ONE DAY SEMINAR REPORT

National Seminar

Anthropology and Health

Organised by:

Department of Anthropology
University of Delhi
Delhi

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This report is a summary of the insights shared by experts from various fields associated with health and healthcare, in the one day seminar on 'Health and Anthropology' held in honour of Prof. V. RaghuvendraRao who has contributed to the fields of mental health, molecular anthropology and genetic studies of diseases in tribal communities of India.

A one-day seminar themed 'Anthropology and Health' was organised by the Department of Anthropology on 28 January, 2016 in honour of Prof. V. RaghuvendraRao who is superannuating on January 31, 2016. The seminar was anchored by Dr. R. P. Mitra and chaired by Prof. V. K. Srivastava, Head of the Department, Department of Anthropology.

Prof. V.K. Srivastava, in his opening address expressed great pleasure at having restarted the tradition of organising seminar in honour of retiring colleagues. He found that the best way to honour an academician was to spend a day contemplating and discussing the fields he has worked and contributed in. This seminar is the second of its kind being organised in the department, after the one organised by Prof. Channa in 2003.

Prof. Rao's work has always been collaboration between health and anthropology and hence the theme for the seminar was decided as such. The Department of Anthropology, under Prof. Rao and others, has seen a long history of collaborations with medical colleges for various projects. This has consequently also led to several Anthropology students receiving employment in the same medical institutes. Prof. Rao's own thesis in 1974 on Sex and Chromatin Bodies was supervised by a professor from AIIMS and during his entire period of association he was made to feel most welcome.

In the discipline of Anthropology, Health has been one of the main concerns. Common questions asked by Anthropologists include, 'What constitutes a healthy body in a community?' Such questions gave arise in the field of Medical Anthropology. In the early years of Anthropology, most Anthropologists were, in fact, practicing physicians, including W.H.R. Rivers, the founder of Medical Anthropology.

The concerns of Medical Anthropology include the local conceptions of health, sickness and disease; to challenge Western hegemony of the concept of health which exists as differential definitions across cultures.

Today, doctors too in European countries are expected to negotiate with Biological and Socio-cultural factors behind each illness and its conceptualisation. Several medical crises, such as Lifestyle Disorders and Psychiatry deal with socio-cultural factors. These factors are gaining increasing importance in the field of medicine, and it is a matter of pride for Anthropologists to be able to contribute to health and welfare in society in this way.

Prof. V.K.Srivastava concluded his inaugural address by expressing his deep gratitude towards the University for funding all the seminars that the Department organises.

Next Dr.Mitra introduced Prof. Rao, highlighting his many contributions to the fields of Molecular Anthropology and Genetics and invited him to address the gathering.

Prof. V.R. Rao began his address by sharing his journey in the Department, starting in 1975, when he joined the department after having completed his M.Sc. At the time, he was brought in contact with a case of an 8-year-old girl, a friend's daughter, suffering from (homozygous) sickle cell anaemia. Despite having studied the disease in class, this was his first encounter with a real patient. The close quarter experience with the case piqued his interest, and henceforth he began to study it. In the course of his studies he found that sickle cell anaemia was restricted to and rampant in the South and Central Indian Tribal groups. It made him question the factors behind the severity of the expression of sickle cell

homozygotes in Indian populations. Along the way he also discovered the coping mechanism of the effected tribes toward this disease. They rarely visited a hospital, but their indigenous knowledge dictated them to utilise cow's urine to enhance haemoglobin quality.

Prof. Rao also spoke about the importance of the 'hard' part of 'soft anthropology', referring to technology, which helps to quantify, analyse and validate data that is feed for soft anthropology. He insisted that each Anthropology student be familiarised with the equipment and technology required to study Biological Anthropology in its entirety. For this the department needs to be fully equipped with state of the art instruments and collaborate with medical institutes to train anthropology students to practice that which they study in theory.

Prof. Rao listed numerous projects in the field of health that are being conducted in collaboration with Anthropologists. To name a few: The ICMR Project on Thalassemia Haemoglobinopathy in Guarat to study the unique mutation found only in India; Studies on the biological and genetic aspects of suicide and identification of genetic markers for Sudden Death Syndrome.

Prof. Kalla, former Head of Anthropology Department, was then introduced as the Guest of Honour. He shared that he was first exposed to Health and Anthropology in a 2.5 month long workshop on cytogenetics conducted by Prof. Vogel in 1972 in the Department. It was Prof. Vogel who first suggested to initiate a Molecular Anthropology Lab in the department without which the study of Human Genetics would not be able to go far for long. He then expressed his gratitude to his successors, Prof. Sachdeva, Prof. Rao, Dr.Saraswati and Prof. Pradeep Seth, who have helmed Molecular Anthropology in the Department after him.

