburg, South Africa, 11-15 November, 2024.

7) Organized the Stakeholders meeting at CHC Bajag, Dindori in January 2025 to initiate the implementation phase of project "Connecting the Unconnected" wherein 300 participants were there comprising of TTHs, ASHAs, ANMs, CHOs, MOs, CMHO, DTO, DMO, along with CEO Janpad Panchayat, Bajag.



Photo: Showcasing successful referral of patients from TTH to PHC Sarwahi under the project “Connecting the Unconnected”. The referred patients received free healthcare facility including medicines.

8) Malaria Microscopy Training: The Malaria Microscopy Training FY: 2024-25 was organized by ICMR-NIRTH Jabalpur with financial support from the National Health Mission (VBD), Bhopal, to strengthen the diagnostic skills of laboratory technicians involved in malaria surveillance across PHCs/CHCs of various districts of Madhya Pradesh. The 10-day hands-on training was conducted in three batches by Dr. Anil Kumar Verma, Scientist-D, Dr. Satyendra Pandey, Scientist-C, and team. A total of 38 participants (11+14+13) were trained through a structured programme comprising theoretical sessions and practical demonstrations. The training focused on malaria epidemiology, diagnosis, slide preparation (thick and thin smears), staining techniques (Giemsa and Field's stain), microscopic identification and differentiation of Plasmodium species (Pf, Pv, Pm, Po), parasite density estimation, national drug policy, and standard record-keeping and reporting practices. Pre- and post-training assessments were conducted for evaluation and certification of participants.





Malaria Microscopy training to Lab Technician (Batch-1)
Duration: 14-23.02.2025, Number of Participants: 11



Malaria Microscopy training to Lab Technician (Batch-2)
Duration: 03-12.03.2025, Number of Participants: 14



Malaria Microscopy training to Lab Technician (Batch-3)
Duration: 17-26.03.2025, Number of Participants: 13

9) Entomological Surveillance Training: ICMR-NIRTH, Jabalpur, organized a four-days training programme on "Entomological Surveillance and Insecticide Resistance Monitoring" from 26-29 March 2025, in collaboration with the National Centre for Vector Borne Disease Control (NCVBDC) through the State VBDCP and National Health Mission, Madhya Pradesh, for State Consultant, District Malaria Officer and District VBD Consultant of Govt. of M.P. The programme was conducted by the Division of Vector-Borne Diseases with active involvement of Dr. Satyendra Pandey (Scientist-C), Dr. Anil Kumar Verma (Scientist-D), and team. The training was successfully completed with the active participation of 16 participants.



Entomological Surveillance and Insecticide Resistance Monitoring for State Consultant, District Malaria Officer and District VBD Consultant of Govt. of M.P., Duration: 26 - 29.03.2025, Number of Participants: 16

