

FORENSIC SCIENCE CONCLAVE

Theme: “KRIMINALISTIKA”: UNRAVELLING THE MYSTERY

Date: 15th February, 2020

Venue:
Department of Anthropology
University of Delhi

Report compiled by:

Dr Astha Bansal

with the help of

D Adithya, Abhilash, Yashvi, Lekhika, Lucky, Rajat, Arpita, Anuksha
(M.Sc. (Previous) Forensic Science student's)

Photography

Avish Rathour
(M.Sc. (Previous) Forensic Science)
and
Pooja
(M.Sc. (Final) Forensic Science)

PROGRAM DETAILS

Saturday	February 15, 2020	
08:30 - 09:30 A.M.	Registration	
Inaugural Program		
09:30 - 10:00 A.M.	Welcome note	Mr. Rajeev (Dept. of Anthropology, University of Delhi)
	Inaugural address by the Chairperson	Prof. P.C. Joshi (Head, Dept. of Anthropology, University of Delhi)
	Special address by the Co-Chairperson	Prof. M.P. Sachdeva (Dept. of Anthropology, University of Delhi)
	Address by the Chief Guest	Dr. Deepa Verma (Director, Forensic Science Laboratory, Rohini, Delhi)
	Vote of Thanks	Dr. Astha Bansal (Dept. of Anthropology, University of Delhi)
10:00 - 10:30 A.M.	High Tea	
Technical Session 1 (10:30 – 12:45 P.M.) Chairperson: Prof. P.C. Joshi; Co-Chair: Prof. M.P.Sachdeva		
10:30 - 11:15 A.M.	Dr. Suminder Kaur (Assistant Director, RFSL, Chanakyapuri, Delhi) Title: Recent trends in Child Rape Crisis	
11:15 - 12:00 A.M.	Dr. G.S. Sodhi (S.G.T.B. Khalsa College, University of Delhi) Title: Novel Techniques for Developing Latent Fingerprints	
12:00 - 12:45 P.M.	Dr. K.P.S Kushwaha (LNJN, NICFS, Rohini, Delhi) Title: Forensic Evidence in Sexual Assault Cases.	
Flash Presentation (12:45 - 01:15 P.M.) Observers of the Session: Dr. Sonali Walia, Dr. Astha Bansal and Dr. Abhilasha Kapoor		
12:45 - 01:15 P.M.	Mr. Rajeev (Dept. of Anthropology, University of Delhi) Title: The potential application of DNA Methylation in Forensic Science- A Review Article.	
	Dr. Kusum Singal (Dept. of Neurology, AIIMS, New Delhi) Title: Mandibular Ramus as Demystifying Tool for Gender Determination.	
	Mr. G.S. Bumbrah (Amity University, Gurugram, Haryana) Title: A Novel Fingerprint powder formulation based on Niagara Blue Dye: A Preliminary Evaluation.	
	Mr. Sanjoy Kumar Chatterjee (Dept. of Anthropology, University of Delhi) Title: Analyses of the diet of our early hominins by studying carbon isotopes and its applications in forensic anthropology: A Review.	
	Ms. Nancy Yadav (Amity University, Gurugram, Haryana)	