He expressed special thanks to Prof. Rao who always maintained that one must analyse their data in their own department instead of sending it to foreign laboratories for study since the science of analysis will not develop without its practice. He has attempted to introduce Molecular Anthropology in other Universities and Departments, though with little success. However, he hopes for continued support from Prof. Rao and the other dignitaries present.

Dr.Sandeep Seth, MBBS, MD (Medicine and Cardiology) and Professor from AIIMS, gave an opening address starting with discussing his association with Prof. Rao, who has witnessed the evolution of Genetic study through his lifetime. Prof. Rao was born in 1941, the time when Watson and Crick were first figuring out the double helical model of the DNA. In 1975, when Prof. Rao began his own project, it was at the same time that genetic sequencing was developed by Frederick Senders. The year he joined the Anthropological Survey of India marked the beginning of the Human Genome Project. In this way, the milestones in Prof. Rao's life have coincided with those in the course of the evolution of his discipline. Dr. Seth expressed gratitude to have been able to work with Prof. Rao over the last six years, thanks to Prof. Rao's work on the genetics of Hypotropic Cardiomyopathy.

His association with Prof. Rao greatly enriched him as a doctor as it taught him about the genetic basis of human diseases which made way for better insight into treatment methodologies.

He concluded his address by thanking Prof. Rao for his contributions and wishing him success in his further career at the Genome Foundation in Hyderabad.

Dr. Mitashree then gave a vote of thanks to Prof. Srivastava, Prof. Rao, Prof. Kalla and Dr. Seth for having inaugurated the seminar with such inspiring words. She also thanked all the faculty members who helped in organising the seminar and making it possible.

The First Scientific Session was chaired by Prof. Kalla and Dr. K. N. Saraswathy. The session began with a talk on 'Community Genetic Approaches in Preventing B-Thallasemia in India' by Prof. V.R. Rao. He discussed how the general approach for handling this disease by the Government has been to promote prenatal detection and induce abortions. It is generally not considered to be a serious issue due to being limited to only a few Indian populations. So when several studies were started to conduct pre-marital screening, the Government objected on the grounds that it led to stigmatisation. In other countries this stigmatisation is not an issue as the disease is considered a bigger issue that needs to be overcome.

An anthropologist's questions in this study of B-thalassemia in India include, 'What is the spread of the gene in the population? Is it restricted to High risk groups?' 'Is the gene frequency stabilised or is still it undergoing positive selection?' . Population specific studies and other epidemiological data revealed that carrier frequency of the gene was up to 25% in the Indian population. Temporal trends in high risk population revealed from none to little change in gene frequencies. High risk populations were identified by the criteria of 8% or more gene frequency found, which existed mainly in Western and North Eastern India.

Prof. Rao then discussed his views on how this situation needs to be handled. The two approaches to be taken are the Field Approach and the Laboratory Approach. The field approach would involve awareness and sensitisation campaigns regarding B- thalassemia.

The next talk was given by **Dr.Sandeep Seth** where he discussed Heart Failure in India, its status and the need for Indian- specific research. He first elucidated how the story of Heart Failure runs parallel to the story of Cardiological Success. With advances in cardiology, doctors were able to provide heart patients with better treatment which increased life spans by up to 20 years. Heart ailments like cholesterol, myocardial infections, etc. began to be treated at very rapid rates with relative ease, but this only resulted in the 21st Century epidemic of Heart Failure.

In Pre-independence India, majority of the Indian population lived in villages where mortality was high due to lack of hygiene and diseases caused by infection. Cardio-vascular diseases were not a health issue for the rural Indian. Today, nearly 50% of the Indian population lives in cities and this has led to the cardiovascular disease epidemic of the modern age. It has been found that 20% of OPD patients suffered from Heart failure and a majority of these from Rheumatic Heart Disease. The causes of heart failure vary in different populations and require different treatments. Aorta Constriction is a cause for Heart Failure unique to India and Japan and hence there is a need for India- specific research on heart failure. However, currently there is little research being done on the genetic basis of Heart failure in the Indian population.

Modes of treatment followed are different. Drug therapy that is applicable in the West needs modification for Indian subjects since the build of the people is slighter which would require a smaller dosage of medicine. In India, mortality of patients is very high. 30% of

heart patients do not survive and even among those who are discharged, 30% die within 6 months of treatment.

Indian research on the plant Terminaliaarjuna, which arises from the traditional use of the Ayurvedic medicine for heart diseases Arjunarishtha, has proved beneficial for treatment.

Beyond Drug Therapy the options available are heart transplants and Ventricular Assistance Devices. The best of such care is available in India now, however the centres offering them are limited.

An Experimental Therapy being researched is Stem Cell Therapy which involves either direct injection of stem cells into the heart or their introduction through the circulatory system. This therapy has shown some promising results in Technicium labelled stem cell studies conducted on Rats.