Section 5: Publications

S.NO	PUBLICATIONS
1	Kumar D, Srivastava S. Neonatal mortality and associated factors in tribal community. Indian J Public Health. 2024 Apr-Jun;68(2):336-337. doi: 10.4103/ijph.ijph_1494_23.
2	Kumar D, Saxena N, Srivastava S, Vasanthachar MH. Nutrition status and associated factors among tribal preschool children of 2-5 years in five districts: a cross-sectional study from three states of India. International Journal of Community Medicine and Public Health. 2024 Apr 30;11(5):1973-82.
3	Singh T, Kumar D. Perinatal risk in India's Scheduled Tribes. The Lancet. 2024 Sep 7;404(10456):933-4.
4	Singh T, Kumar D. Children under 5-year mortality and the risk of maternal mental illness among India's scheduled tribe. Indian J Psychiatry. 2025 Mar;67(3):350-353.
5	Chandel N, Maile A, Shrivastava S, Verma AK, Thakur V. Establishment and perturbation of human gut microbiome: common trends and variations between Indian and global populations. Gut Microbiome (Camb). 2024 Jun 4;5: e8. doi: 10.1017/gmb.2024.6. PMID: 39776539; PMCID: PMC11704572.
6	Vaidh N, Ray SK, Chakma T, Shrivastava S. Gut microbiota in human metabolic health and diseases: current perspective and impending aspects. Curr Sci. 2024;127(4).
7	Manjunathachar HV, Barde PV, Chouksey V, Tiwari P, Mathapati B, Shrivastava S, Chakma T. Leptospirosis in central India: A retrospective study to explore burden of tropical illness. Indian J Med Microbiol. 2024 Sep-Oct; 51:100689. doi: 10.1016/j.ijmmb.2024.100689. Epub 2024 Aug 1. PMID: 39067858.
8	Nagwanshi A, Chakma T, Singh K, Shrivastava S. The challenges of type 1 diabetes management: a focus on tribal and rural teenagers in low-income countries. Curr Sci. 2024;127.
9	Safapour S, Rather LJ, Mir SS, Dar QF. Upscaling Millettia laurentii carpentry sawdust into natural dyes: imparting antimicrobial, antioxidant, and UV-protective finish to wool yarns through an ecological and sustainable natural dyeing process. Biomass Conversion and Biorefinery. 2024 Oct;14(19):23947-59.
10	Grover A, Nair S, Sharma S, Gupta S, Shrivastava S, Singh P, Kanungo S, Ovung S, Singh C, Khan AM, Sharma S. Strengthening cause of death statistics in selected districts of 3 states in India: protocol for an uncontrolled, before-after, mixed method study. JMIR Research Protocols. 2024 Dec 20;13(1):e51493.
11	Shrivastava S, Singh K, Kavishwar A, Kashyap T, Golhani V, Patkar S, Kaur H, Chakma T. Unravelling prevalence of metabolic syndrome in Baiga tribe of Dindori district of central India. Clinical Epidemiology and Global Health. 2025 Jan 1; 31:101868.
12	Rao E, Patel D, Saxena N, Saha KB, Kumar R. Ameliorating Mental Health Issues in Sickle Cell Disease Patients: A Viewpoint. Hemoglobin. 2024 May;48(3):212-213. doi: 10.1080/03630269.2024.2356607. Epub 2024 Sep 27. PMID: 39329378.
13	Nambison NK, Dwivedi AD, Kumar S, Goel G, Prasad P, Singh G, Rajasubramaniam S, Kumar R. Population-based Research in AYUSH: Lessons from Study among Particularly Vulnerable Tribal Groups to Determine Burden of Sickle Cell Disorders. Journal of Applied Sciences and Clinical Practice. 2024 Sep 1;5(3):138-44.

14 Seth T, Udupi S, Jain S, Bhatwadekar S, Menon N, Jena RK, Kumar R, Ray S, Parmar B, Goel AK, Vasava A. Burden of vaso-occlusive crisis, its management and impact on quality of life of Indian sickle cell disease patients. British Journal of Haematology. 2025 Jan;206(1):296-309.

15 Gupta P, Kumar R. Targeting ICAM1 to Ameliorate Vaso-Occlusion and Inflammation in Sickle Cell Disease. Eur J Haematol. 2024 Dec;113(6):730-737. doi: 10.1111/ejh.14313. Epub 2024 Oct 1. PMID: 39354752.

16 Sondhiya G, Manjunathachar HV, Singh P, Kumar R. Unveiling the burden of scrub typhus in acute febrile illness cases across India: A systematic review & meta-analysis. The Indian Journal of Medical Research. 2024 Sep 10;159(6):601.

17 Gupta P, Choudhari V, Kumar R. Exploring the genetic mechanisms: SELP gene's contribution to alleviating vaso-occlusive crisis in sickle cell disease. Gene. 2024 Nov 30; 928:148805.

