



THE

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Annual Report 2020-21





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VISION

Our vision is to strengthen India's public health institutional and systems capability and provide knowledge to achieve better health outcomes for all.

MISSION

- Developing the public health workforce and setting standards
- Advancing public health research and technology
- Strengthening knowledge application and evidence informed public health practice and policy

VALUES

Transparency

- Uphold the trust of our multiple stakeholders and supporters
- Honest, open and ethical in all we do, acting always with integrity

Impact

- Link efforts to improving public health outcomes, knowledge to action
- Responsive to existing and emerging public health priorities

Informed

- Knowledge based, evidence driven approach in all we do
- Drawing on diverse and multi disciplinary expertise, open to innovative approach

Excellence

- Aim for highest standards in all aspects of our work
- Promote excellence in public health precept and practice

Independence

- Independent view and voice, based on research integrity & excellence
- Support academic and research freedom, contributing to public health goals and interests

Inclusiveness

- Strive for equitable and sustainable development, working with communities
- Collaborate and partner with other public health organizations



OUR JOURNEY SO FAR









GOVERNANCE

PHFI Executive Committee

Mr. S. Ramadorai Chairman of the PHFI Executive Committee Former Vice Chairman, TCS **Ms. Vandana Shroff** Partner, Cyril Amarchand Mangaldas

Mr. Lav Agarwal Joint Secretary, Ministry of Health and Family Welfare, Government of India

Prof. K. Srinath Reddy President, Public Health Foundation of India **Mr. R. Natarajan** Co-Founder, Foundation Partners

Mr. Atul Nishar Founder and Chairman Emeritus, Hexaware Technologies Limited.

Dr. Rati Godrej Physician and Industrialist

Lt. Gen. (Dr.) M. D. Venkatesh Vice Chancellor, MAHE

Dr. Sunil Kaul Founder & Managing Trustee, The Action North East Trust **Prof. Sachin Chaturvedi** Director General, Research and Information System for Developing Countries (RIS)

Dr. Muzaffar Ahmad Former Member, National Disaster Management Authority and Former DG Health, Government of J&K, India **Dr. K. P. Krishnan** EPF Chair Professor in Regulatory Economics at National Council of Applied Economic Research

AWARDS AND RECOGNITIONS



Public Health Initiative (Silver category Award), at the 6th India Health and Wellness Summit awarded to the Training Division at PHFI, held virtually on 29th December 2020

Honourable Governor of Maharashtra Shri Bhagat Singh Koshyariji felicitated Prof. Sanjay Zodpey for his significant and stellar contribution towards containment of COVID-19 pandemic



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Prof K Srinath Reddy conferred the ANBAI Lifetime Achievement Award by Honourable Vice President of India, Shri Venkaiah Naidu



Public Health Foundation of India is selected as one of the recipients of the Clarivate India Research Excellence- Citation Awards 2021 (powered by Web of Science), the 8th edition of this award. PHFI is the winner in the Medical and Health Sciences category The Category Normalized Citation Impact of PHFI was twice the global average in this category, as per the Web of Science

Awards and Recognitions

	• Prof Reddy was ranked first in the top ten sustainability leaders in Healthcare by Healthcare Global Magazine
Prof. K. Srinath Reddy	• Prof K Srinath Reddy conferred the ANBAI Lifetime Achievement Award by Honourable Vice President of India, Shri Venkaiah Naidu
	• Prof Reddy was inducted as a Board Member of the National Health Systems Resource Centre, a technical support wing of Ministry of Health & Family Welfare, Govt. of India.
Prof D Prabhakaran	 Featured in the "Leaders" section of the European Journal of Cardiology (European Heart Journal (2021) 00, 1-2 doi:10.1093/ eurheartj/ehab305
	• Hari and Madhu Varshney Visiting Professor at Simon Fraser University, Canada, 2020
	Elected as a Fellow in the Indian National Science Academy; India's highest Science Fellowship

Prof Sanjay Zodpey	 COVID Warrior Award: Presented by Shri Bhagat Singh Koshyari, Honorable Governor of Maharashtra at Raj Bhavan, Nagpur on 16th January 2021. Featured in World Rankings of 'Top 2 per cent' scientists in the chosen field of area of research (Tropical Medicine) Public Health Education Leadership Award for significant contributions in promoting public health education in the WHO's South-East Asia Region
Prof Dileep Mavalankar	Member of Task force for COVID Management at Gujarat
Dr Lipika Nanda	• Dr Nanda is a Board Member of the National Health Systems Resource Centre
Dr Monika Arora	 Invited as an Expert to join the Technical Committee for reviewing National Report of the Fourth round of Global Youth Tobacco Survey (GYTS-4), constituted by Ministry of Health and Family Welfare, Government of India, September 2021. Member of Expert Committee to review the Evidences of COVID-19 outcomes and tobacco use under the Chairpersonship of Dr. L. Swasticharan, Addl. DDG & Director (EMR), formed by Ministry of Health and Family Welfare, Government of India, July 2021. Elected as President Elect of NCD Alliance, Geneva, by the General Assembly of NCDA in May 2021
Dr Poornima Prabhakaran	 Chair -Research Sub-committee of the WHO-GCHA CSO working group on Climate change and health- Poornima Prabhakaran Member- Board of Directors- Global Climate and Health Alliance (GCHA)- Poornima Prabhakaran Member- Inaugural Steering group of the Health and Climate Network, hosted by the Wellcome Trust Member – Institutional Ethics Committee – Indian Cancer Society, New Delhi India
Dr Nanda Kishore Kannuri	 Honorary Fellowship with the School of Social and Political Science, University of Edinburgh
Dr Deepak Saxena	 Member of Team that was Awarded Patent for IRIS CLAW FORCEPS // Indian and Australian (Probably the first Patent at IIPHG) Nominated as Member of Task Force by WHO HQ on generating Evidences on WASH in Health care facility

ACADEMIC PROGRAMS

PHFI's core mandate is to strengthen public health education in the country by offering high-quality, long term academic programs and short-term training programs delivered through a multipronged, cross cutting and integrated approach to education. This capacity building is central to PHFI's vision for strengthening India's public health institutional and systems capacity for better health outcomes. PHFI has purposefully sought to provide its academic offerings as a wide spectrum targeting a varied audience from the public and the private sector.

We offer multiple programs for stakeholders across the spectrum. We offer several certificate programs (in eLearning & on-campus mode) that contribute towards skill enhancement. We visualize our academic engagements across four levels of specialization; short courses, certificates, post graduate diploma/ masters and doctoral programs.

PHFI established a network of five Indian Institutes of Public Health (IIPHs) - three in 2008 at Gandhinagar, Hyderabad and Delhi and fourth in 2010 at Bhubaneshwar and the fifth in Shillong in 2015. These institutes help PHFI in translating its mission of developing and strengthening the capacity of public health workforce through education, training and research and setting standards in public health education. We also operate an ancillary centre in partnership with Government of Karnataka at Bangalore since 2012.



Degree of Specialization

Figure 1: PHFI Academic Programs: Spectrum

On-campus Programs

- PhD in Public Health [at IIPH-Gandhinagar, a university under State Government Act)]
- Integrated MSc & PhD in Clinical Research [offered in collaboration with Academy of Scientific and Innovative Research (AcSIR), (An Institute of National Importance established by Act of Parliament)]
- Integrated MSc & PhD in Health Informatics [offered in collaboration with Academy of Scientific and Innovative Research (AcSIR), (An Institute of National Importance established by Act of Parliament)]
- Master of Public Health (MPH) [at IIPH-Gandhinagar (a university under State Government Act); at IIPH-Hyderabad in affiliation with Kaloji Narayana Rao University of Health Sciences, Telangana; IIPH-Delhi in affiliation with Academy of Scientific and Innovative Research (AcSIR); at IIPH-Shillong in collaboration with Martin Luther Christian University, Shillong; at IIPH-Bhubaneswar in collaboration with Utkal University, Bhubaneswar, Odisha]

- Master of Hospital Administration (MHA) [at IIPH Gandhinagar, a university under State Government Act]
- Post Graduate Diploma in Public Health Management [Supported under National Health Mission (NHM), MoHFW, Govt of India]
- Associate Fellow of Industrial Health [Regulated by Directorate General, Factory Advice Service and Labour Institutes, Govt of India (DGFASLI)]
- Certificate Course on Geriatric Health Caregiving [offered with support from Gujarat State Financial Services Limited and facilitated by Gujarat CSR Authority]
- Certificate Course in Community Health (CCCH) [offered by with support from State Institute of Health and Family Welfare Gujarat]
- Certificate Course in Public Health Management (CCPHM) [Offered in collaboration with Department of Health & Family Welfare, Odisha]



eLearning Programs

- ePost Graduate program in Public Health Nutrition
- ePost Graduate program in Health Promotion
- ePost Graduate program in Epidemiology
- ePost Graduate program in Management of Reproductive & Child Health Programmes
- ePost Graduate program in Public Health & Hospital Management for Nursing & Allied Health Professionals
- ePost Graduate program in Public Health Services Management
- ePost Graduate program in Health Economics, Health Care Financing and Policy
- eCourse on Tobacco Control
- eCourse in Research Methodology

- eCourse in Health, Safety & Environment Management
- eCourse on M&E of Health Programs
- eCourse on GIS Application in Public Health
- eCourse in Research Ethics
- eCourse in Effective Grant Writing
- eCourse in Public Health Surveillance
- eCourse on Public Health Development Program for ICDS officials
- eCourse in Advanced Hospital Management
- eCourse in Clinical Research Methods
- eCourse in Maternal, Infant, Young Child and Adolescent Nutrition
- eCourse in Systematic Review & Meta-Analysis



Our courses use case-based, problem-based learning approach to develop public health competencies. During the teaching session, students propose solutions to public health problems, identify learning issues and critically analyse and synthesize new information. Our courses are "Breaking the mould" by pushing the traditional discipline-based boundaries of academia, research and public health. We lay a greater focus on the importance of leadership with focus on complexities—political, economic and social for achieving global improvements in public health and creating 'change agents' for public health. We focus on transformative learning through our academic programs.



Figure 2: On-Campus Academic Programmes at Indian Institutes of Public Health

Faculty resources

We have a rich pool of 62 full faculty members, time 134 adjunct faculty members. We have consciously invested in the creation of a multi-disciplinary faculty pool. Conventional public health teaching in medical schools does not provide public health students with a diverse faculty pool. We have created systems to recruit faculty members from all core specialty areas of public health. Our multidisciplinary faculty strength in the core public health areas is showcased in the pie chart alongside.



Figure 3: Departmental affiliations of faculty across IIPHs





Figure 5: Number of faculty members

A feat in transforming India's public health education *MPH program is now being offered at all five IIPHs*

There has been a recognized need to initiate and appropriately strengthen public health education in an emerging economy like India. It has been reiterated several times that considerable investment in public health training is needed to create effective public health professionals. Master of Public Health (MPH) – an on-campus program of two years duration is now being offered in all five Indian Institutes of Public Health (IIPHs). Our first MPH program was offered at IIPH-Hyderabad, and at IIPH-Gandhinagar in 2015, in 2016 at IIPH-Delhi, in 2019 at IIPH-Shillong and most recently in 2021 at IIPH-Bhubaneswar. Through this scale-up of Master of Public Health programs over a period of last eight years; the PHFI-IIPHs network is now catering to the need of public health education at five sites across the country. All five MPH programs are affiliated to universities and institutions of great repute.



Figure 6: Current affiliations and location of MPH programs at five IIPHs (2021)

Message from students of first batch of MPH program (2019-21) at IIPH-Shillong

Our journey with IIPH-Shillong started on 21st August, 2019. We are the proud first batch. A batch of fifteen students from different places around North-East India joined this prestigious institution carrying dreams of many shades. Public Health was quite a new discipline for us. We stumbled and struggled but our teachers were always motivating us to continue our journey.

We were pushed out of our comfort zones and learned how to think critically. The learnings were not confined in mere classroom lectures and end module exams. Our teachers wanted each one of us to learn not just to finish the course. Discussions and interactions in class was very helpful as it shaped our concepts more thoroughly. We were always encouraged to take part in classroom discussion. It was very kind of them that they helped us to learn how to use power point, excel and other software skills as well. Our teachers are friendly, encourage independent thinking and create an inclusive classroom environment. We do feel welcome with any guery. During the pandemic we did experience hardships attending online classes which was a new learning platform but nonetheless it was a good learning experience. We have learnt to be more dynamic and confident in our approach to different life scenarios. We are thankful to IIPH-Shillong for helping us shape our career as public health specialists. We the students from North-East are very fortunate to be able to study in IIPH-Shillong. We the students of IIPH-Shillong wish that the state of Meghalaya would appreciate the hard work and research activities put in by our teachers and promote for further development in the infrastructure of the institute.



Infosys Fellowship

The Infosys Fellowships, 25 in number were open to the students (Indian Nationals) of MPH Program at the Indian Institutes of Public Health (IIPHs). This fellowship program has been successfully running since 2016. Twenty-two students pursuing the Master of Public Health (MPH) Program at three Indian Institutes of Public Health (IIPHs) at Gandhinagar, Hyderabad and Delhi have been supported to pursue their master's program followed by placement support for two years at identified NGOs working in the area of public health. The fellows support these NGOs in designing and implementing their activities. We are happy that six fellows have successfully

completed their fellowship in August 2020 and the remaining fellows are currently undergoing their placements and will complete their fellowships in the latter half of 2021. For the Infosys fellows, this has been a unique and a life changing experience. Besides the fee waiver for the academic program, they have had an opportunity to gain hands-on experience through working in real-life community settings at the identified NGOs who are doing excellent work in public health. All this has been possible due to the generous contribution of Infosys Foundation through the grant support to PHFI and the constant support from the team at Infosys Foundation.



Figure 7: Double Helix of an Infosys Fellow

Geographical location of the selected NGOs for the Placement of Master of Public Health (MPH) Graduates of Indian Institute of Public Health (IIPH) Delhi, Gandhinagar & Hyderabad



Our alumni as COVID warriors

During the COVID-19 pandemic, our alumni as well as students have played an active role in fighting the pandemic either in the form of drafting state-level policies; or designing, developing, setting up, testing, staffing and operating of systems or infrastructure, including intermediate healthcare facilities. It is amazing to see how our alumni and students got together with their local teams and how they served within the public health system at the grassroot level. We are proud of their accomplishments and here we present glimpses of achievements of our COVID warriors.



Dr. Spriha Bhaskar (MPH 2016-18 batch) was Honoured by the Health Minister of Bihar state - Shri Mangal Pandey for successful rollout of COVID vaccination in Bihar state. Dr Spriha is currently working as State Public Health Immunization Consultant, UNICEF (Patna).