Dr.Tushar Roy discussed the dilemmas a doctor faces throughout their lives. He defined a dilemma as having no easy solutions to a problem and in this sense, a doctor's life is filled with dilemmas.

Starting at the age of 18, when a child decides to become a doctor, which is followed by six years of rigorous hard work study. The rigour of medical study is so intense that he found doing an L.L.B. very easy after completing his M.B.B.S. Beyond this, the student requires another 4 years of study to complete his M.S., a specialisation. By this time, the student is 28 years old, if she is a girl, she must get married, if a boy, he may delay that by a few years in order to do sub-specialisation. The result is a 32 year old man responsible for a wife and children must now for the first time in his life look for a job. Being a novice, he trains under a senior for 8-10 years under full supervision to cultivate the expertise to independently take decisions that will not harm a patient.

The biggest dilemma the doctor faces at this stage is the internal questioning he goes through. For a novice, work packages rarely exceed Rs. 40,000/- per month, while his friends from school days who were weaker in academics and didn't work nearly as hard, are by now well-settled with well paying jobs and more "successful" in the conventional sense. The question that arises in the doctor's mind now is, "Was it worth it?" Was there any value in working so hard with such dedication? The next question he is faced with is, "Do I live with integrity?" This decides the doctor's approach to his career. It is a difficult place in life and it is the support of family, mentors and friends and values imbibed in one's youth are what allow the doctor to take the difficult yet righteous path. This choice of a life with integrity is what culminates in success and respect for the doctor.

The next dilemma faced by doctors today is that of an overload of information. After the genesis of modern medicine in the form of discovery of Penicillin, immense amounts of information has been amassed that has resulted in specialisations and sub-specialisations such that the situation today is that even the field of cardiology has 5 sub-fields, the specialists of each of which are not familiar with the knowledge of the others. This is because, to remain updated in one's own discipline requires several hours of regular daily study, which leaves little time to acquaint oneself with other branches.

Another major dilemma faced by a doctor is the conflicting views on means and ethics in treatment in the international medical community, which leaves a doctor unsure as to the best path of action.

Dr.Tushar concluded his talk on the note that a doctor, must face several complex problems throughout his career, from the burden of autonomy that comes with seniority; physical, emotional and mental burn out due to long and harrowing work schedules; an asymmetrical award system where accomplishments are taken for granted but mistakes can ruin lives; the toil of clerical tasks; and the rapidly reducing autonomy of a doctor due to corporate management of hospitals and the practice of defensive medicine.

In conclusion, he shared that many a times he asks himself that having faced all these hardships was all the effort worth it? Happily, the answer that he always arrives at is, 'Yes'. He lives a respectable life in comfortable conditions, his relationships with patients are very rewarding and he is able to live a life of integrity. Knowing one's self-worth through this is works to restore his faith in the rightness of the life he has led.

Prof. Subhadra Channa opened her compendious talk on 'Cultural Perspectives on the Body' by noting that Western Medicine relies on the premise of a positivist perspective that the human body can be studied objectively. However, as anthropologists we are all familiar with the differential perceptions of the body which affect behaviour which in turn affect health. She raised the example of endogamy which exists in many societies due to the perception of the human body as being porous with family, lineage, clan, etc. The body was considered to be in continuum with the environment and hence jatis too were localised.
In several cultures it has been believed that illness is the outcome of deeds. So the rigid mind-body dichotomy that is maintained by modern biology is not maintained in most other cultures.

Channa shared an experience of her involvement in a collaborative project between Maulana Azad Medical Colege, New Delhi and an American Medical University. The condition for the collaboration was that each side must also employ a social anthropologist to assist in the project. Through this project they found that the women living in the slums next to the hospital never visited the gynaecologists in times of problems. They believed that the white discharge they suffered from was caused by their dissolving spine. In this way, people's beliefs regarding their bodies affect their approach to treatment.

She recalled her family doctor, Dr.Saha, who also wrote at length on Traditional Medicine and how there has been a transition from traditional to modern medical practitioners- a Vaid's son becomes a doctor, not a Vaid. Today the approach taken in hospitals is that of defensive medicine where a multitude of invasive tests through various machines must be undergone before the doctor makes any conclusion. This itself is a recent trend as Dr.Saha's generation of doctors never needed to refer to such a number of tests to ascertain the illness. The trend has started mainly to avoid legal action in case of misdiagnosis of complex disorders. In traditional medicine on the contrary, diagnosis is done in the most uninvasive of ways such as by measuring the pulse (*Naadi*), which conveyed the complete status of the body systems.

This holistic approach of traditional medicine systems is what has been lost in modern medicine. The tendency to view the body as a just a compendium of parts (specialisations in different organs) and the amassing of vast amounts of information regarding these parts has made it impossible for any one doctor to know the entire body system. Hence there has been an increasing reliance on machines and technology to diagnose and treat body parts. The

question ma'am raised in conclusion is whether this epistemology of modern medicine is actually leading towards ontology?