	Title: Discriminatory study on Standard and Disguised Handwriting of an Individual: A Forensic Report
01:15 - 02:15 P.M.	LUNCH
Poster Presentation (02:15 – 02:45 P.M.) Chairperson: Prof. M.P. Sachdeva; Co-Chair: Dr. P.R. Mondal	
02:15 - 02:45 P.M.	Ms. Lucky (Dept. of Anthropology, University of Delhi) Title: A Case Study of the Class Characteristics of Handwriting of Children from Standard V to VIII.
	Ms. Komal Patel (Galgotias University, Greater Noida, U.P.) Title: Truth Serum- A Review.
	Ms. Pallavi Mohanty (Dept. of Anthropology, University of Delhi) Title: Individual Human Scent as a Forensic Identifier Using Mantrailing.
	Ms. Ruchi Mishra (Dept. of Anthropology, University of Delhi) Title: The variation in number and types of crimes in different economic regions of a Ranchi City.
	Ms. Lekhika (Dept. of Anthropology, University of Delhi) Title: Date Rape Drugs and Modern Detection Devices: A Review.
	Ms. Manisha Kharaliya (Dept. of Anthropology, University of Delhi) Title: Forensic Limnology- An Emerging Era
Technical Session 2 (02:45 – 05:00 P.M.) Chairperson: Dr. P.R. Mondal; Co-Chair: Dr. Vipin Gupta	
02:45 – 03:30 P.M.	Dr. J.R. Sethi (LNJN, NICFS, Rohini, Delhi) Title: Forensic Toxicology and its Role in Criminal Investigation
03:30 – 04:15 P.M.	Dr. Deepak Raj Rao (LNJN, NICFS, Rohini, Delhi) Title: Forensic Challenges of Dart Net and Crypto-Currency
04:15 - 05:00 P.M.	Dr. S.C. Mittal (Executive Director, Premier Forensic Science Institute, New Delhi) Title: Determination of age of documents – A Case Study
Flash Presentation (05:00 - 05:30 P.M.) Observers of the Session: Mr. Rajeev, Mr. Arun and Mrs. Ayasha Praveen	
05:00 - 05:30 P.M.	Ms. Chhavi Singh (Dept. of Anthropology, University of Delhi) Title: Microbiomes Forensic Significance: A Review.
	Ms. Anuksha Amrita (Dept. of Anthropology, University of Delhi) Title: Survey of Diatoms in selected water bodies of Ranchi city and application of Forensic Diatomology.
	Ms. Sweta Bharti (Dept. of Anthropology, University of Delhi) Title: Preparation of databank and a comparative study of various type of tyre mark patterns of four wheelers.
	Ms. Anjali (Dept. of Anthropology, University of Delhi)

	Title: The role of DNA sample as a tool in a Forensic Investigation.	
	Mr. Kumar Shankar Raychaudhuri (LNJN, NICFS, Rohini, Delhi)	
	Title: An Empirical Study for Analysis and Tracking of offenders and Rumour Creators on Social Media using OSINT.	
Valedictory Session (05:30 - 06:15 P.M.)		
05:30 – 06:00 P.M.	Valedictory Remarks:	Prof. P.C. Joshi (Dept. of Anthropology, University of Delhi)
06:00 – 06:15 P.M.	Vote of Thanks	Dr. P.R. Mondal (Dept. of Anthropology, University of Delhi)
06:15 - Onwards	Evening Tea	

Introduction

The department has developed and initiated one- year Certificate course in Forensic Science (CCFS) since 1968. In 2015, the department expanded its educational provision and shaped a unique Master level Course in Forensic Science (M.Sc.). This course provides a platform in the field of forensic science to apply scientific principles for the criminal investigative procedures.

The **Forensic Science Conclave** aimed to provides a platform for the interaction of forensic experts, researchers, and students. The knowledge and experience of eminent speakers broaden the horizon on the concerned subject. Moreover, brainstorming sessions between forensic experts and students would help student's in their future endeavours.

Lamp Lightning Ceremony and Saraswati Vandana





Welcome note by Mr Rajeev

The welcome note was given by Mr Rajeev. He talked about the history and development of Forensic Science course. He expressed gratitude to the chairperson, co-chairperson, organizing secretary, co-organizing secretary, invited speakers and participants for their valuable contribution in conclave.



Inaugural address by the Chairperson

Prof. P.C. Joshi

(Head, Department of Anthropology, University of Delhi)

The Inaugural address note by Prof. P.C. Joshi. He welcomed the chief guest Dr Deepa Verma and forensic experts. He reiterated the aim of bringing together forensic experts, researchers and students. The presentation and discussion began with the inaugural address note by Prof. Joshi.



Address by the Chief Guest

Dr. Deepa Verma

(Director, Forensic Science Laboratory, Rohini, Delhi)

Dr Deepa Verma (Director, Forensic Science Laboratory, Rohini, Delhi), Chief Guest of Forensic Science Conclave, 2020. She said *“Academic Universities and Forensic Laboratory should work in amalgamation for the Criminal Justice System”*. She talked about various laboratories and the different types of cases they were handling. She went on to describe about the available training program for the students, research scholars and Police Officers. She talked about need and importance of practical knowledge in Forensic Science. According to her, gaining academic knowledge is not enough. She discussed about the number of cases forensic laboratories receiving per year. She emphasized the crime trends in current scenario. Dr Deepa explained the emerging fields in forensics such as narcotics, gun terror, cyber threat, and crime against women. She also talked about the psychological examination, layered stress voice analysis, brain fingerprinting, forensic psychological autopsy, psychological profiling to study the criminal behaviour. She motivated the students and talked about the future plans.