The postings during the COVID Pandemic were a complete practical exposure, starting from understanding the panic among the public, Surveillance of the pandemic, to different teams working at different levels in managing the pandemic. And like everybody else, these postings changed my career path

Dr Siri N.N. is a PGDPHM alumnus of 2018-19 batch



Dr. Kartavya Tiwari (MPH 2016-18 batch) is currently working as District Epidemiologist with the National Health Mission at Madhya Pradesh has been awarded by the Collector for his phenomenal work as Corona Warrior.



The COVID Pandemic didn't stop us from working, we worked collectively in the front line and together in the fight against COVID-19. I have conducted around 150 ECHO training through zoom for our health staff. The greatest experience I had ever is by witnessing the greatest passion amongst the health staff for what they are doing which made me awestruck at many points and motivated to the core

Dr Archana Ashok is an MPH alumnus of 2017-19 batch



Leven the course our country faced COVID-19 SARS COV-2 Pandemic in the first week of March 2020. Duties have been allotted to all in-service students from March 10 in Bangalore Railway Station, Bus Stand, Bus Depots, Quarantine Centres (Lodges), war rooms etc. A real Public Health disaster happened by COVID-19 pandemic during our course and taught us many things in field work regarding planning, organizing teams, executing, controlling and spreading the CORONA virus

Dr Manjunath Arakeri is a PGDPHM alumnus of 2018-19 batch

Outlook

= Outlook

Head-start

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Dr Mahnoor Kadri normally starts her day by calling up healthcare workers about entries into the electronic Vaccine Intelligence Network (eVIN) app. Then she checks the cold-chain points (CCPs) on a dashboard, looking for the ones that are about to go out of stock or are not updating their current situation. Kadri is the District Vaccine & Cold Chain Manager at Srinagar, a cog in the massive apparatus that currently keeps India's Universal Immunisation Programme going. "In a fraction of a click, I am able to see the UIP vaccine status of entire Srinagar and pinpoint the smallest loopholes." On Wednesdays and Saturdays, the designated

looking for the ones that are about to go out of stock or are not updating their current situation. Kadri is the District Vaccine & Cold Chain Manager at Srinagar, a cog in the massive apparatus that currently keeps India's Universal Immunisation Programme going. "In a fraction of a click, I am able to see the UIP vaccine status of entire Srinagar and pinpoint the smallest loopholes." On Wednesdays and Saturdays, the designated days for immunisation, he is out on field visits to the cold chain points. The eVIN, set-up in 2015, has streamlined the vaccine supplychain, he says. "Now there is accountability for every single vial that is being given to any facility, which was not possible earlier."

ALSO READ: 'India Will Need Hundreds Of Millions Of Doses'

Work undertaken by our alumnus Dr. Mahnoor Kadri (MPH 2017-19 batch) was duly credited in the print media. Dr Kadri is currently working as the District Vaccine and Cold Chain Manager in Srinagar.



Dr. Gaurav Ojha (MPH 2016-18 batch) is currently working as District Epidemiologist with the National Health Msission at Uttar Pradesh has been awarded by the District Collector for his outstanding work as Corona Warrior.

eLearning programs



eCourse in Maternal, Infant, Young Child and Adolescent Nutrition (MIYCAN)

Undernutrition has been associated with under-5 mortality and morbidity in developing countries, thus preventing children from reaching their full potential. Additionally, undernutrition among mothers durina pregnancy, a prevalent scourge, further increases the burden. Therefore, strategies for prevention of maternal, infant and young child undernutrition are a worthwhile longterm investment that would benefit not only children and their families, but also the country as a whole. A critical component towards improving undernutrition is practicing optimal MIYCAN (Maternal, Infant and Young Child and Adolescent Nutrition). It is important to build capacities of healthcare workers, medical undergraduate and postgraduate students, nursing staff, and those working in the field of public health nutrition to sensitize them towards the importance of MIYCAN, with specific emphasis on breastfeeding, complementary feeding and maternal nutrition, along with effective integration of counselling in service delivery. With this objective, IIPH Delhi has collaborated with IPE Global and Alive & Thrive to launch an eLearning program on MIYCAN to aid in building capacities in this area of public health.



eCourse on Clinical Validation of Products for Entrepreneurs and Start Ups (new program)

During the past two decades, India has witnessed major changes in technology development, heralding an information age. As a result of the information and communication boom, a combination of new technologies is being used to obtain, disseminate, and share information as never before. moreover, social media has become a powerful tool to share ideas and solutions in almost all spheres of daily life. This offers great opportunities to incorporate technology for bringing better health to populations at large. With information and communication devices available even in remote villages, there is a potential that technology could revolutionize health service delivery too and can assist in developing an efficient and people-centered health care system. A key gap amongst the start-ups is their ability to move their products after reaching proof-of-concept stages especially through the clinical validation, adoption, and market entry besides raising capital. eCourse on Clinical Validation of Products for Entrepreneurs and Start Ups is a three-month eLearning program designed to cover basics of epidemiology and various epidemiological studies for product validation. The course has been developed by Indian Institute Health-Gandhinagar of Public (IIPH-Gandhinagar).

Our academic journey

- 10 on-campus programs & 20 eLearning programs [2021-22]
- 2356 graduates for on-campus programs & 4747 graduates for eLearning programs till date
- 415 scholarships awarded for on-campus students
- 92% placements since inception for on-campus graduates
- 19264 participants trained and 772 short-term trainings conducted till date
- Rich pool of 62 full time faculty members, 134 adjunct faculty members
- Multiple national and international academic collaborations
- Regular participant feedback solicited as part of a quality improvement loop
- Academic systems and processes in place to offer state-of-the-art learning experience

On-Campus Programs	eLearning Programs	Short-term training	
 10 On-Campus Programs 3112 enrolments 2356 graduates 92% placements since inception 415 scholarship 	 20 eLearning Programs 7161 enrolments 4747 graduates 	 772 short-term trainings conducted Over 19264 participants 	
62 full time faculty members 134 adjunct faculty members peer-reviewed articles on public health education			

Regular feedback solicited System and processes in place

Alumni Awards and Accolades!

Kozhikode native bags 12th rank in IAS exam

STAFF REPORTER

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■ ● Pentri A | A | A Dr. Mithun Premraj, a native of Vadakara in Kozhikode, has bagged the 12th rank in the country in the UPSC Civil Service Examinations 2021, and has emerged the second rank holder in the State. Mithun, a medical professional, cleared the test in his fifth attempt and has chosen the Indian Administrative Service as his first option for placement.

Mithun had his schooling in his native place Vadakara as well as Thrissur, after which he completed MBBS from JIPMER, Pondicherry, and later, a PG Diploma in Public Health Management. He was

Dr. Mithun Premraj (PGDPHM 2019-20 batch) has secured 12th rank in UPSC Civil Service Examinations 2021, in the country and 2nd rank in his state.



Telangana govt granted drone use permission to conduct experimental delivery of Covid vaccine

The Ministry of Civil Aviation and Directorate General of Civil Aviation have granted the Telangana government conditional exemption for drone deployment to conduct experimental delivery of Covid vaccines.



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Marut Drones developed by PHFI/ IIPH-H/ Hi (Health Informatics) Rapid Lab will soon be flying drones for vaccine delivery (and other medical products). (May 2021)



MSc Clinical Research alumni from 2014-16 batch - Dr Akash Prabhune delivered a webinar on "Linkages to Disease burden with consumption of Demineralized Water and scope AI/ML applications". The webinar focuses on a ticking time bomb of overuse of Demineralised water from Reverse Osmosis Water Purifiers across households in India. The idea is to propose a dedicated water score similar to the CIBIL score for sources of water across the residential and non residential areas of cities. Create awareness and advocate for change across the population.



MPH alumni from 2018-20 batch - Dr. Dipti Mishra received an Appreciation Award for providing technical assistance in formalising National Action Plan for Dog Mediated Rabies Elimination from India by 2030



RESEARCH & IMPLEMENTATION PROJECTS

Snapshot of the Research & Implementation Projects

PHFI is undertaking research, implementation and capacity building activities across a wide spectrum of issues related to Public Health. Our activities are pursued through an extensive network across the country and globally that contributes to vibrant research and scientific communities, disseminating knowledge and passion for science; concepts that are integral to the mission of the PHFI and addressing the critical gaps by generating evidences and through policy recommendations that impact the public health in India.

The success of these projects can also be measured from a series of bibliographic parameters, including the number of publications in top scientific peer-reviewed journals. Till date PHFI has published more than 3800 articles in national and international scientific journals, with an overall Impact Factor (IF) of 7.55.

The global coronavirus disease (COVID-19) pandemic has also been on the agenda of our research, implementation and capacity building activities, in addition to other public health issues. PHFI conducted and organised a series of webinars and research studies related to the COVID-19 pandemic's impact on various population groups and in relation to other public health issues across the country and these studies also addressed gaps in current health care delivery and services. Journal articles and reports were also published part of these projects.

Publications in Peer Reviewed Journals

	2008 – till August, 21	2020-21	
No. of Articles	3879	584	
Impact Factor	7.55	13.45	

This report presents the major projects and partnerships underway at PHFI Central, the Centres of Excellence (CoEs) and the IIPHs, towards addressing Public Health in India.

COVID -19 Prevention, Control & Management

Assessing the Impact of COVID-19 on Primary Healthcare Services and Antibiotic Provision by Rural Healthcare Providers in India and Co-Designing a Multi-Stakeholder Intervention

This is a Health Systems Research Initiative (HSRI) grant jointly funded by the Medical Research Council, UK; Economic and Social Research Council, UK; Wellcome Trust and Department for International Development (DFID) UK and sub-granted to PHFI through London School of Hygiene and Tropical Medicine(LSHTM), UK and in collaboration with LSHTM, Institute of Development Studies in Brighton (UK), the Royal Veterinary College in London (UK) and the West Bengal University of Animal and Fishery Sciences in Kolkata (India).

The objectives of the study are: 1) To assess the role of different types of primary care providers in rural and peri-urban India during the COVID-19 crisis. 2) To determine how providers' operating conditions, service provision and antibiotic provision and supply may have changed during the COVID-19 outbreak. 3) To co-design, with multiple stakeholders (including government and non-government ones), an intervention for appropriate COVID and non-COVID care by rural and peri-urban primary care providers, based on principles of antibiotic stewardship, and to assess the feasibility of such an intervention through a small-scale pilot, understanding role of services provision of primary physicians and informal providers during COVID-19.

The online survey has been conducted with 710 Primary care physicians and 350 informal providers to understand : Providers' demographics, location and type of practice; Impact on practice – whether open or shut down, patient flows, tele-consultations, symptoms that patients are presenting with knowledge of COVID-19 and strategies for dealing with COVID-19 type symptoms; Antibiotic use for patients with COVID type of symptoms; Changes in patterns of antibiotic use before and after COVID; Changes in the supply and price of essential antibiotics before and after COVID; Source of knowledge about COVID and about antibiotic use (in general and for COVID); availability and use of standard guidelines

A series of consultations will be organized over the next three months with one-on-one key informant interview interspersed between the same to include perspectives of decision makers who do not have the capacity to set aside time for a group consultation. Stakeholders groups will involve a diverse set of individuals from hospital associations, pharmaceutical industry, community/civic society groups, government bodies, etc. who will be mapped in terms of their involvement, interest, and ability to influence antibiotic use. Stakeholder consultations will foster discussion on stakeholders' roles within the healthcare system in the context of AMR, as well as their perspectives, current efforts and challenges regarding addressing and tackling AMR. Stakeholders will also be invited to deliberate on, contribute to and co-design one or more specific interventions suggestions based on our formative research.

We will use the survey findings, together with the consultations with a wide range of national and state level stakeholders to co-design interventions for improved primary care with principles of antibiotic stewardship. Currently we are analyzing the data of the online survey.

This project is funded by London School of Hygiene and Tropical Medicine, UK and led by Prof. K Srinath Reddy, Dr. Sanghita Bhattacharya and Dr. Pushkar Kumar

Impact of the COVID-19 Pandemic on Acute and Chronic Food Security in India

In response to the COVID-19 pandemic, the government of India has imposed the largest lockdown in history: 1.3 billion people were ordered to shelter in place for 21 days starting March 25, an order that has been extended until at least May 3. The objectives of this study were to quantify the impact of the COVID-19 pandemic and subsequent lockdown measures on (1) acute (i.e. immediate) food security and (2) chronic (i.e. longer-term) food security in India using telephone and online surveys. Participants were farmers recruited from India's top 10 agricultural-producing states based on yields and net sown area (e.g. Andhra Pradesh, Bihar, Haryana, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, West Bengal). Surveys were conducted across these states covering 1437 farmers in 200 districts at 3 time points (coincided with nation-wide lockdown and phased re-openings) in the year 2020. The results of the baseline survey that helped understand the difficulty faced by farmers in India and the prevalence of food insecurity were widely shared through a live-streamed (Facebook) webinar conducted on May 20, 2020. The webinar was widely attended by researchers, media personnel, civil society and policy advocates. The webinar generated 1.6k views and was covered by national and local media. The findings have also been accepted as peer-reviewed publications.

The project was led by Dr. Poornima Prabhakaran.

COVID-19 and Cardiovascular Disease Survey

The study is a global registry sponsored by the World Heart Federation (WHF), Geneva, Switzerland. The novel coronavirus disease (COVID-19) is an emerging, rapidly evolving, global pandemic impacting nearly 210 countries and/o regions, and more than 2 million patients worldwide, with more than 90,000 deaths as of April 20, 2020.

There is emerging evidence that Cardiovascular disease, Diabetes mellitus, and Hypertension are associated with COVID-19 and its severity. Both acute and pre-existing CVD impact outcomes COVID-19 infection unfavourably. Considering the high global prevalence of CVD and its risk factors (e.g. hypertension and diabetes) and the suggested link with COVID-19 it is urgent to start more robust studies to clarify the many issues early reports have produced. In order to reach robust conclusions that could inform clinical and policy practices, we are conducting a global study for a better understanding of the cardiovascular conditions that increase the risk of developing severe COVID-19, and a better characterization of cardiovascular complications in hospitalized patients with COVID-19.

The study objectives are : To describe cardiovascular outcomes among patients hospitalized with COVID-19: identify То cardiovascular risk factors associated with poor in-hospital prognosis among patients with COVID-19. We are conducting a prospective cohort study including consecutive confirmed COVID-19 patients. This study is coordinated from the 'Public Health Foundation of India' (PHFI) and the 'Centre for Chronic Disease Control' (CCDC) both in India, and conducted in hospitals in lowmiddle- and high- income countries. Data will be collected at each site by local investigators and sent to the coordinating centre. Given the high heart disease burden in India, this study will be important to understand the interactions between COVID-19 and CVD and identify potential solutions applicable to our local context.