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Section 6: Human Resources

List of Staff :

S.NO.	NAME WITH DESIGNATION
1	DR. TAPAS CHAKMA, SCIENTIST-G
2	DR. K.B. SAHA, SCIENTIST `G'
3	DR. S. RAJA SUBRAMANIAM, SCIENTIST-F
4	DR. PUSHPENDRA SINGH, SCIENTIST `F'
5	DR. DINESH KUMAR, SCIENTIST `F'
6	DR. VIDHAN JAIN, SCIENTIST `D'
7	DR. RITURAJ NIRANJAN, SCIENTIST `D'
8	DR. RAVINDRA KUMAR, SCIENTIST `D'
9	DR. SUYESH SHRIVASTAVA, SCIENTIST `C'
10	DR. ANIL KUMAR VERMA, SCIENTIST `C'
11	DR. QAISER FAROOQ DAR, SCIENTIST-C
12	DR. NISHANT SAXENA, SCIENTIST-C
13	DR. SATYENDRA PANDEY, SCIENTIST `C'
14	DR. VAGISHA RAWAL, SCIENTIST-C
15	DR. HARSHWARDHAN V. SHENDE, SCIENTIST `B'
16	SH. C. SOMASEKHAR, ACO
17	Sh. ANKIT KUMAR MISHRA, SECTION OFFICER (ESTT.)
18	Mrs. PRIYANKA GUPTA, SECTION OFFICER (STORE)
19	SH. HAKIM SINGH THAKUR, JR. TRANSLATION OFFICER
20	Sh. SUBASH CH. MUDULI, PRIVATE SECRETARY
21	SH. S.N. SINGH, PTO
22	Sh. LALIT K. SAHARE, TECHNICAL OFFICER-B
23	Sh. MAHENDRA JAIDEV UKEY, TECHNICAL OFFICER-B
24	Mrs. CANINA LUKE, TECHNICAL OFFICER-B
25	Mrs. NAZIA ANWAR ALI, TECHNICAL OFFICER-B
26	Sh. NITISH SINGH PARIHAR, TECHNICAL OFFICER-A
27	Sh. VIVEK KUMAR CHOUKSEY, TECHNICAL OFFICER-A
28	SH. SRI KRISHNA, TECHNICAL OFFICER-A
29	Sh. ARPIT MOURYA, TECHNICAL ASSISTANT
30	Sh. DEEPANSHU BHATIA, TECHNICAL ASSISTANT

31 Sh. SAURABH SINGH, TECHNICAL ASSISTANT
32 Sh. VIJAY KUMAR DWIVEDI, TECHNICAL ASSISTANT
33 Sh. PANKAJ DHEER, TECHNICAL ASSISTANT
34 Sh. TARENDRA DIGARSE, TECHNICAL ASSISTANT
35 Sh. CHANDAN KUMAR, TECHNICAL ASSISTANT
36 Sh. ANAND KUMAR, TECHNICAL ASSISTANT
37 Sh. GAURAV SHARMA, TECHNICAL ASSISTANT
38 Sh. TARANAND SINGH, TECHNICAL ASSISTANT
39 Ms. MODALI SRAVANI, TECHNICAL ASSISTANT
40 Sh. RATNESH MISHRA, TECHNICAL ASSISTANT
41 Sh. CHIRANTAN MAITY, TECHNICAL ASSISTANT
42 Ms. DIKSHA SINGH, TECHNICAL ASSISTANT
43 Ms. ANKITA MOURYA, TECHNICAL ASSISTANT
44 Sh. SURENDRA SINGH MEHRA, TECHNICAL ASSISTANT
45 Ms. MEGHNA MONDAL, TECHNICAL ASSISTANT
46 Sh. SUJEET GUPTA, TECHNICAL ASSISTANT
47 Sh. AMAN SIYOTE, ASSISTANT
48 Sh. NARENDRA K. JHARIYA, ASSISTANT
49 Sh. SUBHASH S. KUMBHARE, SENIOR TECHNICIAN (3)
50 Sh. ASHOK KUMAR SAINI, SENIOR TECHNICIAN (3)
51 SH. RAM KUMAR VERMA, SENIOR TECHNICIAN (3)
52 Sh. PRADEEP KUMAR NAMDEO, SENIOR TECHNICIAN (3)
53 Sh. GENDA LAL GOND, SENIOR TECHNICIAN (3)
54 DR. SHIV KUMAR SINGH, SENIOR TECHNICIAN (2)
55 Sh. SANTOSH KUMAR PATKAR, SENIOR TECHNICIAN (1)
56 Sh. HARI BARMAN, TECHNICIAN-2
57 Sh. SURENDRA K. JHARIYA, SENIOR TECHNICIAN (1)
58 Sh. SHASHI BHUSHAN DUBEY, TECHNICIAN-2
59 Sh. SAHAS RAM SHUKLA, LAB. TECHNICIAN
60 Sh. SHARAD KUMAR KOSTA, UPPER DIVISION CLERK
61 Sh. RAHUL KOSHTA, UPPER DIVISION CLERK

