

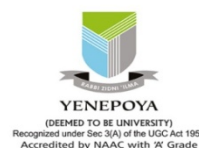
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CENTER FOR NUTRITION STUDIES

YENEPOYA (DEEMED TO BE UNIVERSITY),
RECOGNISED UNDER SEC 3 (A) OF THE UGC ACT, 1956
ACCREDITED BY NAAC WITH 'A' GRADE

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Dear Well-wisher,

We are grateful to have received your support in the growth of the Center for Nutrition Studies, YenePOYA (Deemed to be University). We are happy to share some updates with you. Last six months have been challenging for our field activities, but we did not stop our work and strived to be productive in spite of the challenges.

Publications:

1. Bhargava A, Bhargava M, Juneja A. Social determinants of tuberculosis: context, framework and the way forward to ending TB in India. *Expert Rev Respir Med*. 2020 Oct 5. doi: <https://doi.org/10.1080/17476348.2021.1832469>.
2. Bhargava A, Shewade HD, The potential impact of the COVID-19 response related lockdown on TB incidence and mortality in India, *Indian Journal of Tuberculosis*, <https://doi.org/10.1016/j.ijtb.2020.07.004>.
3. Sapna K, Tarique M, Asiamma A, Kumar TN, Shashidhar V, Arun AB, Prasad KS. Early detection of leptospirosis using Anti-LipL32 carbon nanotube immunofluorescence probe. *Journal of Bioscience and Bioengineering*. 2020 Jul 13. <https://doi.org/10.1016/j.jbiosc.2020.06.002>.
4. Dsouza Priya Swetha, P. and Sudhakara Prasad, K. (2020), A Non-Enzymatic Disposable Electrochemical Sensor for Pyruvic Acid. *Electroanalysis*. doi: <https://doi.org/10.1002/elan.202060206>.
5. Sonia J, Zanhali GM, Prasad KS. Low cost paper electrodes and the role of oxygen functionalities and edge-plane sites towards trolox sensing. *Microchemical Journal*. 2020 Jun 13:105164.
6. Bhargava A, Bhargava M. Tuberculosis deaths are predictable and preventable: Comprehensive assessment and clinical care is the key. *J Clin Tuberc Other Mycobact Dis*. 2020 Feb 26;19:100155. doi: <https://doi.org/10.1016/j.ijctube.2020.100155>.
7. Bhargava M, Bhargava A, Ghate SD, Rao RSP. Nutritional status of Indian adolescents (15-19 years) from National Family Health Surveys 3 and 4: Revised estimates using WHO 2007 Growth reference. *PLoS One*. 2020 Jun 22;15(6):e0234570. doi: <https://doi.org/10.1371/journal.pone.0234570>.
8. Bhargava A, Bhargava M. Obesity and COVID-19 outcomes: a risk factor that needs attention. *Current Science (00113891)*. 2020 May 10;118(9).

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9. Bhargava M, Vaswani V, Vaswani R. Ethics-related guidelines for authors and article retractions: How do Indian biomedical journals measure up? Indian J Med Ethics. 2019 Nov 25;(-):1-9. doi: <https://doi.org/10.20529/IJME.2019.076>.
10. Shaikh N, Harshitha R and Bhargava M. Prevalence of sarcopenia in an elderly population in rural South India: a cross-sectional study. F1000Research 2020, 9:175.

Progress in the research projects:

1. The RATIONS (Reducing Activation of Tuberculosis by Improvement Of Nutritional Status) study: A cluster randomized trial of nutritional support (food rations) to reduce TB incidence in household contacts of patients with smear positive pulmonary tuberculosis in communities with a high prevalence of Undernutrition.

This was approved in April 2019 and is first of its kind trial globally which seeks to improve outcomes in TB patients and reduce TB disease in the household contacts of patients, by providing them nutritional support in the form of dry food rations during the treatment period. The trial is supported by the ICMR and being conducted in collaboration with the National Institute of Research in Tuberculosis (NIRT), Chennai and National Institute of Nutrition (NIN), Hyderabad, State TB Cell of the Jharkhand.

We had training of the field staff in the month of August and started the recruitment on 16th of August. We have already enrolled more than 2300 patients and 8600 contacts by September 2020. We have a very dedicated field staff of 54 field investigators, two project consultants, a project director, research assistant, phlebotomists and data entry operator.

The key finding of the trial so far has been the alarming levels of severe undernutrition in patients with active TB and high levels of undernutrition in child and adult contacts. We have been able to achieve high adherence rates to TB treatment, almost double the weight gain seen in the national program. Preliminary findings also suggest significant reduction of TB mortality as compared to the NTEP.