Vote of Thanks by Dr. Astha Bansal

Dr. Astha Bansal was called upon to give the vote of thanks. Dr Bansal graciously thanked chief guest Dr Deepa Verma. She thanked chairperson Prof P.C. Joshi and co-chairperson Prof M.P Sachdeva for initiatives towards the academic growth of the department through events like these. She also thanked organising secretary Dr P.R. Mondal for his constant support and encouragement. She appreciated Mr Rajeev, organizing committee, and student team who contributed to organizing this conference. She concluded her speech with an expression of gratitude towards the students for showing the interest in the program and making the event a success.



High Tea





Technical Session-1

Dr. Suminder Kaur

(Assistant Director, RFSL, Chanakyapuri, Delhi)

Dr. Suminder delivered lecture on “Recent trends in child rape crisis”. She drew attention on the rising trend of sexual assault cases of children in metropolitan city. She brought to fore the importance of DNA examination, an indispensable tool used in all sort of cases viz. *sexual assault, physical assault, molestation, homicide, identification of unidentified body, paternity disputes etc.* Dr Kaur showed her published research papers. First paper titled “Recent trends in child rape crisis in Delhi- A Forensic Review”, which referred to the overall crime rates of Delhi NCR particularly the cases of South and New Delhi district. The emphasis was given on the cases reported U/S 376/377 IPC and POCSO Act that reveals approximate statistical analyses with special reference to child sexual abuse cases. Second paper entitled “Y- Chromosome STR Typing: A Distinguishing tool for exclusion in a case work and sexual assaults”. Case study of alleged sexual assault and physical violence. Forensic DNA analysis conducted on exhibits collected from the crime scene and at the time of medical examination. She discussed the Prevalence of child sexual assault in India and barriers to disclosure. She explained the POCSO Act (Protection of Children from Sexual Offences). She also highlighted the importance of DNA analysis in the cases. She concluded “DNA evidence unravels the truth- it never lies”.



Dr. G.S. Sodhi

(Forensic Science Unit, S.G.T.B. Khalsa College, University of Delhi, Delhi-110007)

Dr Sodhi delivered lecture on the topic “Novel Techniques for Developing Latent Fingerprints”. The fingerprints found at a scene of crime are one of the most powerful tools in case work investigations. Even identical twins have different fingerprint. Dr Sodhi said “Faces May Lie...Fingerprints Never”. He explained the conventional techniques for developing fingerprint and limitations behind it. He discussed about latent print, ninhydrin technique, size of protein chain, compositions based on nanoparticles and its advantages. He explained about the small particle reagent formulations. A suspension of Eosin Y, coated on zinc carbonate in a detergent solution used as *Small Particle Reagent* on moist metallic surfaces and moist polymeric surfaces. He also discussed the technique for detection of weapons holders, based on suicide mystery case.



Dr. K.P.S. Kushwaha

(LNJN , NICFS , Rohini , Delhi)