This thought-provoking talk by Prof. Channa was followed by a brief History of Medical Anthropology in the Indian Context by **Prof. P.C. Joshi**. Medical Anthropology is generally believed to have originated in the United States, however Prof. Joshi shared that Fosther writes that the first definition of the field of Medical Anthropology was in fact given by two Indians in the Indian Journal of Medical Association. Indian Medical Anthropology can be traced back to S.C. Mitra,a lecturer of Social Anthropology at University of Calcutta, who read a paper in the Indian Science Congress which discussed areas of ethnographic accounts dealing with all issues regarding disease and culture. It questioned the ethnological concept of time, while addressing the diffusionistic concept of time.

Following this, P.O. Bording published a monograph in 1929 on 'The Santhal and Disease' which was the first ever Medical Anthropological monograph. It studied the traditional medicine system followed and taught by the Santhal, now generally known as *Hodopathy*. These pioneering works on Medical Anthropology led to several more subsequent work in the same field in the 1930s, by anthropologists of the like of S.N. Roy, D.N. Majumdar, W.H.R. Rivers and Forest Clement.

In the period between 1930s and 1950s however, there was a lull in Medical Anthropology, probably due to the global interest in Racial Studies at the time. In 1950s, Medical Anthropology was again revived by the works of Hussain and Neox who studied small pox in India, P.B. Naik and Surajit Sinha who wrote a detailed account on the medicine men of the Bhumij.

Joshi enumerated the names of the leding figures in Indian Medical Anthropology by naming Irawati Karve, D.N. Majumdar, and L.P. Vidyarthi, and a special mention to R.K. Mutatkar who promoted Asian Medicine all around the world.

The history of the study of Medical Anthropology in the Department of Anthropology, University of Delhi starts with Dr.Mehra, followed by Prof. V.K. Srivastava and now is being helmed by the speaker himself, Prof. Joshi.

In conclusion, Prof. Joshi expressed happiness at the fact that Medical Anthropology was now being studied in most Departments of Anthropology across India.

The next talk was given by **Prof. R.K. Chadha**, Professor of Psychiatry at All India Institute of Medical Science, New Delhi, on 'The Somatic Presentation of Psychiatric Disorders in South Asia'. South Asia holding one of the oldest civilisations is highly multicultural and home of several elaborate medicine systems such as Ayurveda and Yoga which date back to at least 2,500 BC. Psychiatric studies have found that South Asia displays the maximum somatic symptoms to Psychiatric disorders, which has been termed as 'Somatisation' or the tendency to express and communicate physical distress, unaccounted for by pathological findings to attribute them to physical illness, and seek medical help. Studies have revealed that patients prefer to express physical symptoms rather than psychological issues due to shame and fear of stigma. Westernisation, extent of stigma attached and the severity of symptoms are important factors that determine whether a patient will report their disorders to a medical professional. It is therefore extremely rare for an individual to directly approach a

psychiatrist as the first line of treatment. The psychiatrist is usually sought when no other line of help remains.

Psychological Sophistication or the awareness of one's own psychology and personality determines somatisation in an individual. It is believed that the level of Psychological Sophistication is relatively lower in South Asia as compared to the West, and hence the greater incidents of somatisation. Perceptions of need of care are socially determined. Even in Western countries, 50% of psychological patients do not seek professional help despite availability of all resources. The form taken by Somatisation is also culture bound. For instance, it takes the form of Anorexia Namosa in the West and Dhat Syndrome and Functional Vaginal Discharge in South Asia.

In conclusion, Chaddha discussed the form that Intervention should take in such cases. These should include explanatory models to the patient, pharmacological and non-pharmacological approaches such as exercise, meditation, etc. to defocus from physical symptoms.

In the question round, the question of the cultural difference in mental health management was raised, to which Chadha replied that there was definitely greater stigma and negativity attached with mental diseases in India. The patient receives no positives by acknowledging his/her disease, besides the help he receives from the doctor, since there is no government support or compensation for mental patients in India like there is in other countries. Consequently the recovery rate for mental patients in India is also slower.

Dr. Manikankana Bandopadhyay from the Virus Unit of ICMR, Kolkatta spoke on 'Hepatitis B virus X protein Mediated Suppression of miRNA-122 Expression Enhances Hepatoblastoma Cell Proliferation through Cyclin G1-p53 Mediated Pathway'. She shared the findings of her study which aimed investigate the role of HBx protein in the modulation of miRNA-122 expression in hepatoblastoma cells. The study revealed that HBx promoted proliferation of hepatoblastoma cells. The study provides potential to use HBx-miRNA-122 interaction as a curative to restrict progression of HBV related Hepatocellular Carcinoma.