62 Sh. VIKAS KUMAR GUPTA, UPPER DIVISION CLERK
63 Ms. ANJALI RAJPUT, UPPER DIVISION CLERK
64 Sh. SARTHAK SONI, STENOGRAPHER
65 Sh. RAMSWAROOP UIKEY, TECHNICIAN-2
66 Mrs. MALA PRAJAPATI, TECHNICIAN-2
67 Sh. DHARMENDRA DHARWEY, TECHNICIAN-1
68 Sh. ANUP K. VISHWAKARMA, TECHNICIAN-2
69 Sh. SHIVAM NIGAM, TECHNICIAN-1
70 Sh. MOHIT SAINI, TECHNICIAN-1
71 Ms. PALAK JAIN, TECHNICIAN-1
72 Ms. AYUSHI NAGRIYA, TECHNICIAN-1
73 Sh. SHUBHAM CHAUDHARI, TECHNICIAN-1
74 Sh. WASEEM KHAN, TECHNICIAN-1
75 Sh. MONU DALAL, TECHNICIAN-1
76 Sh. LAVLESH KUMAR MAURYA, TECHNICIAN-1
77 Sh. NITIN UPADHYAY, TECHNICIAN-1
78 Sh. VAIBHAV BISHT, TECHNICIAN-1
79 Sh. JITENDRA KUMAR, TECHNICIAN-1
80 Sh. VIJENDRA KUMAR SINGH, TECHNICIAN-1
81 Ms. SONIKA WATS, TECHNICIAN-1
82 SH. MAHENDRA KUMAR JAIN, LABORATORY ASSISTANT-1
83 SH. JAGDISH PRASAD THAKUR, LABORATORY ASSISTANT-1
84 Sh. AJAY KUMAR SONI, LABORATORY ASSISTANT-1
85 Sh. MADAN SINGH MARAVI, LABORATORY ASSISTANT-1
86 Sh. PREM SINGH GOND, LABORATORY ASSISTANT-1
87 Sh. SONE LAL DUMAR, LABORATORY ASSISTANT-1
88 Sh. GANGA BAHADUR, LABORATORY ASSISTANT-1
89 Sh. PRITAM LAL GOND, LABORATORY ASSISTANT-1
90 Sh. PAPPU LAL DUMAR, LABORATORY ASSISTANT-1
91 Sh. ARAKH CHAND MALIK, LABORATORY ASSISTANT-1
92 Sh. RAJENDRA PRASAD GOND, LABORATORY ASSISTANT-1

93 Mrs. SHASHI PRABHA MISHRA, LABORATORY ASSISTANT-1
94 Sh. SHAMSHAD ALI ANSARI, LABORATORY ASSISTANT-1
95 Sh. SANTOSH KUMAR HALDKAR, LABORATORY ASSISTANT-1
96 SH. RAMESH KUMAR AHIRWAR, LABORATORY ASSISTANT-1
97 SH. ANIL VINODIA, LABORATORY ASSISTANT-1
98 SH. SANTOSH KUMAR KOL, LABORATORY ASSISTANT-1
99 Sh. SANJEEV KUMAR SHUKLA, FIELD LAB.ATTENDANT
100 Sh. KAUSHAL KUMAR SHUKLA, FIELD LAB.ATTENDANT
101 Sh. DHARMENDER K. LODHI, DRIVER
102 Sh. OM PRAKASH DUBEY, DRIVER
103 Sh. LALJU SINGH, PEON
104 Sh. VINAY KUMAR BALMIK, LABORATORY ASSISTANT-1
105 Sh. SANTOSH KUMAR MARAVI, LABORATORY ATTENDANT-2
106 Sh. MUKESH S. KACHHWAHA, LABORATORY ATTENDANT-2
107 Sh. RAJA SONKAR, MULTI TASKING STAFF (GEN)
108 Sh. HARSH SONKAR, LABORATORY ATTENDANT-1
109 Ms. BHARTI SHIV, LABORATORY ATTENDANT-1