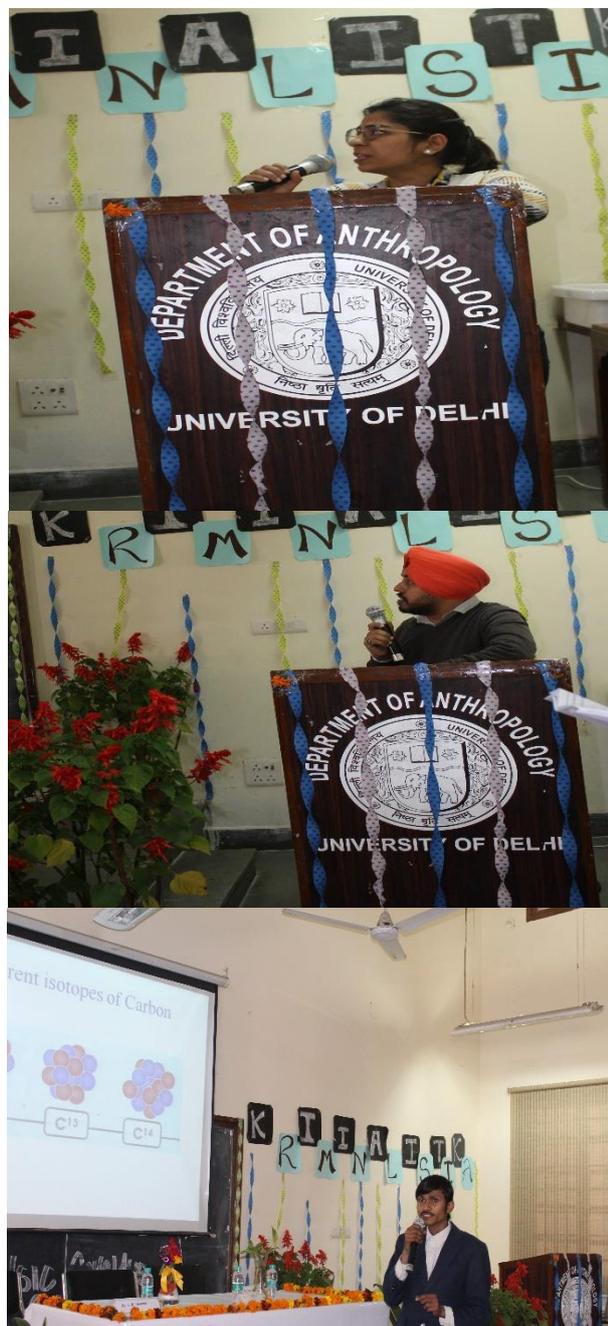
Dr. K.P.S. Kushwaha gave a lecture on “Forensic evidence in sexual assault cases. Dr. Kushwaha gave insight on certain topics like biological fluids, tissues which included body bloodstains, menstrual bloodstain, vaginal secretion stain, seminal stain, saliva stain, skin tissues (under nails), hair strands and body cell, impression marks, botanical evidence. He talked about the identification of blood, menstrual blood, seminal stains and examination of hair and fiber. He showed various genetic marker systems used in forensics. He emphasized on detection of spermatozoa in vaginal swab collected from the sexual assault victims and their usage in linking the perpetrator with the crime, especially with the use of DNA technology. He pointed out the numerous reports in literature on post coital recovery times of spermatozoa. He emphasized on new technologies for forensic DNA testing. He explained the ways of extraction of DNA in extremely burnt human remains. He spoke about the forensic application of maggots, diatoms, pollen grains, hair and fibres. He highlighted the individuality of DNA profiling especially CpG markers used in the determination of age and DNA analysis in identical twins. Dr Kushwaha concluded the session by explaining the work ethics of Forensic Scientists.



Flash Presentation (Technical Session 1)

Observers of the Session: Dr. Sonali Walia, Dr. Astha Bansal and Dr. Abhilasha Kapoor

The first presenter of the session was **Dr. Kusum Singhal**, *Senior Research Fellow from AIIMS*. She presented the paper entitled “Mandibular Ramus as Demystifying Tool for Gender Determination”. She explained the importance of Mandible in identification of unknown dead body. Second paper was presented by **G. S. Bumbrah**, *Assistant Professor, Dept. of Chemistry, Biochemistry and Forensic Science, Amity School of Applied Sciences, Amity Education Valley, Amity University, Gurugram (Manesar)*. He presented the paper entitled “A novel fingerprint powder formulation based on Niagara blue dye: A preliminary evaluation”. He explained the novel fingerprint powder composition based on Niagara blue which has been formulated and used for developing latent fingerprints. The formulation develops sharp and clear fingerprints on wide range of dry, smooth, non-porous surfaces such as glass, aluminium foil, metallic spoon, wooden table etc. which may be discerned in natural light. He pointed out that this formulation is useful in detecting and developing weak and fragmented chance prints from the scene of crime. Third paper was presented by **Mr. Sanjoy Kumar Chatterjee**, *Ph.D. Research Scholar, Dept. of Anthropology, University of Delhi, Delhi – 110007, India*. His paper entitled “Analyses of the diet of our early hominins by studying carbon isotopes and its applications in forensic anthropology: A review”, he explained the dietary diversity within the early hominins by studying carbon isotopes and its applications in forensic anthropology. Fourth paper was presented by **Ms. Nancy Yadav** from Amity University, Gurugram. She presented her paper on “Discriminatory study on Standard and Disguised Handwriting of an Individual: A Forensic Report”. In her findings she compared both standard and disguised handwriting. She reiterated that even in best possible method of disguise, the identification is possible. She concluded that the individuals tried their level best to disguise their usual handwriting in an expanded manner, yet they