This project is funded by World Heart Federation (WHF) and led by Prof. Dorairaj Prabhakaran

Project No-Fever - to Reduce Incidence of Dengue in Hyderabad During and Post-COVID-19 Pandemic: a Partnership of Dr Reddy's Laboratories and IIPH-Hyderabad

Dr Reddy's lab and IIPH-Hyderabad had collaborated to reduce incidence of Dengue and Chikungunya in residential colonies and high-risk sites in Hyderabad. The aim was to reduce incidence of Dengue and Chikungunya by developing an integrated intervention for geographies associated with Dr Reddy's lab and IIPH employees with voluntary participation. The project was a Volunteer-supported Communityled program to reduce the incidence of mosquitoborne diseases in Hyderabad. As Dengue and Chikungunya account for 95% of mosquito-borne disease cases in Hyderabad, hence the project focused on Dengue prevention and control. This was a proof of concept study for developing an integrated intervention involving employees and residential associations attached to employees of corporate organisations. The intervention included in the project were : Communication for behaviour change; Mosquito and fever surveillance, and early referral; Innovative strategies and resources for prevention, and Capacity building of General Physicians for fevers in times of COVID-19.

The program also engaged school students as they have the potential to bring incredible change to our world. Students were engaged for awareness generation, peer learning and engagement, practice personal and household prevention methods; monitor and insist the adults, and community engagement. Additionally the project also focussed on building partnerships with Resident welfare associations, vector control division and sanitation division of the City's municipal corporation, NGOs for waste disposal, vendors for relevant supplies, specialists, and general physicians. The project aimed to develop a proof of concept in the first 6 months and then scale-up to a larger population. This integrative community based intervention shows potential to be used along with the current vector control program in India to enhance and increase the community awareness and participation in dengue prevention and control.

Thisproject was funded by Dr. Reddy's Laboratories Ltd (DRL) and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy



Collabaration Between PHFI & Medisys Eductech Private Limited For eLearning Short Courses - COVID-19

Developing Comprehensive COVID-19 eLearning short courses for Health Care Providers. Epidemic is to be tackled by mitigation, suppression, containment and gradual evolution to herd immunity in affected pockets to control to eradication. The only solution to fight with Corona is to learn to live with it. Short e-courses based on prevention, detection, response and control measures are the wonderful opportunity to prepare ourselves for coping with the Corona Crisis.

This project was funded by Medisys Edutech Private Limited and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

To Strengthen Regional Support in the Technical Analysis, Inferences and Dissemination Regarding COVID-19 Response in SEARO

A technical unit has been established at PHFI to support the technical analysis, inferences, and dissemination regarding COVID-19 response in the WHO South East Asian region. The unit will function as per the terms of reference mutually agreed by WHO SEARO and PHFI.

Dr. Giridhara R Babu is leading the project in coordination with PHFI Bhubaneswar. The tasks carried out by PHFI in response to COVID-19 in the southeast Asian region are social media scrapping including review of epidemiological data and analysis, basic projection model, editorial work, narrative review and other publications, and coordination of the above work. The weekly analysis reports the situation of epidemiological indicators, vaccination coverage, bed occupancy rates with quantitative and qualitative information, and status of public health social measures across the southeast Asian region countries. The epidemiological indicators are mainly cases per 100,000 population, deaths per 100,000, tests per 1000 population and test positivity rate, epidemiological curve, and reproduction number across the SEARO countries and India (both at the national and sub-national level) which are

analyzed and reported. Weekly reports on (epi) updates, variants of concerns and serosurvey estimates are updated and shared with the WHO team. The main Public Health & Social Measures (PHSM) indicators including mask wearing, social measures, business and workplace measures, restriction on gathering, stay-at-home orders, restriction on public transport, international travel measures are also reported. The team is working closely with the WHO team to establish and streamline the required support in a regular manner. Progress updates are regularly provided to the concerned members of the collaboration. WHO is supporting countries in their containment and mitigation efforts by providing technical guidance, capacity strengthening and creating awareness, and addressing misinformation.

This project is funded by World Health Organization (WHO) and led by Prof. K Srinath Reddy and Prof. Giridhara R Babu.

Supporting National Urban Health Mission (Center of Excellence - Public Health Foundation of India)

The purpose of the study is to address the COVID care services of the urban slums/poor and to respond to the needs while preparing strategic guidance toward scaling up in similar settings of the different urban areas in the state of Karnataka as well as in other cities of India. To expand inclusiveness and to reduce vulnerabilities, the study incorporates four strategic pillars: a) Health partnerships; b) Technologies; c) Health services; d) Capacity building.

Within urban health, the study attempts to integrate different innovative communitybased models to strengthen COVID care services, produce local workforce models such as homecare services. Study innovative technological solutions to improve efficiency and quality of COVID care services as well as health information for a robust data driven decision to link for public health action.

Indian Institute of Public Health Bangalore continues to work with Bruhat Bengaluru Mahanagar Palike (Municipality)/government, technology companies, community-based

Key activities undertaken:

- 1. Situation analysis of Covid 19 in Karnataka.
- 2. Assess COVID care health services preparedness through review of literature related to the four pillars of health in containing COVID 19 among the urban poor.
- 3. Document the lived experience of stakeholders from all four pillars of health system to examine the strength and weaknesses of health system and highlight areas of improvement in health system for Covid 19 resilience.
- 4. Examine the lived experience of Covid recovery among urban poor for better community level interventions
- 5. Explore the mental health scenario among urban poor through qualitative interviews with family members of suicide victims during the pandemic.
- 6. Examine the demand and supply side barriers to Covid 19 vaccination drive.
- 7. Develop an intervention for collecting reliable co-morbidity data for Covid 19 and resilience through community homecare support services.



Community awareness campaign in Vijnapura slum, Bengaluru



Temperature assessment for COVID 19 screening in community



Set up of hand sanitising stations for community use in Vijnapura slum

organisations (CBOs), and other partners to adapt key strategies and response to the evolving COVID situation and critical needs of the most vulnerable urban slum population at Vijinapura in Bangalore.

This project is supported by Asian Development Bank and led by Dr. Suresh Shapeti and Dr. TN Sathya Narayana

Assessment of Integration of Ayush Into the Public Health System for Combating COVID-19

The current highly challenging health scenario and the overwhelmed health systems demands for a relook into the strategies for making optimal use of the available resources. This includes actionable inputs that attempt to make the health systems receptive to integrative efforts to facilitate integration across systems, creating opportunities for greater collaboration and trust. The change that is envisaged should be evidencebased, nuanced, and contextual, with thoughtful understanding of the current issues in country. This study will provide a substantial baseline on all these issues, and contribute to building up knowledge that can be used for advocacy and action. More importantly, the development of concrete action plans tailored to each state context, will enable testing policies and strategies that can be adapted at scale and ensure sustainability. In the long run, we envisage that this could be a turning point for mainstreaming traditional medicine to exist in coherent plurality within the public health infrastructure and in the delivery of healthcare service in best possible way to all people. More importantly, this is in line with WHO's agenda as they establish steps for the appropriate integration of traditional medicine to health systems (particularly health services) by developing national policies, regulatory frameworks and plans for products, practices and practitioners. Such an integration will be essential in achieving the Sustainable Development Goals of universal healthcare which links to equitable social and economic development.

This project is funded by World Health Organization (WHO) through Central Council for Reseach in Ayurvedic Sciences and led by Dr Tanica Lyngdoh and Dr. Preeti Negandhi

A Retrospective Review of COVID-19 Related Clinical Outcomes Following The Introduction of the National Clinical Management Protocol (NCMP) on Ayurveda and Yoga and Other Ayurveda Interventions for COVID-19

The knowledge and practices from Ayurveda and Yoga that might be effectively utilized in the prophylaxis and adjuvant therapy of COVID-19 is now being channelized to augment standard of care. Thus in its attempt to leverage and implement time-tested traditional knowledge, the Ministry of AYUSH has developed and provided guidelines on Ayurveda and Yoga for the use of registered Ayurveda Practitioners covering the whole spectrum of COVID 19 infection management. The Ayurveda management stands as 'ADD ON' to the present contemporary line of management in accordance to standing instructions issued by Health authorities. Thus, the overall aim of this project is to describe the output and outcome indicators as measureable information to determine the extent to which the guidelines produce the health outcomes as expected. The objectives includes: (i) Documentation and analysis of Ayurveda interventions utilized by Ayurveda practitioners for prophylaxis against COVID 19 in compliance with the National Clinical Management Protocol (NCMP) on Ayurveda and Yoga for Covid-19 related outcomes; and (ii) Documentation and analysis of Ayurveda interventions utilized by Ayurveda practitioners for management of asymptomatic, mild and moderate COVID 19 cases in compliance with the National Clinical Management Protocol (NCMP) on Ayurveda and Yoga for Covid-19 related outcomes."

This project is funded by the Ministry of AYUSH, Government of India and led by Dr. Jyoti Sharma

A Rapid Assessment of COVID-19 Management in Odisha

This study proposes a Rapid Assessment of COVID-19 Management in Odisha in order to inform public policy regarding various strategies adopted, what worked and to what extent it benefitted to the people of Odisha.

The research team would do a systematic analysis of COVID-19 management plans, strategies and their reach to the people using both quantitative and gualitative research methods. The main domains that would be assessed are clinical, economic and social. An inventory of interventions made by Government of Odisha has been prepared which would be assessed by analysing secondary and primary data collected through a household survey and primary qualitative data through key informant and in-depth interviews. in Ganjam district. Ganjam district has been identified as a case based upon the wider spread with highest number of returnee migrants and successful management of COVID-19, expected to provide meaningful insights and learning to future policy making. In addition to development of a comprehensive report with scientific analysis of data, short video films will be produced to support visual and verbatim evidence from various levels of stakeholders, either benefitted or part of the COVID management strategies.

Hence the overall aim of the study is to assess, analyse and document policies and strategies implemented and resources utilized for managing COVID-19 in Odisha and their plausible effect on the people of Odisha.

This project is funded by Odisha State Disaster Management Authority and led by Dr. Shridhar Murlidharrao Kadam

Program Management for Setting-Up an Integrated Command and Control Centre for Government of Haryana in Partnership With Deloitte

The project is aimed to: 1. Identify and curate the relevant content related to Covid-19 treatment protocols, appropriate health behaviour and specific health action approved by the MoHFW and other relevant departments for Covid-19 management to be used for dissemination to specific stakeholders directly involved in the frontlines of Covid-19; 2. Repurpose the curated content for two purposes of: a. Training: Virtual training of RMPs, paramedical staff, administrative staff, ASHAs, Anganwadi Workers and Auxiliary Nurse Midwives (ANMs); b. Dissemination: Digital and electronic outreach to the larger population, with special focus on high-risk population [those with co-morbidities] and 3. The training content will be in the form of short learning modules with focus on: Guidelines, Identification of cases, Interpreting tests, Triaging, proper referral and patient management, Follow-ups of patients, Potential patient risk assessment and referral and Pre- and post-vaccination process and protocols.

This project is funded by Deloitte Touche Tohmatsu India LLP, and led by Prof. K Srinath Reddy and Dr. Himanshu Negandhi

A Strategic Analysis of Impact of Covid 19 on CBID and Persons with Disability

Persons with disability (PWD) are already at a disadvantage with respect to access to healthcare, services, and welfare concessions when compared to people without disability. This project was aimed at studying the impact of the lockdown measures among PWD and how it is affecting their inclusion. CBM's role was to identify NGOs, Partners, field workers, people with disability. Under the project following activities were carried out: Tools were developed by with inputs from IIPHH,CBM and HI, initially in English and then translated to other languages. 2.CBM team identied locations and organizations for data collection. Their partner NGOs helped with some IDIs and FGDs.

This project was funded by CBM India Trust and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Demand Driven Health Policy and Systems Research (HPSR) to Inform the Response to COVID-19

The Alliance for HPSR has supported a programme of demand driven health policy and systems research (HPSR) to inform the response to COVID-19. The aim of this programme was to develop new HPSR, largely within LMIC settings, that directly responds to knowledge gaps identified by national stakeholders. This knowledge is expected to inform both a) how the given country could better respond to COVID-19, b) the development of learnings that could be useful to other LMICs.

Knowledge gaps were identified by a wide range of LMIC-based stakeholders, both policymakers and researchers.

Specific tasks included under this project were: Submission of a research protocol for a study expected to examine measures or initiatives already in place, rather than propose putting in place new interventions or measures; Attendance at meetings between countries in each individual thematic area to facilitate cross-pollination of ideas; Development of an intermediate report, including brief summary of relevant work and findings to date; Development of a final report that is expected to directly inform policy in-country ; Development of a manuscript for publication

This project was funded by World Health Organization (WHO) and led by Dr. Preeti Kumar

Support for Deployment of Swasthya Sahayak Technology for Community Screening for COVID-19 & Tuberculosis, in Dist. Auraiya and Ferozabad

The project is aimed at identifing presumptive cases of Tuberculosis, using standard questionnaire and support in conducting Microscopy and CBNAT testing of presumptive cases at DMCs through the following objectives: 1) To develop application for identifying population who have migrated back from other areas and are at risk of developing Covid-19 infection and to identify presumptive cases of Tuberculosis. 2) To develop a comprehensive dashboard which provides detailed information on Covid-19 cases including the risk levels (mild, moderate and severe), age wise and geography wise analytics. There will be an additional information on suspected and confirmed TB cases. 3) To conduct screening of families in a district's rural population to identify the risk level of the population screened using standard medical criteria for Covid-19 (As prescribed by ICMR). 4) To identify presumptive cases of Tuberculosis during home visits and refer them to the DOTS centre.

The project will help in identification of Covid and Tuberculosis patients with their Risk levels and Geographical distribution in the area and referring them to the nearest DOTs center for treatment of the Tuberculosis and providing Covid help line number to the suspected Covid cases. So far, we were able to cover more than 100000 population and identified more than 1200 suspected cases for Tuberculosis.