Staff Newly Recruited

S.NO.	NAME WITH DESIGNATION
1	SH. JITENDRA KUMAR, TECH-1 (01.04.2024)
2	SH. VIJENDRA KUMAR SINGH, TECH-1 (01.04.2024)
3	MS. MEGHNA MONDAL, TA (05.04.2024)
4	MS. SONIKA WATS, TECH-1 (24.04.2024)
5	SH. SUJEET GUPTA, TA (26.04.2024)

Staff Transferred IN/OUT

S.NO.	NAME WITH DESIGNATION
1	SMT. PRIYANKA GUPTA, SO (IN-05.12.2024)
2	SH. C. SOMASEKHAR, ACO (IN-06.03.2025)
3	SH. ABHISHEK SARAF, SO (OUT-14.10.2024)

4	DR. SANDEEP KUMAR, SCI-B (OUT- 31.10.2024)
5	SH. MILIND DIXIT, PS (OUT - 30.11.2024)
6	DR. QAISER FAROOQ DAR, SCI-C (OUT-13.03.2025)

Staff Retired/Resign

S.NO.	NAME WITH DESIGNATION
1	SH. PURUSHOTTAM PATEL, SR. TECH-3 (RETD. 30.04.2024)
2	SH. RAMESH KUMAR BHATIA, IC (RETD-31.05.2024)
3	SH. PRAKASH SANGLE, TECH-2 (RETD-31.05.2024)
4	DR. SURENDRA KUMAR, SCI-D (RETD. - 30.06.2024)
5	SH. DEEPCHAND KHATARKAR, SR. TECH-3 (RETD. - 30.06.2024
6	SH. MALIKHAN SINGH, LAB. ASSTT. -1 (RETD. - 30.06.2024)
7	SH. RAJU HARIJAN, DRIVER (RETD. - 30.06.2024)
8	SH. DAYANAND VISHWAKARMA, UDC (RETD. - 30.06.2024)
9	SH. RAJENDRA KUMAR THAKUR, AO (RETD. - 31.07.2024)
10	MS. REENA SHOME, TO-C (RETD. - 31.07.2024)
11	SH. ASHOK KUMAR GUPTA, TO-B (RETD. - 31.08.2024)
12	SH. BAL RAM SINGH PATEL, SR. TECH-3 (RETD. - 30.09.2024)
13	SH. BAISHAKHU LAL, ASSISTANT (RETD. - 30.09.2024)
14	SH. BHUPENDRA MEENA, TA (RESIGN- 11.12.2024)
15	SH. ARVIND KAVISHWAR, PTO (RETD. - 31.12.2024)
16	MS. EKTA BARKADE, LAB.ATTENDANT-1 (RESIGN-17.01.2025)
17	SH. SURESH KUMAR BARMAN, LAB. ASSTT. -1 (RETD-28.02.2025)

Section 7- Budget

FY 2024-25 Budget Information:

Parameter	Details
Institute Name	**ICMR-National Institute of Research in Tribal Health, Jabalpur (M.P.)**
Reporting Year	April 2024 – March 2025
Total Budget (Sanctioned (ICMR and Others) vs Utilized) 2024-25	₹ _14,21,05,323.34_ / ₹ _8,23,35,102.50_
ICMR	₹ __ / ₹ _14,74,401.00_
Others	₹ _14,21,05,323.34_ / ₹ _8,08,60,701.50_
Total ICMR Budget utilized	₹ _8,23,35,102.50_
Key Collaborations (National/Intl)	CCRAS, DBT, CCMB Hyderabad, DHR, Government of Madhya Pradesh, etc