were not able to change their 'individual characteristics'. It is because of the fact that certain individual characteristics are so deeply engraved into the sub-conscious mind that it becomes very difficult for the original writer to leave all such characteristics in the act of deliberate deviation. Last paper of the session was presented by **Mr Rajeev**, Guest Faculty, PhD Research Scholar from Department of Anthropology, University of Delhi. He presented the paper on "The potential application of DNA Methylation in Forensic Science- A Review article". He discussed the forensic application of tDMR (tissue specific differentially methylated regions) marker's for identification of body tissues. He highlighted that degree of methylation patterns in males were greater than females and talked about the identification of sex by using methylation profiles. He also discussed the importance of methylation in age estimation.



Poster Presentation

Post lunch was the poster presentation session which was judged by **Dr. P. R. Mondal** and **Dr. K.P.S. Kushwaha**. Five students presented their poster. 'A Case Study of the Class Characteristics of Handwriting of children from Standard V to VIII' was presented by **Ms. Lucky**. She highlighted the similarities in handwriting among the student due to same educational environment, adaptive conditions and same copybook form. **Ms. Pallavi Mohanty** presented a review on 'Individual human scent as a Forensic Identifier using Man Trailing' emphasising the use of this method in confirming the presence of suspected person at the crime scene. **Ms. Ruchi Mishra** presented her work on 'The variation in number of types and crimes in different economic regions of Ranchi City' signifying the different types of crime being committed in different area, like cyber offences, murder, theft in high economic area while the counterfeit currency, dowry in middle economic area and riot, naxal activities in low economic area. **Ms. Lekhika** presented a review on 'Date Rape Drugs and modern detection devices: A Review' emphasising on the use of Rohypnol drug in many sexual assault cases and the need of new techniques for its analysis. **Ms. Manisha Kharaliya** along with Amarjeet and Amandeep Singh reviewed on the topic 'Forensic Limnology-An Emerging Era depicted the use of microorganism like bacteria and diatoms for forensic examination to know the site of crime scene and cause of death.



Technical Session 2

Dr. Deepak Raj Rao

(LNJN, NICFS, Rohini, Delhi)

Dr. Deepak Raj Rao delivered the lecture on "The Forensic Challenges of Dark Net and Crypto -Currency". He began his session with the history of the darknet and highlighted that Dark Net is being made intentionally hidden and can be reached only through a special browser or an application created for it. By using this browser, the user becomes anonymous and cannot be traced. He went on to describe the ways online drug market and illicit drugs sold on crypto markets. Dr. Deepak explained the Challenges of Dark Net communication that are Anonymity, Hidden exchange, Privacy, and Authentication. He discussed about the Payment on the darknet/web by Bitcoin that is a crypto-currency which is often used in transactions on the darknet. He showed concern about the rapid boom of crypto currency. He suggested the available methods by which some of the evidence can be extracted using digital forensic tool and technique. He highlighted some cases regarding forgeries



Dr. S.C. Mittal

(Executive Director, Premier Forensic Science Institute, New Delhi)

Dr. Mittal delivered the lecture on 'Determination of Age of Documents – A Case Study. Dr. Mittal began the presentation with his experiences of investigating the various cases. He explained that the biggest challenge in document examination is the determination of the age of the document. He said *'we cannot determine the exact time when one's hair starts growing, so how can we determine the exact age of a document'*. He cited an example of an examination and interpretation of questioned manuscript. He mentioned a case in which the genuineness of a post's stamp was suspected and went on to describe the book of postal India which helped in establishing its genuineness. He highlighted the term foxing, brown patches developed on the paper which plays a major role in the determination of the age of the documents. He explained about the case study on obliterated documents in which 30 was changed into 38 by adding an extra loop to zero. He shared his experience with fluorescent pen writing. He concluded the presentation by describing the sequence of steps undertaken while examining any questioned document.