The project is with funding support from GAIL India Ltd and led by Dr. Sunil Saxena Raj

Rapid Assessment of Knowledge, Risk Perception, Trust and Acceptance of Proposed COVID Vaccination Among Service Providers and Adult Men and Women of Uttar Pradesh

With UNICEF support, PHFI in collaboration with Institute of Entrepreneurship Development (U.P) have undertaken a mini formative study (or dipstick) using qualitative and quantitative data collection methods in four important districts of Uttar Pradesh. Broadly speaking, in-depth interviews were conducted with ASHAs, ANMs/ Nurses, adult men and women, faith leaders, local healers and community leaders. On the other hand, a quantitative survey were administered to adult men and women over 40 years of age in the same four selected districts of the state. PHFI was responsible for the conduct of qualitative study (in-depth interviews) and analysis of deidentified quantitative survey data

The study was aimed to enable the state to segment audiences, develop messages

appropriate for participant groups, and put together an evidence-based communication plan. The outcome, we hope will contribute to enhancing public support for COVID-19 vaccine, reduce the perceived risks of immunization against vaccine preventable diseases, address vaccine hesitancy, build trust and increase the quality of vaccination services.

This project was funded by - United Nations Children's Fund (UNICEF) through Institute of Entrepreneurship Development (U.P) and led by Dr. Sailesh Mohan

Evaluating ECHO Telementoring Program in the Capacity Strengthening of Community Health Workers (CHWS) in Context of Covid-19 and Other Allied Health Services in Alignment with HWCS

Community health workers (CHWs) have long played a key role in delivering healthcare in rural and remote populations, through primary care, prevention, and education. Community health workers (CHWs) have long played a key role in delivering healthcare in rural and remote populations, through primary care, prevention, and education. Numerous mechanisms of training and supporting CHWs have been implemented, and the World Health Organization (WHO) has outlined recommendations for the programmatic and financial aspects of CHW programs. The proposed study will be evaluating the ECHO telementoring program which will be conducted to provide training to around 2000 Community Health Workers (CHW) to strengthen their capacity to provide services on COVID-19 and other health areas - in alignment with HWCs extended range of services in light of COVID such as mental health, maternal and child health, new-born care, immunization and vaccination, geriatric care eye and ENT.

The study will be conducted in 4-5 hubs connecting around 32 spokes sites in four states of India. A mixed method (combination of quantitative data and qualitative data) approach will be used to collect the information. The study will be conducted pre (baseline) and post (end line) intervention (ECHO telementoring) to determine the effectiveness of the tele-mentoring intervention in facilitating the gain of knowledge and skills and changes in trained ASHAs practices.

This project is funded by Extension for Community Healthcare Outcomes (ECHO India) and led by Dr. Raj Mohan Panda

Technical Support to All India Institute of Ayurveda (AIIA) for Ayush Prophylactic Trial on COVID-19

An outbreak of pneumonia in December, 2019 in Wuhan, China, is now spreading to many countries across the globe. This pandemic (as declared by WHO) has been determined to be caused by a novel coronavirus. It is named as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Despite worldwide efforts to contain it, the pandemic is continuing to spread for want of a clinically-proven prophylaxis and therapeutic strategy. In India, the disease till date has affected over 37000 people and over 1200 deaths. As a preventive measure, there has been a lot of deliberations from the Government of India to push AYUSH ministry guidelines, which suggest a range of home remedies to boost immunity. In this context, the All India Institute of Ayurveda (AIIA), New Delhi is conducting a prophylactic trial to evaluate the effect of commonly used Ayurveda interventions in preventions of Covid-19 among the population. While AIIA is the prinicple agency for implementing the study, it has requested for technical support from IIPHD. So IIPHD is working in collaboration with AIIA to provide technical assisstance through all phases of the study.

This project is funded by All India Institute of Ayurveda (AIIA) and led by Dr. Tanica Lyngdoh

Technical Support to Ministry of Ayush on their Research Projects Related to COVID-19

An outbreak of pneumonia in December, 2019 in Wuhan, China, is now spreading to many countries across the globe. This pandemic (as declared by WHO) has been determined to be caused by a novel coronavirus. It is named as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Despite worldwide efforts to contain it, the pandemic is continuing to spread for want of a clinically-proven prophylaxis and therapeutic strategy. As a preventive measure, there has been a lot of deliberations from the Government of India to push AYUSH ministry guidelines, which suggest a range of home remedies to boost immunity. In this context, Minitry of AYUSH has under its various Councils and Institutions across the country implemented research projects on the same. While these Institutions are the prinicple agencies for implementing the study, AYUSH Ministry has requested for technical support from IIPHD. So IIPHD is working in collaboration with the Ministry to provide technical assisstance through all phases of the study.

This project is funded by Central Council for Research in Unani Medicine (CCRUM) and led by Dr. Tanica Lyngdoh

Contribution Towards Addressing COVID-19, As Part of Project Pathway

As India began its fight against control of COVID-19 in the country in April 2020, the Public Health Foundation of India (PHFI) extended the scope of their ongoing activities under the aegis of Project PaTHWay to include relief operations in response to the COVID-19 pandemic. PHFI continued their partnership with Janaseva Foundation (Pune) and National Institute of Mental Health and Neurosciences (NIMHANS - Bengaluru), to provide relief kits to marginalized population in both the cities of India. The relief activities in both cities continued till March 2021 under the Project PaTHWay and provided direct relief, in form of food and groceries to the marginalized and vulnerable population belonging to the lower socio-economic background and to frontline workers in the form of Personnel Protective Equipment (PPE). Collectively, approximately 67594 beneficiaries reached directly through the COVID-19 relief activities of Project PaTHWay in Pune and Bengaluru.

This project is funded by AXA Business Services Pvt. Ltd. and led by Dr. Monika Arora



COVID-19 Relief Activities in Pune & Bengaluru

Hand Sanitizers and N95 Masks provided to the Medical Superintendent, NIMHANS for the frontline health workers



Grocery kit distribution to marginalized communities of Pune



Masks and Sanitizer distribution to street children, old age home-Pune
Health Champion Course

The project is being implemented by Health Promotion Division, PHFI in collaboration with Pratham Education Foundation. The aim of the project is to address health related challenges and provide innovative solutions and opportunities for adolescents and youth to become change agents and health champions.

Objective: To sensitize and empower adolescents with health promotion skills to become health champions in their communities and undertake action projects to become familiar with data collection in public health and enhance their chances of working in various national/state/ district level programmes and interventions.

Considering the ferocity of the second wave of COVID-19, following activities were prioritised and conducted to raise awareness around preventive measures and early detection to contain COVID 19 especially in the community settings. Health experts from PHFI, IIPHs and partner organisations were engaged and invited to record the sessions and conduct webinar in different regional languages.

Activity 1: Development of short audio-visuals/ snippets by Health experts on addressing vaccine hesitancy, preventing community infection and mental health wellbeing during second wave of COVID in India in regional languages (English, Hindi, Marathi, Kannada, Telugu, Tamil, Odia, Gujarati, Bengali, and Assamese). The development of resources is in the process.



Session recording with Dr Deepak Saxena in Hindi



Session recording with Dr Hemant Mahajan in Marathi

Activity 2: Webinars with experts/ doctors/public health experts – live interaction/ Q & A with the community members. This live session and then recorded link were shared with communities of Pratham pan India. These webinars were organised in different regional languages.

Snapshots of Webinar





This project is funded by Pratham Education Foundation and led by Dr. Monika Arora

Assessment of Effects of Containment Measures and Closure of Educational Institutions and Social Isolation Due to COVID-19 on Well-Being and Education of Adolescents and Youth

The main objective of this assessment was to generate evidence to deal with possible short-

and long-term consequences of school closure and social isolation on young people in India, following the COVID-19 outbreak. This project was funded by World Health Organization Country Office for India.

Participants were invited from schools (aged 11-17 years) and colleges (aged 18-21 years) engaged in earlier and ongoing PHFI's projects and in collaboration with partner organisations. Survey used by the University of Luxemburg was adapted in Indian context to study the effects of prolonged social isolation coupled with the challenges of home-schooling/online classes on adolescent's and youth's subjective well-being and resilience skills. Survey was reviewed by experts at PHFI, WHO SEARO and WHO country office for India and pre-tested with school and college students and accordingly was revised and administered using two sub links using webbased google forms. The survey is available in English and Hindi. Survey link was disseminated using Social Media for participants aged 18 and above. The study was approved by PHFI IEC. Consent procedures were followed. Surveys conducted through schools following school consent. Informed assent was obtained from the participants below 18 years and consent was obtained from participants above 18 years.

In total, response was obtained from 15 States/ Union Territories (Bihar, Chandigarh, Chennai, Delhi, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Punjab, Rajasthan, Uttar Pradesh and Uttarakhand) of India. Overall n=1596 participants completed the survey. Data collection was conducted from March - June 2021. The result of the non-parametric test (Wilcoxon signedrank) on 2 related samples suggests that there is a statistically significant (p=0.000) difference in the level of student's life satisfaction before and during COVID-19 pandemic. The value of absolute change reveals that the level of students' life satisfaction has decreased due to pandemic, which resulted in increasing dissatisfaction in general life style, including longer stay at home and online schooling during COVID-19. In addition to the survey, In-depth interviews (IDIs) were conducted with parents (n=4) and teachers from private (n=3) and government (n=4) schools using online platform. Teachers from private schools reported, technology use and availability of devices for student as initial barrier to conduct online classes. Participants reported health issues of students related to eyesight and weight. Teachers from Government school reported class strength, availability of devises and online platform as barriers to conduct interactive online classes. Other major issues listed by teachers from Government school included migration of families to native villages, economic hardships in terms of loss of job/daily wages by family members. At the same time, parents of students studying in private schools reported, issues related to discipline, lack of punctuality in children, change in sleeping pattern, access to online games and access to different sites, selective learning tendencies, lack of healthy dietary intake pattern during the classes and cheating during online tests. Parents also reported, psychological problems faced by children including feeling of restricted environment, missing peers and teacher's physical presence, scare of COVID situation and anger issues.

This project is funded by World Health Organization (WHO) and led by Dr. Monika Arora

COVID-19 Vaccination Awareness Programme with Frontline Health Workers (FLWS) and Community Members in Velhe & Haveli Blocks of Pune District in Maharashtra

The Public Health Foundation of India (PHFI) is conducting a study to sensitize the Frontline Health Workers (FLWs) and community members from Velhe & Haveli Blocks of Pune District (Maharashtra) on various aspects of COVID-19 vaccination. The study aims to assess the knowledge, attitude, hesitancy towards COVID-19 vaccination among FLWs. The study also aims to disseminate accurate and transparent information about the COVID-19 vaccine(s) to alleviate apprehensions about the vaccine, ensure its acceptance and encourage its uptake. The study is being done by the Public Health Foundation of India, Gurgaon in collaboration with Janaseva Foundation (Pune).

The study is funded by the AXA Business Services Pvt.Ltd. and led by Ms. Shalini Bassi





Sensitization sessions by Experts with Frontline Health Workers

CENTRES OF EXCELLENCE (CoEs)

Centre for Chronic Conditions and Injuries (CCCI)

Mission: Generate world-class knowledge that can impact policy and practice aimed at reducing the burden of chronic conditions in India and beyond

Vision: To carry out cutting-edge science to understand the dynamics, determinants and dimensions of chronic conditions and to develop, evaluate and help scale up evidence-based solutions.

Key projects

Worksite Based Lifestyle Program for Reducing Diabetes and Cardiovascular Risk in India (India-Works)

The worksite based lifestyle improvement programme is designed to address the growing diabetes burden in India, through targeting the employees in the organised workforce (both public and private sectors). It follows a peer led programme with classes on diet, physical activity and behavioural modification. A major focus of this project is to demonstrate fullscale sustainability at worksites across India .The programme is offered in 10 worksites in India, and will provide comprehensive picture on implementation of the project and of potential scalability. It will inform stakeholders that might consider adopting this intervention program to be fully informed of the upfront (fixed) and recurring (variable) costs to deliver the intervention and the potential return on investment (ROI). We will use an employer/societal perspective and will report cumulative and per-site estimates providing lifestyle classes at worksite will enable employees to overcome individual-level barriers such as lack of time and social support, inability to locate resources. As part of the program, staff members at the sites will be trained in delivery of lifestyle education, providing healthy food options to employees, and motivating healthy decisions at the workplace. These efforts can be easily sustained by the worksites long after the trial ends and will be particularly appealing to management if shown to be cost-effective and able to increase productivity.

This project is funded by National Institute of Health through Emory University and led by Prof. Dorairaj Prabhakaran

Developing and Testing Collaborative Quality Improvement Initiative (C-QIP) for Prevention of Cardiovascular Disease in India

This K43 study aims to develop, implement, and evaluate a Collaborative Quality Improvement (C-QIP) intervention (non-physician health worker, text messages for healthy lifestyle and clinical decision-support system) effect on processes of care measures and clinical outcomes among individuals with existing CVD in India using United Kingdom Medical Research Council (MRC) framework for developing and evaluating complex interventions. A growing body of research suggests several factors at the level of the patient, provider, and health system may effectively lower the impact of CVD in India, such as literacy, increased time spent with patients, and integrated health care. Maximizing CVD treatment in India must involve a cascade of processes from appropriate prescribing to longer-term adherence as well as low(er)-cost health service delivery innovations such as nonphysician health workers and interactive webbased or mHealth-based clinical decisionsupport system for providers and patients.

Multifaceted quality improvement intervention (including but not limited to non-physician health worker/case managers, team-based care, SMS reminders, interactive decision-aids for patients and providers, audit-and feedback mechanisms) have been successful in high-income countries for improving care among individuals with existing CVD, but have not been extensively evaluated in India. These interventions could be sources of innovation in CVD prevention, treatment, and control through implementation science research.

This project is funded by Fogarty International Centre, National Institutes of Health, USA and led by Dr. Kavita Singh

A Cluster Randomized Trial of an Mhealth Integrated Model of Hypertension, Diabetes and Antenatal Care in Primary Care Settings In India and Nepal (mIRA)

The project aims to enhance antenatal care (ANC) with a tablet-based electronic decision support system (EDSS), which will help frontline health workers (ANMs, staff nurses and Medical Officers) at the primary healthcare level in Telangana, India and Kathmandu, Nepal to provide evidencebased routine ANC, enhance detection, screening, detection, referral and management of GDM and PIH and anemia, and; facilitative record-keeping and reporting while linking the same across various levels of healthcare facilities and care providers. This project is a collaboration with two other institutions: The London School of Health and Tropical Medicine (LSHTM), UK and Kathmandu University, Nepal.

Formative research has been completed, intervention development is in progress and the trial is expected to commence in 2021.