Section 8- Rajbhasha Progress Report

राजभाषा नीति के कार्यान्वयन एवं अनुपालन से संबंधित प्रगति रिपोर्ट

आईसीएमआर-राष्ट्रीय जनजाति स्वास्थ्य अनुसंधान संस्थान, जबलपुर में भारत सरकार, गृह मंत्रालय, राजभाषा विभाग की राजभाषा नीति के समुचित कार्यान्वयन एवं अनुपालन के लिए सतत प्रयास किए जा रहे हैं। प्रतिवेदन अवधि के दौरान इस संस्थान में हिंदी के प्रगामी प्रयोग एवं सरकारी कामकाज में हिंदी के प्रयोग को बढ़ावा देने हेतु किए गए प्रयासों का संक्षिप्त विवरण इस प्रकार है:-

1. राजभाषा कार्यान्वयन समिति

राजभाषा विभाग के आदेशानुसार इस अनुसंधान संस्थान में 'राजभाषा कार्यान्वयन समिति' गठित है:-

1. डॉ. राजनारायण आर. तिवारी, निदेशक (अतिरिक्ति प्रभार) - अध्यक्ष
2. डॉ. के.बी. साहा, वैज्ञानिक-जी - सदस्य
3. श्री राजेन्द्र कुमार ठाकुर, प्रशासनिक अधिकारी - सदस्य
4. श्री शोकत आजम शेख, लेखा अधिकारी - सदस्य
5. श्री मिलिंद दीक्षित, कार्यवाहक अनुभाग अधि. (भंडार) - सदस्य
6. श्री हाकिम सिंह ठाकुर, कनिष्ठ अनुवाद अधिकारी - सदस्य सचिव

सामान्यतः प्रत्येक तीन माह में इस समिति की बैठक होती है, जिसमें इस अनुसंधान संस्थान में राजभाषा कार्यान्वयन एवं अनुपालन की स्थिति की समीक्षा की जाती है तथा सरकार द्वारा निर्धारित लक्ष्यों को प्राप्त करने हेतु आवश्यक उपायों की संस्तुति की जाती है। प्रतिवेदन अवधि तक इस समिति की कुल 97 तिमाही बैठकें आयोजित की जा चुकी हैं।

2. हिंदी पत्राचार एवं टिप्पणी-लेखन

प्रतिवेदन अवधि के दौरान इस केन्द्र द्वारा 'क' क्षेत्र को मूलतः हिंदी में लगभग 50 प्रतिशत और उससे अधिक पत्राचार किया गया। साथ ही सरकार द्वारा निर्धारित लक्ष्य के अनुरूप हिंदी पत्राचार को 'क' क्षेत्र के अलावा 'ख' एवं 'ग' क्षेत्रों के साथ भी मूल हिंदी पत्राचार को बढ़ाने के लिए प्रयास किए जा रहे हैं। अधिकांश फाइलों पर भी हिंदी में टिप्पणियां लिखी जाती हैं। पिछली बैठकों में संस्थान द्वारा मूल हिंदी पत्राचार एवं मूल रूप से हिंदी टिप्पणी-लेखन का प्रतिशत और बढ़ाए जाने तथा संस्थान में प्रतिवर्ष हिंदी की नई पुस्तकों की खरीद पर कार्यान्वयन के कदम उठाए गए हैं।

3.धारा 3(3) एवं राजभाषा नियम - 5 का अनुपालन

राजभाषा अधिनियम, 1963 (यथासंशोधित 1967) की धारा 3(3) के अनुपालन में सामान्य-आदेश/परिपत्र, सूचना के अंतर्गत रिक्त पदों के विज्ञापन, निविदा सूचना एवं निविदा प्रपत्र आदि निर्दिष्ट दस्तावेजों के अतिरिक्त रिक्त पदों के विज्ञापन आदि भी हिंदी/द्विभाषी रूप में जारी किए जाते हैं।