Flash Presentation (Technical session 2)

Observers of the Session: Mr. Rajeev, Mr. Arun and Mrs. Ayasha Praveen

The first presenter of flash session was **Ms. Chhavi**, from Department of Anthropology, University of Delhi. Her paper entitled “Microbiomes Forensic Significance: A Review”, She pointed out the application of microorganisms in human identification, for geolocation to estimate post-mortem interval etc. The second paper was presented by **Ms. Anuksha** her paper entitled “Survey of Diatoms in selected water bodies of Ranchi City and application of Forensic Diatomology”. She emphasized the relationship of the distribution of diatoms with the extent of pollution in water bodies. Her research data represents diatomological profiles of selected sites of Ranchi city for possible application of forensic diatomology. The next paper was presented by **Ms. Sweta Bharti** on “Preparation of databank and a comparative study of various type of tyre mark patterns of four wheelers”. Her study was formulated into a predictive and preliminary databank. She gave an insight on the class and individual characteristics of tyre marks while giving various examples. **Ms. Anjali**, from Department of Anthropology, University of Delhi presented her paper titled “The role of DNA samples as a tool in a forensic investigation through a review article”. She pointed out some recent studies which indicates the possible application of DNA methylation in forensic Science. Finally, **Mr. Kumar Shankar Raychaudhuri**, from LNJN NICFS, presented a paper on “An Empirical Study for Analysis and Tracking of offenders and Rumour Creators on Social Media using OSINT”. Mr. Kumar discussed an empirical study for analysis and tracking of offenders and rumour creators on social media using open-source intelligence tools (OSINT). He stressed on that his research work is useful for various law enforcement and intelligence agencies in ensuring the security of the nation.



Valedictory Remarks:

Prof P.C. Joshi was invited to deliver the valedictory remarks. He extended his heartfelt gratitude to all the invited speakers of the day and highlighted the importance of learning from the experiences of these eminent personalities. He praised all the participants of the flash presentation for the effort and the hard work that they had exerted to deliver the presentation in front of these formidable speakers. He concluded his words by thanking the Faculty Members and the Students of the Department for their role in making this conclave a grand success and expressed his desire to hold more such academic for the students in the Department for the years to come.



Vote of Thanks by Organizing Secretary

Dr. P.R. Mondal

Organizing Secretary

(Department of Anthropology, University of Delhi)

Dr. Mondal expressed his sincere gratitude to all the esteemed members, who dignified the event with their presence. He explained the emotional attachment that he felt towards every aspect of the event. Dr. Mondal attributed the success of the event to the Head of Department, Prof P. C. Joshi, organizing committee members and the students of the department.



Prize Distribution



Photo Gallery



COMMITTEES

Chairperson

1. Prof. P.C. Joshi

Co-Chairperson

1. Prof. M.P. Sachdeva

Organizing Secretary Members

1. Dr. P.R. Mondal
2. Dr. Vipin Gupta

Convenor

1. Mr. Rajeev

Co-ordinating Committee

1. Dr. Sonali Walia
2. Dr. Astha Bansal
3. Dr. Abhilasha Kapoor
4. Mr. Arun
5. Mrs. Ayasha Praveen
6. Ms. Neelam Singh
7. Ms. Shweta Singh
8. Ms. Manisha Kharaliya

Sub-Committees:

A. Student Representatives

1. Ms. Pooja
2. Ms. Anjali Kushwaha
3. Ms. Srashti
4. Ms. Parul Sharma

Registration Desk

1. Mrs. Ayasha Praveen
2. Ms. Neelam Singh
3. Ms. Shweta Singh

Stage Management

1. Dr. Astha Bansal
2. Dr. Abhilasha Kapoor
3. Dr. Sonali Walia
4. Mr. Rajeev

B. Abstract Booklet

1. Dr. Sonali Walia
2. Dr. Abhilasha Kapoor
3. Dr. Astha Bansal
4. Mr. Rajeev

C. Catering

1. Mr. Rajeev
2. Mr. Atreyo Mondal
3. Mr. Arun

D. Conclave Kits, Mementos, Banner designing

1. Mr. Rajeev
2. Ms. Neelam Singh
3. Ms. Shweta Singh

E. Certificate

1. Mr. Rajeev
2. Mr. Sanjoy Kumar

F. Decoration

1. Ms. Farzana
2. Ms. Shweta Singh
3. Ms. Neelam Singh

G. Student volunteers

Chaavi, Anjali, Rashmi Raman, Srashti Saxena, Abhilash, D Adithya Krishna, Amrita Yadav, Himanshi Meena, Avish Kumar Rathore, Charu Saklani, Kirti Bansal, Rishika Datta, Aswani Chadran, Arpita Sethi, Yashi Verma, Anuksha Amrita, Lekhika, Pallavi Mohanty, Meenakshi, Amit.