We received the 2nd year grant for continuation of the project. With the ongoing pandemic, while we would have finished our target enrolment of 2800 patients by the August 2020, we now hope to do this by the end of this year.

2. Sub-studies within RATIONS Project:
 - a) Dietary recall in a subset of patients and their household contacts: Nutritionists at Lady Irwin College and National Center for Excellence and Advance Research in Diet (NCEARD), New Delhi conducted training of field staff for 24-hour dietary recall
 - b) Hand-grip strength in a subset of patients
 - c) Body composition using a portable BIA machine by BodyStat in a subset of patients and their household contacts.
 - d) Immune Substudy in a subset of patients and their household contacts where we will estimate lymphocyte subsets, kinetics of interferon gamma responses (IGRA). We now have a lab-space at the Central Coalfields Limited (CCL) and will soon have a 2-laser, 8-color flow cytometer installed.

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3. Technical document preparation on analysis of malnutrition figures of adolescents (15-19 years) in NFHS-3 and NFHS-4:

Information on adolescent nutrition is scant. The National Family Health Surveys have data on boys and girls from 15-19 age group, but club them with adults and apply adult BMI cut-offs inappropriate for this age group. We did a re-analysis of the NFHS-3 and 4 adolescent height and weight data and used the age and gender specific WHO 2007 Reference Standards. Surprisingly, we found that thinness may have been overestimated more than two-folds. Stunting (low height for age) which has been hitherto not known for this age group was found to be >30% in boys and girls in NFHS-4. Moreover, it seems that it has increased since NFHS-3.

Growth potential is spread across the first 1000 days and the next 7000 days, and adolescence is the last window opportunity. Stunting affects cognitive development, learning ability, work performance and incomes and is also a risk factor for obesity, diabetes, and hypertension in adult life. The analysis red flags the fact that demographic dividend of our young population is in jeopardy due to these levels of stunting.

4. Neck circumference in adults: Its utility and acceptability compared to standard nutritional assessment techniques in screening for overweight-obesity.

This ICMR-funded student research project was conducted using the state-of-the-art nutritional assessment equipment including the bio-impedance analyzer. The report has been submitted and approved by the ICMR and we will soon be publishing this in an indexed journal.

Seminars, Conferences, paper presentations:

1. Symposium on Food for thought: impact of malnutrition on the TB epidemic and presented a session titled, 'Undernourished patients, undernourished populations, and End TB Strategy' at the 50th Union World Conference on Lung Health on 30 Oct – 2 Nov 2019. Hyderabad, India.
2. Poster titled 'Neither children nor adults: socio-demography, household exposure and nutritional status of adolescents with self-reported TB from a nationally representative survey from India' at the 50th Union World Conference on Lung Health on 30 October – 2 November 2019. Hyderabad, India.
3. Panel Discussion on 'Comprehensive Management of Chronic Obstructive Pulmonary Disease' including their dietary management on the occasion of World COPD Day on 30th Nov 2019.
4. Seminars at Guld Medical University, Ajman as a part of delegation from Yenepoya on 17-19 Nov 2019:
 - Approach to acute undifferentiated fevers with focus on re-emerging infections
 - TB and Nutrition: Back to Basics
5. WHO-SEARO Regional Webinar and Panel Discussion (TB Programme Manager of Indonesia and Dr Anurag Bhargava, India) on Nutrition and TB on 4 Sept 2020.
6. Plenary session in National Conference on Nutrition and Health, 12-13 Sept 2020: Insights into Adolescent Nutrition from the NFHS, India
7. Poster presentation: Mid-upper arm circumference (MUAC) as a marker for maternal nutrition assessment at International e-conference on 'Challenges and Solutions to provide continued Nutrition Care and Delivery for the vulnerable groups owing to the COVID-19 pandemic induced paradigm shift' organised by Manipal Academy of Higher Education.

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Capacity building and academic trainings:

- Basic online course on Flow-cytometry
- Essentials of Medical Writing by Springer Nature
- Dietary management in Diabetes and Hypertension

Involvement at national and international level as experts, resource persons, etc

- National Technical Working group in TB and Co-morbidities
- Joint Monitoring Mission and TB Mini-Epi Review
- Capsular course on Nutrition Epidemiology at Lady Irwin College, New Delhi
- Expert opinion to shape the MoU between the Central TB Division and Ministry of Woman and Child Development
- Technical Advisory Group (TAG) for MUKTI project conducted jointly by USAID, NHM-MP, Child Fund India and IPE Global Limited
- Planning a Comprehensive Package to mitigate risk factors pertaining to TB mortality in Jharkhand