4. प्रशिक्षण

इस संस्थान के अधिकांश अधिकारियों एवं कर्मचारियों को हिंदी का कार्यसाधक ज्ञान/प्रवीणता प्राप्त है और प्रशासनिक अनुभागों - स्थापना, लेखा एवं भंडार अनुभागों में तैनात कर्मचारियों द्वारा अधिक से अधिक मूलतः हिंदी में सरकारी कामकाज निष्पादित करने का प्रयास किया जाता है।

राजभाषा विभाग के निर्देशों के अनुसार, जिन कर्मचारियों को हिंदी टंकण एवं हिंदी आशुलिपि के सेवाकालीन प्रशिक्षण की आवश्यकता थी, उन सभी को हिंदी शिक्षण योजना, राजभाषा विभाग, जबलपुर कार्यालय से हिंदी टंकण/हिंदी आशुलिपि का प्रशिक्षण दिलाया गया है। वर्तमान में केवल एक आशुलिपिक हिंदी आशुलिपि प्रशिक्षण के लिए शेष हैं, उन्हें शीघ्र ही हिंदी शिक्षण योजना के माध्यम से हिंदी आशुलिपि का प्रशिक्षण दिलाया जाएगा।

5. विभागीय परीक्षाओं में द्विभाषी प्रश्न-पत्र उपलब्ध कराना:

सरकार द्वारा जारी निर्देशों के अनुसार इस केंद्र में अधीनस्थ सेवाओं की भर्ती परीक्षा एवं विभागीय परीक्षाओं में द्विभाषी प्रश्न-पत्र उपलबध कराए जा रहे हैं।

6. प्रशिक्षण कार्यक्रमों एवं वैज्ञानिक विषयों पर व्याख्यानों में हिंदी को प्रमुखता:

इस संस्थान में अनुसंधान कार्य से संबंधित प्रशिक्षण कार्यक्रमों और वैज्ञानिक व्याख्यानों आदि में हिंदी को प्रमुखता प्रदान की जाती है, जिससे अधिक से अधिक लोगों तक इसका लाभ पहुँच सके।

7. हिंदी-दिवस/हिंदी-पखवाड़ा

राजभाषा विभाग के निर्देशों के अनुसार हिंदी के प्रचार-प्रसार एवं मूलतः हिंदी में सरकारी कार्य करने को बढ़ावा देने के उद्देश्य से संस्थान में प्रति वर्ष हिंदी-दिवस एवं हिंदी-पखवाड़ा मनाया जाता है। इस दौरान निदेशक महोदय द्वारा सभी अधिकारियों एवं कर्मचारियों से सरकारी कामकाज अधिकाधिक हिंदी में करने की अपील की जाती है एवं अधिकारियों व कर्मचारियों के लिए हिंदी की विभिन्न प्रतियोगिताएँ आयोजित की
जाती हैं।

इस वर्ष 14.09.2024 से 30.09.2024 तक 'हिंदी-पखवाड़ा' मनाया गया। इसके अंतर्गत संस्थान के वैज्ञानिकों, अधिकारियों एवं कर्मचारियों के लिए हिंदी टंकण (कम्प्यूटर पर), हिंदी निबंध-लेखन, हिंदी वाद-विवाद एवं हिंदी कविता-पाठ प्रतियोगिताएं आयोजित की गई। 'हिंदी-पखवाड़ा' के समापन अवसर पर दिनांक 30.09.2025 को संस्थान के निदेशक महोदय (अतिरिक्त प्रभार) डॉ. राजनारायण आर. तिवारी, मुख्य-अतिथि के रूप आमंत्रित शासकीय स्वशासी मानकुँवर बाई कला एवं वाणिज्य महिला महाविद्यालय, जबलपुर की हिंदी विभाग की प्रोफेसर एवं विभागाध्यक्ष डॉ. (श्रीमती) नीना उपाध्याय तथा संस्थान के वरिष्ठ वैज्ञानिक डॉ. तापस चकमा, वैज्ञानिक 'जी' द्वारा हिंदी प्रतियोगिताओं के विजेताओं को नकद पुरस्कार एवं प्रमाण-पत्र प्रदान प्रदान कर उन्हें प्रोत्साहित किया तथा अपने संबोधन में राजभाषा नीति के अंतर्गत अधिनियम, नियमों, आदेशों का अनुपालन करने तथा दैनिक सरकारी कामकाज में अधिक से अधिक हिंदी का प्रयोग करने का आह्वान किया गया।