Dr.Abhishikta Ghosh from the Anthropological survey of India, Kolkatta, presented her paper on 'Molecular Characterization of Breast Cancer in West Bengal, India'. Breast cancer is known to be the most multifactorial disease in women globally. In West Bengal, Breast Cancer is the most common type of cancer found among women. It has been found that 5-10% of breast cancer is hereditary. Women with the BRCA1 and BRCA2 gene mutations are found to have an 80% higher probability of developing breast cancer. However, it has also been seen that the risk factor doesn't always reflect the expression of disease. This indicates a complex interplay between the gene and the environment which results in expression of the gene.

The objective of Ghosh's study was to understand polymorphisms in BRCA2 gene and their relation with environmental factors that control expression. Results revealed that the women, whose mean age at diagnosis was 52 years, having BRCA1 mutation suffered a 6.89 times greater risk of developing breast cancer, while those with BRCA2 mutation were at 6.2 times higher risk of developing breast cancer.

Women with irregular menstrual cycles, use of oral contraceptives, abortions, lower age of menarche, higher age at first full-term pregnancy and unmarried women faced a higher risk of breast cancer.

Dr. Amitabh Biswas of Galgotia University, Uttar Pradesh presented his paper on 'Comparing the Pothogenecity Prediction of Novel and Previously Associated Mutations of MYH7 through Fold X analysis'. Hypertrophic Cardiomyopathy (HCM) is a genetic cardiac disorder which results in decrease in heart function. To understand this disorder, their team set out to study the nature of the causative mutation which leads to the dysfunctional phenotype. The mutation associated with this HCM is the beta myosin heavy chain (MYH7). FoldX, an algorithm which can determine the energetic effect of point mutations as well as the interaction energy of protein complexes was used to make energy predictions and quantitative prediction. The study helped to link the MYH7 mutations to HCM and also correlate age of onset and severity of disease on other genes in the family under study.

Dr. Sridhar Sivababu of ICMR-IGIB, Delhi was a Special Invited guest and presented a lecture on 'Genomics for Precision Medicine'. He started with the marking the distinction between Genetics, which is a field of study, and Genomics, which refers to a set of techniques of study. The maximum genetic diversity in the world exists in the Middle East and South and Central Asia. Africa and South East Asia have next to no genetic variation while Europe and America show very little variation. The genetic composition of any two humans in the world is 99.9% identical. Most differences exist in the form of Single Nucleotide Polymorphisms (SNPs). So the question they raised was whether SNPs can help us understand diseases. The emerging genetic research is aimed towards Gene Therapy in medicine. However, gene therapy has faced criticism for being an elitist approach to medicine since it focuses on the individual and not the average masses- it is 'Precision Medicine'. So the question that arose was how genetic medicine can benefit a larger group. The answer is that genetic medicine benefits individuals suffering from rare diseases with rare gene variants. For this it is necessary to identify new genes and pathways and ensure affordable screening. Exome sequencing can prove useful since 85% of rare diseases are monogenic and exomes form only 1% of the human genome, which will allow experts to do Clinical Diagnosis of Mendelian Disorders.

The steps involved in this are variant profiling followed by filtration to find the rare mutations. This method can prove useful in identifying novel genes that cause diseased phenotype. Hence, Patient specific data will be treated using Patient Specific Therapy by finding the Patient Specific Mutation followed by Patient Specific Gene Manipulation.

Dr. M Abdul Karim from the Dept. of Biochemistry, IGNOU, New Delhi, presented his paper titled 'Experimental Induction of Oxidative Stress during Predisposed Hyperlipidaemia leads to Enhanced Nitric Oxide (NO) signalling'. The study aimed to understand the link between nitroxidative stress to the molecular alterations found in many diseases. It was found that nitrated proteins are the substrates for the macrophages and maturation of atherosclerotic plaque development. This information can be used to further understand the results of

inhibiting protein nitration in context of post-translational modification of human cardiovascular pathology.

Mr.Pulakes Purkait of the Anthropological Survey of India, Udaipur presented his paper titled 'The A1166C polymorphism of AGTRI Gene is Associated with Risk of Type 2 Diabetes among Bengali Patients'. The renin-angiotensin-aldosterone system (RAAS) has been linked to hypertension, diabetes and other cardiovascular diseases. The gene AGTR1 is reportedly the most probable gene determining hypertension, diabetes and complication of diabetes. This study aimed to verify any correlation between the gene AGTR1 and high risk Type-2 diabetes among Bengali patients. The study concluded that there was indeed a positive correlation between AGTR1 (rs5186) A1166C polymorphism with Type 2 Diabetes Mellitus.