The current project activities comprise of three phases: formative research, intervention development and the intervention implementation and evaluation. We have conducted the formative research using quantitative and qualitative methods to understand the context for the intervention development and its implementation in the primary care settings in the state. In this phase, we carried out health facility surveys in another set of 23 health facilities (subcentres, primary health centres, and tagged facilities) across 5 districts to assess the health infrastructure. In addition, we also conducted ANC observations at these facilities to assess the provision of ANC care interviews with the pregnant women and the healthcare providers to understand the context of the care being provided. Due to the nation-wide COVID-19 related lockdown and the consequent suspension of all field activities from 20th March 2020, we were unable to complete our formative research in the sixth targeted district, Asifabad (in 5 additional health facilities). However, we do not expect any new findings from this district (Asifabad) in addition to what we have already obtained from the other

districts. We are currently analyzing the data and have started conducting some interviews with the policymakers and health administrators at the state level to understand the policy level aspects of ANC provision and mHealth.

This project is jointly funded by DBT, India, and Medical Research Council (MRC), UK and led by Profs. Dorairaj Prabhakaran & Sailesh Mohan

Uday: a Comprehensive Diabetes Prevention and Management Program in India

UDAY is a comprehensive diabetes and hypertension prevention and management program in India that is being implemented in the two geographically and culturally distinct study sites, Sonipat (Haryana, north India) and Visakhapatnam or Vizag (Andhra Pradesh, south India) covering a total population of 4000000 in rural and urban sub-sites. It comprises of multicomponent interventions implemented at multiple levels of health care system and included the following: a) community-based screening and education of adults ≥30 years of age by community health workers for detection of diabetes and hypertension and associated risk factors, linking of those with diabetes and hypertension to the public health system and regular followup at home for improving selfmanagement skills and risk modification; b) training of health providers including health workers, pharmacists, physicians on evidencebased management quidelines; c) implementation of quality improvement programme and diabetes registry; and d) advocacy with governments and other stakeholders to improve access to healthcare.

This far, 150000 individuals have been screened for the presence of diabetes and hypertension/ diabetics and people with high-risk were followed up to 8 times at their doorstep; 18500 patients with diabetes and/or hypertension were registered in facility based registries; 400 healthcare providers were trained including 10 physicians, 309 pharmacists and 100 health workers; 125 camps and events were organized in collaboration with local stakeholders to increase the awareness and regular meetings were held with stakeholders for health system strengthening which led to improved access to lab tests and antidiabetic and antihypertensive medicines.

This project is funded by Eli Lilly & Co. and led by Profs. Sailesh Mohan, Dorairaj Prabhakaran and K Srinath Reddy

Strengthening the Prevention and Control of Chronic Diseases in Sikkim through Evidence Based Research and Capacity Building

Strengthening the CM's Comprehensive Annual and Total Health Check-up for Healthy Sikkim (CATCH): This program envisages annual health check-up of each citizen at designated centres across the State and is aimed at enabling people to maintain good health by detecting potential health problems in early stages through early diagnosis and treatment. We are currently assisting the state government in developing an analytical template for the data to track the health status of the population vis-à-vis chronic diseases.

We are currently developing a registry program with a clinical decision support system on a tablet based device, which will help guide health personnel in the treatment of diabetes and hypertension to be implemented in select health facilities. This is expected to be operational soon after the initial pilot testing to understand the clinic work flow and how best it can be integrated in to the existing health facilities. This will enable tracking patients who come to the implementing facilities and provide information on their diagnosis, treatment received and outcomes experienced.

In consultation with the state health officials we have also developed a population based health survey to determine the incidence of major chronic diseases and their risk factors among adults. Information on demographics, lifestyle behaviors, anthropometry, biological measurements and biosamples (blood and urine), healthcare costs, and mortality will be collected. This will provide most recent data, track trends over time and facilitate evidence based prevention and control efforts.

This project is supported by AIA Engineering/ Vega Industries, Aon Global Insurance Brokers Pvt. Ltd and Spectris and led by Dr Sailesh Mohan

Indo-European Consortium for Next Generation Influenza Vaccine Innovation

The main goal of the INCENTIVE Consortium is to establish a cornerstone toward the development of the next generation influenza vaccines to reduce the worldwide burden resulting from disease outbreaks. This major goal will be achieved by pursing the following specific objectives:

- Address the current knowledge gap by performing comprehensive immunome profiling of responders and non-responders to influenza vaccines at baseline and post vaccination with standard vaccines to identified the underlying mechanisms;
- b) Advance the development of two next generation universal vaccines;
- c) Identified predictive biomarkers of responsiveness to vaccination to develop new diagnostics; and
- d) Perform a health systems and investment analysis, and discrete choice experiments to assess the suitability of the developed technologies for low- and middle-income countries and to identify potential downstream constraints that might affect uptake by health care systems

This project is funded by European Commission (EU) & Department of Science & Technology (DST), Ministry of Science and Technology, Government of India though National Institute of Immunology and led by Dr. Sailesh Mohan

Public Health Ethics in India- Establishing Linkages and Synergies

India is diverse country which faces wide and varied public health challenges of both infectious and chronic diseases accompanied with extreme heat and air-pollution. Whereas lots of scientific research is being done, ethics has not entered the academic discourse in humanities, public health policy, practice, implementation, societal drivers and solutions. Sectors outside health which have a profound influence on health but don't look at health considerations, need an ethical lens too. We aim to establish a robust network of Global and Indian of experts in public health ethics and conduct a series of seminars which will enable sensitization of the issues, new ideas and a debate on various issues in public health and also train the MPH and other master's students on public health ethics. The seminars will broadcast across IIPHs under PHFI and also be video recorded and uploaded for wider outreach and availability. Newer and emerging issues will be identified, ideas for future grant proposals will be explored. We will explore the demand and need for an internship program in Public health ethics at PHFI for students of humanities and law. Ethics need to enter the core of health and preventive and promotive health and this is the beginning of the road. There is a need for a dynamic interlinking of synergies towards public health ethics in India. We plan a series of 9 or more seminars and a brainstorming session on various topics in Humanities and Public Health Ethics by Global and National experts and a needs assessment of an internship program for students of humanities to be exposed to public health at the Public Health foundation of India. This will be conducted at relevant some lead humanities departments in Delhi and India.

This project is funded by Wellcome Trust (WT) and led by Dr. Shifalika Goenka

Open Gyms in Delhi - A Situational Assesment from a Health Perpective and a Case Study for Health

A random sampling of all the parks, urban forests/ green areas in Delhi was done. Our basic scoping done shows there are 18000 parks in Delhi. They will be stratified into 3 sizes . Approx 600 parks will be sampled, stratified random sampling, and surveyed from a health perspective. The parks will be assed through mulitple lenses and visits via personalized paperless data collection through trainined consultatnts in the field. It will be a rapid in and rapid out. Additionally, a detailed case study will be done one one such park for greater depth and detail. The methodology will use a combination of gualiative and guantitatve approaches alond with Goe -spacial methods to calcualte the NVI- normalized vegetative index. Analysis and publication will be written up

This project is funded by World Health Organization (WHO) and led by Dr. Shifalika Goenka

Novel Salivary Diagnostics for Screening and Detection of Early Oral Cancer and Precancer

PHFI in collaboration with Aqsens Health is proposing to undertake a feasibility study for a noninvasive technique based on salivary diagnostics on the principle of time-resolved fluorescence, being developed by Aqsens Health for screening and early detection of oral cancer. Aqsens is aiming to develop, productize, manufacture and bring the method and technology as a screening system to the Indian and Global market. The proposed feasibility study for the period of 2 years, will be primarily conducted to develop the core technology and test the obtained diagnostic accuracy of the technology, as part of the development process, on saliva samples from oral cancer cases and cancer-free controls.

The primary objectives include: (1) To develop TRF salivary luminescence fingerprint for early detection of oral cancer; (2) To test the obtained accuracy of TRF luminescence fingerprint for



High resolution digital imaging of the oral cavity



Lab Processing of biospecimens

early detection of oral cancer and (3) To explore the oral cancer referral pathways and factors associated with early or delayed reporting of any abnormality to a healthcare facility (e.g., socio-demographics, lifestyle factors, family / personal history, knowledge, awareness and perceptions, previous screening experience, symptoms, alternative medicine, accessibility and availability, knowledge and awareness, fear and stigma). Currently, we have completed primary data collection for exploring referral pathways and the analysis and manuscript writing are in progress. The data collection' for TRF assays is will be completed soon and we are planning the initial set of lab experiments in December 2021.

This is funded by Aqsens Health, India and led by Dr. Krithiga Shridhar

MaternalDocosaHexaenoicAcidSupplementationandOffspringNeurodevelopemnt in India (DHANI-2)

DHANI is the first large pre- and post-natal maternal dietary supplementation trial in India. It is a double-blinded, parallel group, randomized, placebo controlled trial supplementing 957 pregnant women aged 18-35 years from ≤20 weeks gestation through 6 months postpartum with 400 mg/d algal-derived DHA (Maternal docosahexaenoic acid) or placebo. Data on the participant's socio-demographic profile, anthropometric measurements and dietary intake has been recorded at baseline. The mother-infant dyads have been followed through age 12 months. The primary outcome variable is infant motor and mental development quotient at 12 months of age evaluated by Development Assessment Scale in Indian Infants (DASII). Secondary outcomes are gestational age, APGAR scores, and infant anthropometry. Biochemical indices (blood and breast-milk) from mother-child dyads are being collected to estimate changes in DHA levels in response to supplementation.

In India scientific evidence from iron-folic acid supplementation during pregnancy has been translated to supplementation policy and substantially influenced government actions. More novel dietary interventions which could

benefit offspring birth outcomes and enhance later life growth and development need to be explored. Both animal and human observational studies and few clinical trials point to the possibility that DHA may have a role in the enhancement of offspring neurodevelopment. To the best of our knowledge this is the first such randomised controlled trial conducted anywhere in the world which starts supplementation during pregnancy and continues through 6 months postpartum. This has led to enhanced understanding of the role of maternal DHA supplementation on in-utero and early-life cognitive and motor development among their infants. Results from this study have provided the first high quality evidence on whether a prenatal and continued as postnatal DHA supplement improves the neurodevelopment of 1-year old infants born to supplemented mothers.

Based on the findings of this study, we can work to ascertain the best ways to translate the findings to the existing infrastructure and delivery mechanisms of national child development and nutrition programs like the Integrated Child Development Scheme, Anganwadi workers, ASHAs etc.

This project is funded by DBT/Wellcome Trust India Alliance and led by Dr. Shweta Khandelwal

Evaluating Causal Relationship Between Regional Body Fat Distribution and Lipid Profile in Indian Population

The aim of the present study is to examine whether regional body fat distribution is causally associated with lipid levels in Indian population. We will first identify the genetic variants associated with adiposity and lipid traits to derive instrument variables based on allelic scores and then use them as proxy for exposures and outcomes in examining the causal pathways using bi-directional Mendelian Randomization approach. The objectives of the study are listed below:

1. Identify genetic variants associated with regional body fat distribution and lipid levels in Indian population for developing reliable

instrumental variables (IVs) based on allelic risk scores.

 Examine causal relationship between regional body fat distribution and levels of lipids and apolipoproteins using bidirectional Mendelian Randomization (MR) approach using IVs based on allelic scores.

We will be generating genome-wide data on intensively phenotyped "CARRS cohort study" participants using a recent GWAS chip named Global Screening Array (~640,000 markers) to identify India specific markers. We will also utilize the available cardio-metabochip data (~200,000 markers related to cardiometabolic traits) on wellphenotyped data from "Indian Migration Study" in order to validate the loci of interest. Therefore, this will collectively help in deriving allele scores to be used as genetic proxies for the traits to be examined on the causal pathway i.e. body fat distribution (exposure) and lipid levels (outcome).

Thegenome-wideresourcethatwouldbegenerated through this fellowship grant will address multiple research questions and will ensure long term research activities in genetic epidemiology in India. The findings from the proposed study will provide evidence for the causality between increased regional adiposity and raised levels of lipids. This will help in formulating public health interventions and clinical management of the high risk patients and will address the growing burden of cardiometabolic disorders.

This project is funded by Wellcome Trust/DBT India Alliance and led by Dr. Gagandeep Kaur Walia

Epidemiology of Comorbid Cardiometabolic Conditions and Depression in Indian Population

Aim of the study is to examine longitudinal patterns of association between cardiometabolic conditions and depression and their associated determinants in adult Indian population. Study Design: 2700 adult participants will be selected from population-based cohort, Centre for cArdiometabolic Risk Reduction in South-Asia (CARRS) surveillance study from Delhi and Chennai based on presence/ absence of cardiometabolic conditions and/or depression. They will be followed up longitudinally twice during the course of this fellowship. Information will be collected on traditional risk factors such as lifestyle factors along with psychosocial risk factors. Biomarker assessment will be done using blood samples. As a secondary analysis, findings will be compared with data from an independent dataset of migrant Indians.

Examining comorbidity of cardiometabolic conditions (CMCs) with depression, rather than narrowly focusing on "hard" CVD outcomes, has substantial public health relevance as these CMCs are associated with functional limitations. are highly prevalent at population-level, and can be monitored and managed to preempt the occurrence of sequelae. Not all CMCs may have similar associations with depression and epidemiological risk factors may also vary, putting certain groups at higher risk. Building this evidence and identifying risk factors will have public health significance. It will give impetus to patient-centered care where comorbidities are managed simultaneously as disease-specific interventions are flawed and insufficient.

This project is funded by DBT/Wellcome Trust India Alliance and led by Dr. Aastha Aggarwal

Atman: Adaptation and Evaluation of a Psychosocial Intervention for Self-Harm in Youth

The overall goal of the proposal is to adapt and evaluate an evidence-based psychosocial intervention for self- harm in youth that can be delivered by counsellors. The specific goals of first phase are: To adapt an intervention by:

- Identifying specific components to address individual, peer and family targets for symptomatic recovery in youth who self-harm
- Describing domains of psychopathology and targets to address in Indian youth with selfharm
- Integrating additional contextual information within the intervention framework to improve its acceptability and effectiveness
- Evaluating acceptability and feasibility of the

intervention The specific goal of the second phase is to evaluate effectiveness of the intervention delivered by the counsellors in reducing self-harm thoughts and behaviour in youth.

The objective is to adapt a psychosocial intervention to prevent recurrence of self- harm behavior in young people. Self-harm is the clearest antecedent of later suicide and given this, the proposal is a timely one. Rates of suicide in India have shifted with economic development with a rising rate of suicide evident in young men particularly in the more developed south of the country. And in young women suicide has overtaken maternal causes globally as a major cause of death. This is to a large extent driven by the high rates of suicide in young women in South Asia. A study found suicide to be the second leading cause of death in the 15 to 29 years age group in India.