'हिंदी-पखवाड़ा 'के अंतर्गत संपन्न इन हिंदी प्रतियोगिताओं के विजेताओं तथा उन्हें प्रदान किए गए नकद पुरस्कारों की सूची इस प्रकार है:-

1. **हिंदी टंकण प्रतियोगिता**: (19.09.2024)

श्री राहुल कोष्टा, उ.श्रे.लि.	प्रथम पुरस्कार	₹ 5000/-
श्री नरेन्द्र कुमार झारिया, उ.श्रे.लि.	द्वितीय पुरस्कार	₹ 3000/-
श्री तारेन्द्र डिगरसे, तक.सहा. (जैव-विज्ञान)	तृतीय पुरस्कार	₹ 2000/-
श्री शिवम निगम, तकनीशियन-1	सांत्वना पुरस्कार (।।)	₹ 1000/-
श्री शरद कुमार कोष्टा, उच्च श्रेणी लिपिक	सांत्वना पुरस्कार (।।)	₹ 1000/-

2. **हिंदी निबंध-लेखन प्रतियोगिता**: (20.09.2024)

श्री शिवम निगम, तकनी.1 (कंप्यू)	प्रथम पुरस्कार	₹ 5000/-
डॉ. पुष्पेन्द्र सिंह, वैज्ञा-एफ	द्वितीय पुरस्कार	₹ 3000/-
श्री विवेक कुमार चौकसे, तक.अधि.ए	तृतीय पुरस्कार	₹ 2000/-
कु. अंकिता मौर्य, तक.सहा.	सांत्वना पुरस्कार (।)	₹ 1000/-
श्री महेन्द्र जे उके, तक.अधि.-बी	सांत्वना पुरस्कार (।।)	₹ 1000/-

3. **हिंदी वाद-विवाद प्रतियोगिता**: (25.09.2024)

श्री शिवम निगम, तकनीशियन-1	प्रथम पुरस्कार	₹ 5000/-
श्री विवेक कुमार चौकसे, तक.सहा.ए	द्वितीय पुरस्कार	₹ 3000/-
श्रीमती नाजिया अली, तक.अधि.बी	तृतीय पुरस्कार	₹ 2000/-
श्री सुरेन्द्र सिंह मेहरा, तक.सहा.	सांत्वना पुरस्कार (।)	₹ 1000/-
श्री चिरंतन मैती, तकनीकी सहा.	सांत्वना पुरस्कार (।।)	₹ 1000/-

4. **हिंदी कविता-पाठ प्रतियोगिता**: (26.09.2024)

श्री विवेक कुमार चौकसे, तक.सहा.	प्रथम पुरस्कार	₹ 5000/-
श्री हर्ष सोनकर, प्रयोग.परिचा.1	द्वितीय पुरस्कार	₹ 3000/-
श्री सुरेन्द्र कुमार झारिया, तकनी.सी	तृतीय पुरस्कार	₹ 2000/-
श्री सुरेन्द्र सिंह मेहरा, तक.सहा.	सांत्वना पुरस्कार (।)	₹ 1000/-
श्री चिरंतन मैती, तकनीकी सहा.	सांत्वना पुरस्कार (।।)	₹ 1000/-

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कुल योग ₹ - 48,000/-

(अडतालीस हजार रुपए मात्र)