Ms.Tanushree Pandit of the Anthropological Survey of India, Kolkata, presented her paper titled 'Neuroscience and Prehistoric Diet through the Study of Stone Tools: An Anthropological View'. She questioned the factors behind the transition in hominins from simple to complex stone tool technology. Brain imaging has been used to study the use of different brain parts among naïve and expert stone knappers. It was found that naïve knappers activated the ventral, lateral and dorsal brain areas while experts activated broadmann area 19. H.*habilis* show a reduced head size and evidence of a changing diet. Big brain expansion started from H.*erectus*, as a result of improved metabolic processes. The palaeodiet is a reflection of not just the evolving Encephalisation but also of the changing environment and hence changing stone tool typology. Micro wear analysis of unretouched tools found from Koobi Fora indicate the diet to be frugivorous as well as omnivorous.

A Special Lecture was delivered by **Dr. P.R. Mondal** on the Anthropological Approach to study Nutritional Status in India. Sir's talk mainly dealt with highlighting the erroneous practices in Nutritional data Collection by Indian anthropologists today. He highlighted several common oversights such as having all school subjects stand in a line for their anthropometric analysis. In this method, the data for several endogamous groups becomes mixed and hence the geneticity of the group is not maintained making the averages and generalisations of little anthropological value. The fieldworkers often don't have sufficient knowledge of anthropometric landmarks; body weight is measured after taking meals which gives inaccurate data; a few millimetres of height is lost in the evenings, which is not taken into consideration while collecting data; and instrumental errors are not regularly assessed. These are some of the common mistakes made by anthropologists in the field when collecting nutritional data that need to be rectified.

Next, a Special Lecture was given by **Dr.Indrani Chattopadhyaya** regarding 'Human Nutritional ecology: A Theoretical Perspective in Archaeology'. She discussed the notion that 'Proper human development requires proper nutrients' and how the Darwinian Models for diets of prehistoric man were given on the basis of the Optimal Foraging Theory which was based on energy optimisation. This was a deductive model of conceptualisation which is little used today. The new approach taken to understanding prehistoric diet is Inductive, known as

Human Nutritional Ecology. This Theory is based on the idea that prehistoric man was not in a perpetual state of famine and nor were all his efforts focussed on finding better nutrition. He had a multitude of options to choose from as hunters and gatherers. Mesolithic sites show evidence of individuals healthier and more robust than the Neolithic settlers who practiced settled agriculture and hence lesser variety in their diets. Nutritional Ecology is hence is a wider paradigm that covers the effects of different nutrients on health optimisation. Hence it is well suited for interpreting prehistoric human society.

A Special Lecture was given by **Dr. K.N. Saraswathy** on the scope of research on Haemoglobin. Thalassemia is a commonly found disorder among the Sindhi caste group in India. Similarly, sickle cell anaemia is also a troubling issue for several tribal groups in India. However several population studies have revealed an absence of heterozygotes above the age of 35 in these very populations. An important question anthropologists can ask is what is causing this mortality after the age of 35 among heterozygotes in these populations? This is a curious question that needs to be answered through further anthropological study.

Dr. R.P. Mitra gave a Special Lecture on Sigma and its Consequences. He started by quoting Levi-Strauss who once said that there is a natural tendency of humans for classification. However, this passion for classification can sometimes lead to terrible consequences such as stigma. He shared his ongoing study on 'The stigma of Chains' which deals with the phenomenon of confining and chaining up of individuals classified as dysfunctional, in the rural areas of Rajasthan, away from the District headquarters. The individuals studied have been chained for up to 5-30 years. This chaining is not a reflection of the severity of psychiatric symptoms of the subjects. These individuals are chained after certain critical incidents that they are involved in, such as Breaking things, abusive language, disturbing neighbours, stealing, stone pelting, etc. Such events are characterised by behavioural disturbance by individual to the neighbours (not the family itself). This results in classification of individual from 'Normal' to 'Patient' and a subsequent constraining and confinement. Once this happens the individual's status transforms. His social existence ends and there is no longer any scope for treatment. These chains are never opened and hence mark the social death of the individual, shame to the family and stigma to the village.

A Special Lecture was given by **Dr.Vipin Gupta** on Anthropology and Global Health. He discussed how he has always considered Anthropology a 'Life Science', where 'life' refers to the organic forms of living. Each population exhibits a different form of living and hence diseases in populations are specific to indigenous groups of common culture and gene pool. However, Non-Common Diseases do not show demographic biases. These are a result of socio-economic inequality. Indian population suffers from infection, low life expectancy, infant mortality, substance abuse and malnutrition. The role of Anthropologists for these would be to reduce health inequalities through Ethnography and biocultural research, which has been epitomised by Prof. V.R. Rao's work.