This project is funded by DBT/Wellcome Trust India Alliance and led by Dr. Shilpa Aggarwal

Prenatal and Postnatal Exposure to Pesticides and Neurodevelopment of Infants: Findings from Dhani Cohort

We propose to find the association of inutero and early life pesticide exposure to the infant's neurodevelopment at 12 months of age. The proposed study has been planned on a cohort (DHANI) of an ongoing clinical trial in Belgaum, Karnataka. DHANI (Maternal DHA Supplementation offspring and Neurodevelopment in India) is examining the effects of in-utero and early life DHA exposure (through maternal supplementation) on postnatal neurodevelopment and body-size of Indian infants (NCT01580345). Biochemical samples already collected so far at 4 points (baseline,

delivery, 1 & 6 months postpartum) under DHANI would be utilized to assess pesticide exposure by QuEChERS (quick, easy, cheap, effective, rugged, and safe) method. The objectives are: 1. To examine the association between the pesticide organochlorine (OC), organophosphate (OP), synthetic pyrethroids (OC, OP & SP) residue levels detected in cord blood as well as breast milk with the DASII score assessed at the age of 12 months. 2. To estimate the correlation between the pesticide organochlorine (OC), organophosphate (OP), synthetic pyrethroids (OC, OP & SP) residues in maternal blood and the extent of its transfer in cord blood, secretion in the breast milk and infant blood at 6 months.

The study would help us in:

- Narrowing down to the pesticide compounds the study population is highly exposed to, from 29 subclasses of pesticides of 3 groups (OC, OP and SP).
- Tracing back to the utilization and application practices of the pesticide of interest would give the cause of exposure which could be – unrestrained use, lack of awareness among farmers about standard procedures, usage of low-quality equipment and lack of protective gear.
- The association of development quotient with any of the 29 pesticide residues would indicate the specific group or pesticide compound towards which the infants are more vulnerable.
- Determining the pesticide groups which can cross the placental barrier and affect or interfere with the in-utero life of a fetus.

This project is funded by Science and Engineering Research Board (SERB) and led by Dr. Monica Chaudhry

Ramalingaswami Centre on Equity and Social Determinants of Health (RCESDH)

The Public Health Foundation of India (PHFI) launched the Ramalingaswami Centre on Equity and Social Determinants of Health in 2010. The Centre's goal is to improve the health of India's population by reducing health inequalities, focusing particularly on socioeconomically disadvantaged groups. The Centre intends to achieve this goal through high quality research, training and policy development related to social determinants of health.

The Ramalingaswami Centre on Equity and Social Determinants of Health was established with funding from the V. Ramalingaswami Foundation. Prof. Gita Sen, Director, is leading the Centre from PHFI's established research hub at Bengaluru.

The Centre has four major projects underway.

Equity, Social Determinants and Health Outcomes

Reproductive health has seen considerable expansion and greater policy focus since the 1990s. In this project, we deepen investigation into two areas of prior research that impinge on the larger issues of quality of care and effectiveness: the importance of attention to antenatal risk; and respectful maternal care. We pay particular attention to multiple dimensions of inequality in the context of the work on respectful maternal care.

The project is aligned with the National Health Mission, and in particular, its focus on maternal and reproductive health. The project supports public health in the country by providing in-depth analysis to support improvements in respectful maternal care; has developed a tool for antenatal care support that can be used at the state level; and will provide fresh insights for advancing health equity to improve the health of the most disadvantaged women and girls.

During the past year, in-depth qualitative analyses were conducted of the data collected from teaching hospitals, lower level urban clinics and rural health institutions. Additionally, equityfocused quantitative analyses of survey data on the experience of (dais)respectful and abusive obstetric care in two districts of Karnataka were also underway. Papers are being drafted based on these analyses. A paper based on our experience of implementing a tool to improve the quality of antenatal clinical assessments was recently published (Srinidhi V, Karachiwala B, Iyer A et al. 'ASHA Kirana: When digital technology empowered frontline health workers' BMJ Global Health 2021; 6:e005039).

This project is funded by Bill & Melinda Gates Foundation and led by Prof. Gita Sen

Regional Mentor Institute (RMI)

The Centre won a major international bid and was appointed a Regional Mentor Institute (RMI) by WHO's Alliance for Health Policy and Systems Research in 2019. The RMI's remit is to advance thinking and work on gender and intersectionality in health policy and systems research (HPSR) through a fellowship programme and an online course.

During the last year, nine early career Research Fellows from the SEARO region were helped to integrate an analytical focus on gender and intersectionality into their HPSR projects through a process of continuous mentoring and two online workshops.

An online course 'Gender equity and intersectionality in health policy and systems' with nine modules was also designed to run over 10 weeks. It combines lectures and its embedded videos and podcasts with case studies, reading material and assignments to support individual learning. Feedback received from a pilot with a diverse group of researchers, lecturers, students, professionals and practitioners mainly from the SEARO region has been positive and constructive.

This project is funded by WHO's Alliance for Health Policy and Systems Research and led by Prof. Gita Sen

Evidence Synthesis on System-Level Issues and Interventions from Medical Education/ Training through Organization of Care in the Respectful Maternity Care Context

The scoping review of interventions that have addressed the organisational factors that work against respectful maternity care has been underway and is nearing completion. The review is being done in collaboration with WHO-HRP, Geneva.

This project was funded by WHO and led by Prof. Gita Sen

Migrants on the Margins: Intersecting Labour, Economic, Gender, and Health Disadvantages

The three primary objectives of the proposed study are to examine nationally representative survey data for patterns of women's temporary migration, work, income, and health, to explore how these factors intersect in the individual experiences of purposively selected participants, and to identify and describe the larger contexts in which health is produced.

Fieldwork was interrupted by the Covid-19 pandemic but is expected to restart by the end of 2021; about six months of work remain. One manuscript on the linkages between labour, income, health and healthcare seeking has been submitted to the Journal of Migration and Health (currently under review).

It is hoped that study findings will have practical consequences in terms of recommendations for the development and implementation of effective health interventions targeting this mobile population.

This project is funded by Azim Premji University and led by Dr. Abha Subba Rao.



South Asia Centre for Disability Inclusive Development & Research (SACDIR)

South Asia Centre for Disability Inclusive Development & Research (SACDIR) is a **Centre of Excellence** established under the aegis of the Public Health Foundation of India (PHFI) in technical collaboration and support from the London School of Hygiene and Tropical Medicine (LSHTM), and its component institution, the International Centre for Eye Health (ICEH), London, UK. PHFI is registered under the Societies Act and has been structured as a public-private partnership supported by the Govt. of India and the State Governments of Andhra Pradesh, Delhi, Gujarat, Karnataka and Odisha.

VISION: Public health interventions for improved quality of life and health outcomes of persons with disability

MISSION: Inclusive millennium- evidence and action for empowering persons with disabilities by enhancing research and human resource capacity

Ongoing Projects of SACDIR

1. Development of a Minimum standards framework for the provision of therapy services for the disabled in Tamil Nadu:

The aim of the project is to help in streamlining and regulating therapy service provision for persons with disabilities in the state of Tamil Nadu as well can be replicated for other states.

2. Adolescent Injury and Violence Detection (AVID)

The aim of this project is to develop a tool using Artificial Intelligence (AI) to detect adolescents at-risk of experiencing violence and injuries. This application focuses only on Phase I of a multi-phase project. The project is funded by Johns Hopkins School of Public Health

3. Operational Research Capacity Building

The aim of the project is to increase and strengthening the capacity of the available staff for Operational Research which in turn will help in evidence generation. In short, a step forward in reducing the unmet need of operational Research Capacity Building. The project is funded by Seva Foundation, USA

4. Strengthening of Cancer care plan for the state of Andhra Pradesh

The aim of the project is to strengthen Andhra Pradesh State's own cancer plan contextualized to local priorities and learning's from global best practices / models; co-create tangible interventions for implementation at the state level and to develop a robust advocacy plan and engage with policy makers/ decision makers. The project is funded by RIHI India

5. A Comprehensive Cancer Care Plan Development and Advocacy Engagement for the State of Telangana

The aim of the project is to develop a comprehensive cancer plan that is contextualized to the priorities of the state of Telangana, the project seeks to complements the state government's initiatives to deliver high-quality, affordable cancer care services. The project is funded by RIHI India

6. Multi-centric Task Force project "Study of impact of exposure to Ultra Violet Radiation (UVR) & aerosol exposure on ocular health in India Phase-II"

Project aims to assess the association between the exposure of Ultraviolet Radiation (UVR), and aerosols with cataract, dry eye, pterygium in adults and VKC in children in urban areas of India. (Vishakhapatnam & Hyderabad). The project is funded by Indian Council of Medical Research (ICMR)

7. Indian Health Outcomes Public Health research and Economics (I-HOPE)/ Centre for Health Outcomes Research and Economics (CHORE)

The project aims to generate new knowledge and disseminate the best practices in clinical research, health economics, and public health in vision sciences through big data , create a pool of trained clinician scientists with expertise at the intersection of the above domains Develop a training centre for clinicians to assess and perform research, evaluate cost-effectiveness, and analyze big data, The Project is funded by DBT/Wellcome Trust India Alliance

8. Active Bleeding Control (ABC)

The aim of ABC is to reduce injury related mortality and morbidity by creating trained bystanders with basic skills to keep victims with active bleeding to be alive until professional help arrives. The project is funded by UPIASI

9. COMMUNITY EYE HEALTH JOURNAL (CEHJ) SOUTH ASIA:

The Objective is to publish the South Asia supplement of the Community Eye Health Journal which collates and disseminates evidence on best practices for prevention of avoidable blindness and visual impairment. The project is funded by Tijjsen Foundation



(The detailed reports of these projects are provided under IIPH HYDERBAD section)

CENTRE FOR ENVIRONMENTAL HEALTH (CEH)

Exposures to environmental pollution remain a major source of health risk throughout the world, though risks are generally higher in developing countries like India, where poverty, lack of infrastructure, and weak environmental legislation combine to cause high pollution levels.

According to the World Health Organization, 23% of global deaths and 26% of deaths among children under five are due to modifiable environmental factors. A significant proportion of the environmental disease burden is attributable to risks including poor ambient and indoor air quality, unsafe water, poor sanitation and hygiene, exposure to toxic chemicals, and climate change. According to the 2013 Global Burden of Disease India Report, high blood pressure, indoor air pollution, tobacco smoking, poor nutrition, and outdoor air pollution are the five biggest killers in India.

To understand and to address the environmental health burden of disease in India, the Centre for Environmental Health was established in May 2016 with support from Tata Sons and Tata Consultancy Services. It is based at the Public Health Foundation of India (PHFI) in partnership with the Tata Institute of Social Sciences (TISS), Mumbai.

The major projects carried out by the CoE are:

Climate Health and Air Pollution Research in India (Chair India): Addressing Gaps in Achieving Sustainable Development Goals

The overarching aim of this project is to realize sustainable goals on a global level linking air pollution and climate change with health

Objectives are : 1. To develop a nation-wide exposure model for daily ambient PM2.5 and ambient temperature from 2008-2020 at a spatial resolution of 1 km x 1 km and locally at 200 m x 200 m in India; 2. Link our national estimates of PM2.5 and temperature to health data to quantify the associations between PM2.5 and ambient temperature, independently and jointly on the following major public health endpoints: Total Mortality. Cardiometabolic outcomes: Luna function outcomes; 3. Create a public website with environmental data on a 1 x 1 km grid that can be used by planners, policy makers and general public to increase awareness and aid decision-making; 4. Specifically engage with key stakeholders using a dedicated communications strategy that will increase the efficiency of the project, disseminate results well beyond the scientific community and facilitate translation of project deliverables into policy action

In an international multidisciplinary consortium of leading experts, we will leverage cutting edge methodologies already developed for Delhi using multiple sources for 1x1km predictions of fine particulate matter pollution and temperature across India. The exposure information will be linked with important health outcomes. To foster public awareness, collaboration and policy change, we will provide an interactive web-tool, open access environmental data and an ambitious stakeholder communications and engagement strategy. This will contribute to sustainable development by filling critical gaps in the evidence base for air pollution-temperaturehealth effects benefitting both the large Indian population and global community.

- 1. Air pollution data collection:
 - a. Collection of governmental ground monitoring data complete. More data may be added from CPCB and IIT-Mumbai
 - b. Processing of the data is ongoing. Geocoding final recheck ongoing
 - c. Smaller grid creation for city studies ongoing
 - d. Looking into collecting country wide shapefiles from Survey of India

- 2. Temperature data collection:
 - a. Data collection from freely available sources complete. QA/QC ongoing
 - b. Waiting for payment of Meteomatics invoice to download remaining stations
- 3. Data collection for modelling exercise:
 - Meteorological, population and land use data is downloaded and processed. FST files created.
 - b. Different satellite data products are being processed currently.
- 4. Modelling exercise for PM2.5: Calibration of PM2.5 and PM10 is ongoing.
- 5. Health association studies:
 - a. Data collection of all cause mortality in progress
 - NFHS wave 4 & LASI pilot data collected, complete dataset of wave 5 of NFHS awaited and LASI's geospatial data is awaited.

This project is funded by Swedish Research Council though a sub-grant from Karolinska Institute and led by Dr. Poornima Prabhakaran

Elearning Courses for Climate Change & Health

The key objective of this project is to increase opportunities of self-paced training on key climate change and health topics for professional staff in ministries of health and in sub-national public health and health-care organizations. These professionals need highly targeted and relevant material to be made available in an interesting, engaging and easy to access format and their engagement with such material tracked to meet the goals around quality capacity building. Further, it has been established that there is a need for contextualized and usable guidance that meets the needs of diverse users (from policy development, funding, evaluation, implementation and other decision makers). The course on is designed to meet the training needs of staff of technical units, policy makers, in various countries and also staff of WHO in these countries who are responsible for handholding the various stakeholders in implementing WHO's climate change program objectives. Each course (on topics as listed below) comprise of a set of modules which are delivered in a self-paced format. Each course is for a duration of approx. 2 hours comprising of modules not exceeding duration of 30 minutes each and hosted on the OpenWHO.org platform (https://openwho.org/ courses). The topics include: Climate Resilient Water Safety Planning, Climate Resilient and Environmentally Sustainable Healthcare facilities, Integrated Disease Surveillance and Early Warning Systems, Health National Adaptation Plan (HNAP) development process, and Climate Change & Health Vulnerability and Adaptation Assessments

The project would help accelerating the progress on climate change and health interventions and capacity building front for climate change professionals. The development of eLearning modules on Climate Change and Health is crucial to enhance knowledge on the climate change impacts of health and ways in which these impacts can be mitigated.