A Special Lecture on Understanding Social Determinants of Health Seeking Behaviour among Gujjars of Jammu and Kashmir was given by **Mr. Chakraverti Mahajan**. He

discussed his work conducted at the Anthropology Department of University of Punjab which involved looking for cultural and socio-economic and organisational factors that led to disease. The once nomadic Gujjar community have now been settling down in the plains of Jammu and Kashmir because of which their health seeking behaviour has also changed. The causal factors behind this change include economy, state, laws and militancy. The liminal phase of their settlement has affected their way of life. For instance, they still resist polio vaccinations, tubectomy and other medical interventions. The reasons behind this resistance have found to be mainly rooted in religious sanctions or dictates of community leaders.

Dr.Mitashree Srivastava delivered a Special Lecture on the Anthropological Perspectives on Buddhist Conceptions of Human Suffering and Healing. Mitashree shared how Buddhist studies has been a central theme of her research since the early periods of her career so she felt it necessary for her contribution to this seminar on Health and Anthropology to be to shed light on the Buddhist conceptualisation of suffering and health. The Buddhist perceives all pain, ailments and sadness as a result of our worldly attachments and the belief in a separate 'self' identity or 'ego'. Freedom from this suffering is achieved through Enlightenment, the path to which involves detaching oneself from all attachments. The healing practices within the Buddhist community differ greatly but all forms of treatment are based upon this basic philosophical premise. All healing practices incorporate shades of mysticism, despite a marked absence of shamans, thought he forms they take vary widely. This mysticism is caused by the reason that all disease and illness is assumed to be a consequence of one's 'Kamma' or 'Karma', meaning actions, which are unknown to the patient and the doctor. Hence the only real medicine to all suffering is 'Dhamma' or 'Dharma', meaning the 'eternal law'.

This lecture was followed by a Paper Presentation by **Mr.Piyoosh Kr. Singh** of the Dept. of Anthropology, University of Delhi, titled 'Evaluation of Endophenotypic Traits of Suicide Behaviour in Idu Mishmi Tribe of Arunachal Pradesh'. The first issue he addressed was that of the absence of any clear phenotype for biological correlation in suicidal researches. It is unclear if there exists a phenotypic trait that converts a psychiatric issue into suicidal behaviour. Studies on suicide attempts look for biological issues in the individuals. The question is whether a suicidal tendency is inherited over generations. It was found that 60% of subjects from the community responded positively to the idea of suicide, while 35% had already attempted suicide. Aggression, physical in case of males and verbal in case of females, was found to be a positive correlate for suicide. The challenge now is to identify genetic correlates for such behaviour.

Mr.Rajnish Kumar Singh of the Dept. of Anthropology, University of Delhi, presented his paper titled 'Social, Psychological Coping Strategy and Disease severity of B-thalassemia'. He shared his need to correlate the severity of the disease with the psycho-social burden suffered by the patient. For this he created several psychological stress schedules and comprehensive quality of life schedules. It was found that Middle Socio-Economic classes had a larger number of B-thalassemia patients, while the numbers are very low in high socio-economic groups. There was no gender difference in clinical severity, however there was a

clear positive correlation between increase in psychological stress and severity of disease expression it is yet unknown if there are some genes determining clinical severity.

A flash presentation was made by **Ms.Shivan Pasi** of the Dept. of Anthropology, University of Delhi, titled 'Evaluation of Psychiatric and Genetic risk factors among primary relatives of suicide completers in Delhi NCR region, India'. She discussed her study correlating caste, religion and culture with life expectancy and lifestyle. Studies show that there exists a role of genetic determinance in psychiatric dsorders. For this reason, a family approach is best to study genetic models of suicide to discover the existence of sub-phenotypes. Hardy-Weinberg equilibrium studies show a higher frequency of mutated alleles in primary relatives of suicide victims.

A flash presentation was made by **Sweta Saha** of the Dept. of Anthropology, University of Delhi, presented her paper titled 'Role of stressful life events in Depression'.Frequency distribution of stress is divided into three categories- no risk; moderate risk; high risk. It was found that stressful events were of equal consequence for both males and females in suicidal cases however in non-suicidal cases females required a higher level of stress to predispose them to depression. This reflects a higher tolerance and better coping strategies.

A flash presentation was made by **Suniti Yadav** of the Dept. of Anthropology, University of Delhi. She raised the question of whether culture affects disease risk. It has been reported that genes behave differently in each culture. COPD caused by secondary inhalation of tobacco smoke is higher among communities in Haryana where Hukka smoking is a prominent social group activity. These groups show 7.8 % incidence of COPD, compared to the global~2%

A flash presentation was made by **Jyoti Mishra** of the Dept. of Anthropology, University of Delhi, titled 'Folic Acid supplementation in pregnancy: A Review'.Women with pregnancy complications have been found to have a deficiency of foliates. A healthy vegetarian diet is sufficient for folic acid supplementation. High levels of folic acid in the blood stream reflect un-metabolized folic acid hence increase in dosage of supplements is not adivisable. There is a need to highlight folic acid metabolic pathway and the risks of indiscriminate dosage supplements.

A flash presentation was made by **Swati Chawla** of the Dept. of Anthropology, University of Delhi, titled 'Attitudes and Beliefs of high risk community B-Thalassemia'. The knowledge of the disease in high risk communities is not very concise. Hence the disease is often blamed upon the mother. In Urban settings, the social stigma surrounding thalassemia patients is minimal as compared to the rural. Caste connections and closeness has led to an increased consciousness of the disease in the rural communities than in the urban.

A flash presentation was made by **Divya Mishra** of the Dept. of Anthropology, University of Delhi, titled 'A Review of the Socioeconomic Scales used in India'. The two most widely socio-economic scales in India are the Prasad Vidyaparik and the Kuppuswami scales which

are good for studying the urban and the rural populations. However, there is a complete lack of socio-economic scales meant for the exclusive study of tribal populations.

Rajeev of the Dept. of Anthropology, University of Delhi, made a flash presentation titled 'Anthropological Genetics: Reveals Human Genetic Variation and Evolution'. He discussed how Anthropological Genetics studies the biology of genetic variables. Anthropologists in this field focus specially on understanding disease and how biocultural factors affect the spread of disease. Based on such insights it is possible for Anthropologists to suggest Public Health Programs specific for different cultures and communities.

Sanjoy Kr. Chatterjeeof the Dept. of Anthropology, University of Delhi, made the final flash presentation titled 'Food and Feeding Behaviour of our Hominid Ancetors and Wild Primates have relevance for Modern Human Health: A Review'. He discussed how our evolutionary history impacts our genetic composition, hence it is necessary to be understood for its modern implications.

An overview of diets of Hominid ancestors reveals that Australopithecines were of two types, the robust herbivores and the carnivores. Recent findings show that Homo *habilis* were largely arboreal and primarily dependant on fruits and leaves. H.*erectus* were more evolved and made wooden spears indicating their butchering behaviour. They were involved in large game hunting. H. *neanderthalensis* were also large game hunters and hunted animals like mammoths, reindeers, wild horses, etc. in Western Europe. H. sapiens have been found to be primarily dependent in meat.

The arboreal non-human primates are dependent mainly on fresh, un-cooked fruits and leaves which results in higher nutrition.

Modern humans have taken to cooking and refining foods such as oil and sugar while wild populations of animals sustain themselves on large variety of complex foods. Only humans depend on livestock consumption to fulfil their protein requirements. We also tend to have higher concentrations of sucrose levels in our diet which leads to increased sugar levels in our bodies.

Hominids consumed food according to the geological situation, geographical location and environmental conditions. Miocene hominids consumed mainly fruits and leaves despite their dentition being adaptable to both plant and animal foods. It is the advancement of agriculture in the last 12,000 years which has caused a drastic change in the meat eating pattern in humans.

VALEDICTORY FUNCTION

Concluding remarks by Prof. V.K. Srivastava

The Head of the Department thanked all the participants and speakers of the seminar for constantly mentioning Prof. V.R. Rao throughout their presentations, which helped to fulfil the purpose of the seminar to honour him. He expressed his happiness at the fact that Prof. Rao's influence is not restricted to just our own department, which was made apparent by such enthusiastic participation in the seminar. He promised to ensure that all subsequent

seminars be no less than two days long to ensure sufficient time for each speaker. He finally thanked the entire University Research Council, teaching and non-teaching staff for helping to organise and finance this seminar.

Valedictory Remarks by Prof. V.R. Rao

In conclusion, Prof. Rao spoke few words of advice to his students and those he was leaving behind at the department, saying one should always do one's own work regardless of expectation of results. A student should come to learn and experience. Post-graduation onward each student is also a scientist and hence their studies must be more interactive and focus on skill development. The job of a teacher in higher education is all about inspiring their students, and for this reason he will continue to remain in touch and continue interaction with the department and any student who needs him. His final words to the students were to let people know about Anthropology. The Department and students should organise more Exhibitions on Human Diversity, involve schools and sell Anthropology in the society, and to always remember, 'Empiricism is for Science, and Empiricism is for Society.'

Vote of Thanks

The seminar was concluded by a final Vote of Thanks given by Dr.Benrithung Murry. He thanked the University for being so positive and generous in helping organise such a seminar which marked a great trend of honouring retiring professors. He thanked all the presenters and flash presenters for their submission of extracts. Thanked the Chairpersons and co-chairs of the seminar, all the participants and invitees, the Conveners- Dr. R.P. Mitra and Dr.K.N. Saraswathy, all the research scholars and finally Prof. Rao who has left us confident as his legacy inspires us to follow in his footsteps.