The project is funded by WHO-SEARO and led by Dr. Poornima Prabhakaran

Environmental Toxicants, Child Development and School Readiness: A Preliminary Study With Intra-Familial Exposures in Communities Affected by Battery Recycling Facilities in Patna, Bihar

The overall objective of this study is to estimate the relationship between two contextually important pollutants, lead and PM2.5, and child development in preschool children from communities living near lead acid battery recycling facilities, considering the exposure and health of the primary caregivers. The study will be conducted in Patna, Bihar, where informal used lead acid battery (ULAB) recycling or repairing operations are often located in densely populated residential areas with minimal safety precautions in place.

This is a community-based, cross-sectional study of preschool children and their primary caregivers from low-income households in Patna.



Pictures (from top L-R): 1. field staff setting up air quality monitor for PM2.5 measurements; 2. winter air monitoring in one study site with known Used-Lead Acid Battery (ULAB) recycling facilities; 3. Dusttrak air quality monitor; 4. 7-days continuous monitoring was conducted in five study sites in Patna

Data collection for this study is on-going and will soon be concluded. We conducted household and individual-level surveys with the primarycaregivers, the index child and the siblings. Information was collected on household income, assets, other socio-demographic indicators as well as questions on indoor air quality, time spent outside by child, pregnancy, health and breastfeeding history. We also asked relevant information to understand potential COVIDrelated effects on economic, educational and child factors.

We conducted 7-days continuous PM2.5 monitoring at five study sites from January-February, 2021 using an optical photometer (DustTrak).

The on-going study will provide data on child and adult exposures as well as estimates of burden on families living in areas where informal recycling takes place. Preliminary data on toxicant-associated child developmental deficits in preschool years will inform large-scale longitudinal studies including child and familycentric interventions to improve later cognitive and behavioural outcomes in exposed children. Based on this pilot work, we have received funding from DBT/Wellcome Trust India Alliance to conduct a longitudinal follow-up study (titled ECD-Urban pollution; 2021-2026) to assess the independent and combined effects of overlapping threats of multiple environmental hazards including air and lead pollution in preschool and pre-primary children in Patna.

The study findings will help with data on children's exposure to lead and PM 2.5 and the associated health impacts. This can help in strengthening the national policy to reduce exposure especially from lead-acid battery recycling sites. The findings related to child school readiness can also provide critical information and feed into national education and health policy. Insights into the health impacts can also help advocate for rehabilitation programs for families engaged in informal recycling practices.

The study is funded by the Centre for environmental Health under its Research Development Grant program and led by Dr. Aditi Roy

Climate Change and Health

PHFI conducted a comprehensive review of the secondary literature on climate change and health in India. The study findings were documented in the form of a report, and delivered the same to PDA and UNDP. PHFI incorporated suggestions from PDA, UNDP, and other subject-matter experts on the completed draft of the report, and delivered the final version to PDA and UNDP.

This project was funded by Professional Development Associates, Inc. and led by Dr. Poornima Prabhakaran

WHO-IEC Manuals on Air Pollution

As per the India State-Level Disease Burden Initiative, India has disproportionately high mortality and disease burden due to air pollution. Air pollution has become one of the greatest environmental health risks affecting the health and well-being of the population of the country. Vulnerable population groups including traffic police personnel, municipal workers, women living in rural areas and children are at a higher risk of suffering from health risks and consequences of poor air quality. In this project, flipcharts and training manuals were developed in Hindi and English to provide cues to action to motivate the target group for adoption of healthy behaviors and disseminate key strategies to cope with health concerns linked to air pollution.

Community-Level Training for states & UTs on Air Pollution & its Health Impact on Women & Children for 'International Day of Clean Air for Blue Skies' was held on 7th September 2020. This was organized by the National Program on Climate Change and Human Health (NPCCHH), National Centre for Disease Control (NCDC), Ministry of Health & Family Welfare, Government of India. The IEC materials developed by the Centre for Environmental Health at PHFI were used by our master trainer to train district and other health officers for conducting awareness sessions about impact of air pollution on health at the community level. The expected impact is to equip vulnerable population groups with information about air pollution and measures to reduce its impact on their health.

This project was funded by World Health Organization (WHO) and led by Dr. Poornima Prabhakaran.

A Multi-Site Study on Environmental Risk Factors for Gallbladder Cancer, and Mediating Role on Reproductive Factors and Diet

Gallbladder cancer (GBC) is a highly lethal cancer site with limited opportunities for early detection curative treatment, disproportionately and affecting women (up to 3 times more than men) with substantial geographic variations. The highrisk regions of India extend across the states of Assam, Bihar, Punjab, Haryana, Himachal Pradesh, New Delhi, West Bengal, Uttar Pradesh, Uttarakhand, Manipur and Jammu and Kashmir, affecting relatively younger population than the western counterparts. Especially little is known about the etiological mechanisms and modifiable risk factors of GBC. A few identified modifiable risk factors such as obesity, chronic typhoid infection, gallstones and reproductive factors or genetic susceptibility are unable to fully explain GBC patterns. Evidence reveals that ground water in these regions is polluted with pesticides (particularly organochlorines) and heavy metals (particularly arsenic) way above the safe limit prescribed by the World Health Organization. Unique environmental risk factors (e.g., chronic ingestion of contaminated ground water) may partly explain this burden, however evidence to

date is very limited. Realizing the gap in evidence, we set-up a hospital based case-control study, matched for age, sex & region, for GBC in two of the highest burden regions of India (Assam and Bihar) to investigate the association of pesticides and arsenic for GBC risk and explore the mechanisms by investigating the mediating role on reproductive factors and diet. The study aims to generate preliminary data and the findings may identify areas of future research for full-scale validation studies evaluating prevention of GBC, leading to policy implications. The public health relevance of this project stems from addressing modifiable and targetable, yet understudied etiological factors and mechanisms, for a highly lethal cancer site in one of the highest burden populations across the globe. It aims to generate preliminary data; and the findings may identify areas of future research for a full-scale study evaluating prevention of GBC that currently is detected late, is largely untreatable and is disproportionately killing women in reproductive age group. According to the state-level cancer burden assessment, GBC is one of the top 10 priority cancer sites in India. Thus, limited data on risk factors and disease mechanisms need to be addressed as the first step for any relevant public health implication.

Currently, the primary data collection from the field sites and laboratory analyses of biological samples for environmental bio-monitoring are completed. Data cleaning and management followed by data analysis and manuscripts writing are in progress. This will help set-up the evidence-based platform for future work.

The study is funded by the Centre for environmental Health under its Research Development Grant program and led by Dr. Krithiga Shridhar

Capacitate Adolescent and Youths to Negotiate Behaviours on Health, Nutrition and Gender-Based Components (E-Garima Project)

This social and behaviour change intervention is a part of the e-garima programme of UNICEF that aims to address a wider ambit of nutritional security among adolescents and young adults. We adopted an integrative and holistic approach to environmental health by broadening the current scope of this initiative by focussing on the capacity of a socially motivated volunteer cohort as well as encourage them to engage with the broader policy discourse through this intervention. This is being rolled out in collaboration with UNICEF, NSS and the PHFI Lucknow team.

The Objectives of the project are:

- a. To identify and utilize localized information channels and change agents to introduce context-appropriate behaviour aimed at addressing issues pertaining to Water, Sanitation and Hygiene (including Menstrual health and hygiene) and other environmental exposures such as air pollution
- b. To integrate content on various environmental exposures that are associated with nutritional uptake, adolescent and reproductive health
- c. To build capacity of peer educators on WATSAN and MHM to increase the reach of the programme and for its overall sustenance.
- d. To disseminate information, education and facilitate an environmental health risk communication with beneficiary groups through an e-learning platform

So far, we have been able to understand the viability and the design modalities of the roll out through a formative study conducted among 7000+ volunteers. We have designed the structure of the training programme along with pertinent collaterals. The first module on adolescent health including menstrual health has been uploaded on the e-learning platform and is ready for roll out. The second module on Nutrition is partly ready and currently being designed on the platform. Five gamified elements have been conceptualized and being designed with the software partner for roll out. The last module on WASH and solid waste will be designed over the next few months.

Through this programme we aim to instil healthy approaches among the target group and intuitively facilitate peer learning. The programme offers the opportunity for a socially motivated cohort to engage with various local and regional stakeholder who are responsible for rolling out grass-root programme and initiatives.

This sub-objective of the UNICEF supported project is led by Dr. Poornima Prabhakaran.

CENTRE FOR DIGITAL HEALTH (CDH)

Cardiology Masterclass – Clinical Grand Rounds (CGR) & Journal Clubs (JC)

Cardiology Masterclass is a specialized educational program to provide new & practical knowledge in the field of cardiology. It is directed towards clinical cardiologists & those in training (DM and DNB and aspiring cardiologists). Eminent leaders, specialist and experts from the field are involved. The program comprises of Clinical Grand Rounds and Journal Clubs which is conducted alternately every fortnight on a Friday/Saturday evening. The core purpose of the Clinical Grand Rounds is to use clinical material to educate participants on the wide spectrum of clinical presentations of heart disease using a standardized pedagogic process. The program content is designed to enable prospective cardiologists to acquire strong foundations in all aspects of cardiology and enhance presentation skills. The journal club is specifically designed with a view to provide the participants with the tools and skills to enable them to accurately interpret published literature and apply to their patients and practice. Also, this will help cardiologists in training to develop vital research skills that are required in developing and conducting studies for their thesis.

The program intends to widen the horizon of cardiology training in the country and instill confidence among young minds to become future leaders. The refined clinical skills of the young cardiologists will improve their diagnostic accuracy resulting in better care. Research exposure will increase understanding of clinical medicine, facilitate critical thinking and critical appraisal and increase exposure to best clinical minds. This multi-disciplinary approach of the program to improve clinical and research skills would result in a trained cadre of health workforce who can combat rising burden of the CVD morbidity and mortality, thereby building a healthier society in the long term.

The Cardiology Masterclass program includes prominent leaders in the field of Cardiology with

Prof S C Manchanda as a Program Chair, and Prof Anita Saxena, Prof S S Kothari and Prof C N Manjunath as Program Co-chair(s). Other renowned Cardiology Experts from across the country are also on the panel. A National Program Coordination Committee of 12 young cardiologists was formed to assist in the seamless coordination and conduct of the sessions.

The Cardiology Masterclass was launched successfully on 5th of March 2021. The program has successfully conducted nine Clinical Grand Rounds and four Journal Clubs, all of which have been well received. So far, 423 DM/DNB Cardiology trainees have registered in the program. A total of 270 (64%) of the registered trainees are DM fellows, while 153 (36%) are DNB trainees. There is almost equal representation of public (48%) and private (52%) sectors among registered fellows.

The project is funded by Sun Pharmaceuticals and led by Prof. Dorairaj Prabhakaran

Endocrinology Masterclass – Clinical Grand Rounds (CGR) & Journal Clubs (JC)

Endocrinology Masterclass is a specialized educational program to provide new & practical knowledge in the field of endocrinology. It is directed towards clinical Endocrinologists & those in training (DM and DNB and aspiring Endocrinologists). Eminent leaders, specialist and experts from the field will be involved. The program comprises of Clinical Grand Rounds and Journal Clubs to be conducted alternately every fortnight on a Friday/Saturday evening. The core purpose of the Clinical Grand Rounds is to use clinical material to educate participants on the wide spectrum of clinical presentations of heart disease using a standardized pedagogic process. The program content is designed to enable prospective Endocrinologists to acquire strong foundations in all aspects of Endocrinology and enhance presentation skills. The monthly journal club is specifically designed with a view to provide the participants with the tools and skills to enable them to accurately interpret published literature and apply to their patients and practice. Also, this will help Endocrinologists in training to develop vital research skills that are required in developing and conducting studies for their thesis.

The program intends to widen the horizon of Endocrinology training in the country and instill confidence among young minds to become future leaders. The refined clinical skills of the young cardiologists will improve their diagnostic accuracy resulting in better care. Research exposure will increase understanding of clinical medicine, facilitate critical thinking and critical appraisal and increase exposure to best clinical minds. This multi-disciplinary approach of the program to improve clinical and research skills would result in a trained cadre of health workforce who can combat rising burden of the CVD morbidity and mortality, thereby building a healthier society in the long term.

Prof Nikhil Tandon is the current Program Chair of the Endocrinology Masterclass, with Prof Anil Bhansali and Prof Subhankar Chowdhury as Program Co-Chair(s). The Endocrinology Masterclass also has an advisory board of eight well-known Endocrinologists from different parts of the country. Till date, 109 fellows have been registered in the program, with 36 (33%) females and 73 (67%) males. DM trainees account for 91 (83%) of the 109 registered trainees, while DNB trainees account for 18 (17%). In addition, 60 (55 %) work for the government, while the remaining 49 (45%) work in private practice.

On 23rd July 2021, the Endocrinology Masterclass was launched successfully with the first Clinical Grand Round. There have been four clinical grand rounds and two journal club conducted so far.

The project is funded by Sun Pharmaceuticals and led by Prof. Dorairaj Prabhakaran

Digisahayam

Digisahayam is an assisted telemedicine solution being implemented by the Public Health Foundation of India (PHFI). PHFI has established telemedicine clinics with trained health personnel that help bridge current gaps in telemedicine and improves access to healthcare among poor and vulnerable populations living in remote, rural as well as urban locations.

Barriers in telemedicine today

- Challenges in accessing telemedicine services due to literacy, language or technological barriers among patients
- Lack of good clinical history, physical examination findings and laboratory parameters that aid physicians in evidence-based decision making
- Multiple innovations in digital health technology but no inter-operable system that puts them on a single platform

Our Solution

- Trained healthcare workers connect, convey findings, facilitate doctor-patient interactions and also prevent wasteful visits
- Trained healthcare workers collect history, perform physical examination and carry out lab investigations before initiating tele-consultation, thereby saving time and improving quality of care
- The PHFI telemedicine platform embeds electronic health records (EHR), point of care diagnostics (13 commonly used lab tests including ECG), in-built clinical decision support system and numerous state-of-the-art digital health technologies (including a digital stethoscope for remote auscultation and a physiciancontrolled high definition camera)

Innovation

- Health workers from local community
- Training in all aspects including basic life support

Doctors obtain data in real time about the patient in a curated manner. This includes both history and physical findings.

- Instant lab reports
- Summary of patient diagnosis and management plan. Using AI based on 25,000 case studies in the backend
- A whole range of services in a single platform

Star Arogya Digi Seva

This is a Digisahayam initiative supported as a part of CSR initiative of Star Health and Allied Insurance Company. It is expected to bridge the gaps between community, technology and digital healthcare through trained personnel; Approximately 6,000 specialist consultations, 12,500 general physician consultations and 15,000 point of care diagnostic tests including remote ECG is expected to be carried out over a period of two years; Will ensure continuity of care and longitudinal health data through use of inbuilt electronic health records: Generation of valuable data that can inform development of suitable insurance models for urban underprivileged and rural communities; Generation of livelihood opportunities through hiring of field staff from the local community; Considerable reduction of indirect healthcare costs related to travel and loss of daily wages; Prevention of complications through improved awareness, early detection and treatment, and timely referral thereby potentially avoiding instances of distress financing and catastrophic health expenditures; Decreasing the need for visits to hospitals that have become less accessible due to the COVID pandemic.

The first phase of implementation started in December 2020 and in the first two months the telemedicine platform was developed, and staff recruitment, baseline survey and trainings were held. Three clinics are currently function in Tamil Nadu - two in urban slum locations of Chennai city and one in the rural village of Pasuvanthanai in Thoothukodi district. Since February 2021, over 3500 patients have been provided free teleconsultations though these clinics, out of which 28% were provided free specialist care. Several collaborations have been made to conduct specialist camps with service providers such as Aravind Eye Hospital, Shankara Netralaya, Sri Satya Sai Central Trust and Lions Club of Chennai.

The project is funded by Star Health and Allied Insurance and led by Prof Dorairaj Prabhakaran



Setting Up a Regional Demonstration Site in India

More recently, the Digisahayam project has received support from the World Health Organization to set up a Regional Demonstration Site in India. In this project, two Primary Health Centres in Chikkaballapur district of Karnataka will be upgraded to provide assisted telemedicine solution. The project will be done in collaboration with WHO, Centre for Chronic Disease Control and State government of Karnataka. This project will be evaluated for adoption and scale-up in the South East Asian region.

The project is funded by World Health Organization and led by Prof Dorairaj Prabhakaran

Online Certificate Course in Management of Hypertension

This project is a collaboration between the American Heart Association and the Public Health Foundation of India. In this initiative, the Certificate Course in Management of Hypertension being implemented by PHFI will be adapted for online self-paced learning. The course will be hosted on the American Heart Association E-Learning Academy and will be open to healthcare providers across the World. The course is expected to go live in the first quarter of 2022.



OTHER HEALTH TECHNOLOGY PROJECTS

Deployment of Swasthya Sahayak System to Support Maternal & Child Health Initiatives of Govt. of India through NTPC CSR Support

PHFI intends to partner with NTPC to achieve following objectives:

- 1. To undertake digitization of the family health records in Blocks neighbouring NTPC plant.
- 2. Conduct screening of general population and facilitate further management of highrisk pregnancies using Swasthya Sahayak platform using application developed by PHFI. We will refer such cases identified to the Government facilities for further diagnostic and medical management. After the referral, the cases will be followed up to facilitate compliance with the medical advise.
- 3. Data collected during the duration of the project will be available live on a dashboard for policy level and administrative decisions

This project is funded by National Thermal Power Corporation Ltd and led by Dr. Sunil Saksena Raj

Development of Swasthya Sahayak to Align With "National Digital Health Blueprint"

With the support of Spectris Technologies ,PHFI has undertaken the below project to develop:

- Software application which is in alignment with the Government of India Technology platform-- developing the application in modular forms and ensuring they confirm to the minimal viable products for the platform.
- 2. Integrate multiple options for Identity management system to facilitate follow up and data retrieval by the user.
- A technology testing lab to test all components of the device after manufacturing to ensure supply of the fully tested devices for Quality assurance, to help in undertaking testing and minor repairs of all devices deployed in the field.

This project was funded by Spectris India and led by Dr. Sunil Saksena Raj

To Deploy Swasthya Sahayak Point of Care Kit in Rural Areas of Bangalore, on a Pilot Basis

Swasthya Sahayak Solution in association with the new RMNCH application "Maatr", being developed by Capgemini to provide diagnostic facility to the population;

- The Swasthya Sahayak device & diagnostic application will be provided to the users for use by frontline workers on lease for 3 months.
- Diagnostic test consumables (Hb, Sugar, Urine Protein & Sugar, HIV, Syphilis) will be provided with each device, for approximately 25 tests a month for 3 months.
- In the initial stage it is proposed that 10 devices will be provided on lease for implementation of the pilot. A budget for the same is presented.

This project is funded by Capgemini Technology Services India Limited and led by Dr. Sunil Saksena Raj

To Provide Access to Quality Affordable Diagnostics to The Rural Population Across the Country Through Common Service Centers, Being Run By CSC E-Governance Services

PHFI has signed an MOU with CSC e-Governance services to provide Swasthya Slates and training on conducting diagnostic tests to the Village level Entrepreneurs (VLEs) who manage the Common Service Centers located across the country. These VLEs provide multiple services to the rural population apart from health related services like Telemedicine Solution. They will be supported during State level training's and remotely. Their performance will be monitored and feedback provided to them and Ministry of IT.

Currently we have deployed devices in selected CSCs in the States of Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Himachal Pradesh. The required modification in the application has been successfully done and integrated with the CSC services. The initial feedback from the users and response on utilization has been very good.

This project was funded by CSC e-Governance Services India Ltd and led by Dr. Sunil Saksena Raj

Develop a Applicaion to Deploy Swasthya Sahayak as a Point of Care Device with Specific Focus on Providing Maternal and Child Health

PHFI has partnered with Procter & Gamble to achieve following objectives:

- 1) To generate employment opportunities for the females and construct "Swasthya Sakhi's".
- 2) To undertake screening of general population using Swasthya Sahayak platform. This will be done using application developed by PHFI. The application will help to register individuals, document responses to identify high risk cases. Data collected during the duration of the project will be available live on a dashboard for policy level and administrative decisions.
- 3) The basic diagnostics done will also screen the population for Hypertension and Diabetes and various other parameters using Swasthya Sahayak System, point of care diagnostics, on a selective basis, and refer them to nearest PHC/ CHC.

This project was funded by the Procter & Gamble and led by Dr. Sunil Saksena Raj

Project Dream-H (Digital Real-Time Advanced Medical Modular Logistics System—for Home Care)

Project DREAM-H aims to address the medical logistics needs of primary health care service provider at the point of need, the person's home. Project DREAM-H (Digital Real-time Advanced Medical Modular logistics system—for Home Care) is a portable, modular, multi temperature controlled ruggedized, stackable box to be fitted on to a two-wheeler (Honda Activa), top carry vaccines, blood samples, temperature sensitive medicines, other consumables, digital hand-held devices for health care management. Each box

will be color coded, with secure lock arrangement, and will be designed to be used as a standalone unit, with a recessed handle/ groove. The temperature inside the storage compartment of the box, will be maintained at 2 -8 degrees, and 15- 24 degrees depending on medical product for up to 6-8 hours. Real time temperature logging and syncing to the accompanying mobile digital device will be enabled. Outer dimensions of the boxes are fixed at 40*40 and 40*20 centimeters for length and breadth with height at increments of 20 centimeters. For Primary health care service, DREAM-H will be paired with Icon Based Structured Health Questionnaires (ISHQ) made available on a mobile phone platform for screening and managing health care conditions universally.

This project was funded by Honda Motorcycles and Scooters India Limited and led by Dr. Suresh Babu Munuswamy

MITH.AI or Mass Modular Integrated Transformational Health Care through Artificial Intelligence

This is a "comprehensive, convergent and customisable" digital platform designed and developed at Hi Rapid Lab for @ home rapid screening and real time management for socio demographics, economics, Water, Sanitation, Hygiene (WASH) issues, nutrition status, disability, and disease conditions.

USP - Unique Service Proposition: Home is considered as the service denominator. The broad USP (Unique Service Proposition) of MITH.AI is: (1) @ home primary health care; (2) Comprehensive primary health care and; (3) Real time primary health care. Specific USP of MITH. AI is: (1) 20- 30 X faster, reliable, automated, user friendly, universally implementable screening/ data collection methods; (2) Modular, granular, universally deliverable digital platform based interventions - software and hardware; (3) Edge AI that can in real time understand/ analyze input and customize specific individual, household and condition specific solutions; (4) custom developed two wheeler and drone based last mile supply chain platform for point of need universal

reach; (5) modular temperature controlled boxes to make available medicines, vaccines, collect diagnostic samples, other products and consumables on demand in any combination

Benefits: At system level, instead of waiting for people or patients to come to the health facility, proactively reaching the home of the person, addresses several service and system related issues simultaneously like: (1) universal health coverage (UHC); (2) focus on primary and primordial prevention; (3) provision of comprehensive and continuous care; (4) granular and longitudinal generation from source and (5) high accuracy prediction.

MITH.AI design and development has reached a critical mass stage where several components are ready for pilot field level validation studies (except a few modules). With due ethics approval a pilot study is scheduled for 2021.

This technology is developed by Dr. Suresh Babu Munuswamy

Sky Bridge – Modular Medical Drone Delivery Platform

PHFI – Public Health Foundation of India's SKY BRIDGE program aims to improve access to vaccines, lab samples and medical products in rural, remote, and hard-to-reach areas. Through collaboration with state governments, the private sector and startup companies the program aims to design and develop a viable platform of drones/ UAV (Unmanned Aerial Vehicles) that can be integrated into government health systems, thereby ensuring time (and life) savings compared to traditional delivery systems.

Public Health Foundation of India is an expert in building and managing proof-of-concept flights that can further guide decisions to invest and scale up fast, the implementation of drones/ UAV's for middle and last mile medical logistics. In collaboration with state governments of Telangana, Arunachal Pradesh, Gujarat we are beginning beyond visual line of sight drone trials initially, that will be scaled to regular services.



Developing the Drone Ecosystem

PHFI's commitment goes beyond flying drones and in to building the entire ecosystem and operation models that can help scale up and sustain the drones for health care concept and turn in to an everyday and possibly everywhere and every need service. Concrete actions include networking and joint development between stakeholders. We are continuously working with WEF – World Economic Forum, CII – Confederation of Indian Industries and NITI AAYOG, India's premier government think tank to start the engagement and sensitize bureaucrats of several state governments. As part of this process a delegation from PHFI and WEF recently met the chief secretaries and health secretaries of several north east states including Assam, Arunachal Pradesh, Manipur and Meghalaya. Virtual meetings were held with the state government representatives of Gujarat, Jharkhand, Karnataka and Mizoram.



Building Drone – Field Trials – With Payload



Building Drone- Field Trials



Field demonstration at Gujarat University Startup and Entrepreneurship Council (GUSEC):

On August 2nd, 2021, PHFI-Hi Rapid lab team and Marut Drone team together presented the Sky Bridge project and gave a field demonstration of the drone flying with internal payload and temperature controlled boxes to Mr. Nagarajan, Director, Higher Education Department, Gujarat and Mr. H.A.Pandya, Vice-Chancellor of Gujarat University. **PHFI and (WEF) World Economic Forum has convened Industry Core Group (ICG)** to facilitate long term investments and scale up the drone services fast with supportive regulations. The first meeting was held on 25th June, 2021 with participation from representatives of Novartis, Reliance, Apollo, Boeing and several startup companies. Snap shots of PHFI and WEF reports on drones are highlighted below.

This technology is developed by Dr. Suresh Babu Munuswamy





TECHNICAL ASSISTANCE FOR HEALTH SYSTEM STRENGTHENING

1. TB screening performed in collaboration with Fujifilm mobile service at Targeted Intervention catchment area in Dehradun – supported by TSU

Setting Up Technical Support Unit (TSU) for Providing Technical Assistance to State AIDS Control Society for the Implementation of National HIV/AIDS Control Program

Public Health Foundation of India (PHFI) is supporting National AIDS Control Organization (NACO) in five states of the country i.e., Jharkhand, Gujarat, Rajasthan, Uttarakhand, and Uttar Pradesh through Technical Support Unit (TSU). These TSUs support the respective State AIDS Control Society (SACS) to plan, implement, supervise, and monitor the HIV/AIDS program in these respective five states. The TSUs are involved in the end to end strengthening of HIV/ AIDS service provision and delivery, through strategy development, planning, data analytics and real time monitoring of the program on the ground. TSU conducts capacity building activities, provides on-site supportive supervision to ensure effective implementation of the program in the field and reach out to the beneficiaries for support.

On an average every year around 11 lakh KPs had been reached out. PHFI has achieved good performance on its mandated work and has taken additional relevant work in the states such as strengthening service delivery for prevention of Tuberculosis and Hepatitis, support to the KP in the COVID-19 situation. During the national lockdown, the TSU teams have taken the initiative to help the KP by providing free masks, sanitizers and liquid soap. At present TSU ensures free dry ration by the Government is received by sex workers. The TSUs have also taken up the responsibility to keep in touch with KP virtually to help them cope with their mental stress, which has been well perceived in the field by the key communities.

This project is funded by National AIDS Control Organisation (NACO) and led by Dr. Preeti Kumar



2. NACO and TSU at Jaipur providing hand holding support to TI NGO



3. HIV prevention awareness program under Employer Led Model program conducted for migrant workers in Rajasthan



4. FSW hotspot validation by TSU team under mapping exercise



5. Transgender community being oriented by TSU team about mapping exercise under NACO guidelines in Uttarakhand



6. MSM and TG community at Gujarat being explained about Partner/ Spouse HIV testing



7. HIV testing camp under community based screening and Hepatitis C testing in Uttar Pradesh



8. In Jharkhand, migrant workers being oriented about HIV prevention

Sahyog- Capacity Building Support to NACO (GFATM)

In the wake of the UNAIDS 95-95-95 fast track targets, NACO adopted the 'National Strategic Plan (NSP) for HIV/AIDS and STI (2017-24).' The NSP sets the tone, strategies and priorities for future course of the NACP, which in turn underscores the need for a comprehensive capacity building of NACP workforce at the national (NACO), state (SACS, TSUs, PLHIV Networks), district (DAPCUs, PLHIV Networks) and sub-district (TIs) level. Towards this end, NACO, has developed and field tested a comprehensive training module, covering all components of the NACP, including programmatic, administrative, finance, and procurement functions. A consortium, led by HLFPPT, with PHFI and FH India as SSRs, has been shortlisted as Sub Recipient for NACO Grant under the Global Fund for the period 2021-24, to take forward the NACO's capacity building agenda. Salient features of the Consortium's methodology for comprehensive, integrated and cross-cutting capacity building of NACP workforce are:

- a) Recruitment of Master Trainer to conduct all trainings
- b) Recruitment of Program officers to be seconded at NACO
- c) Five days TOT for pool of Master Trainers (Offline Training)
- d) Two-day Program Development Workshop for Project Directors and Additional Project Directors of SACS/DACS
- e) Three-day training of NACO/SACS Staff
- f) Three-day training of TSU Staff
- g) Three-day training of DACO/DTOs

h) Three-day training of Program Managers of Migrant and Truckers' TIs

This project is funded by National AIDS Control Organization (NACO) through Hindustan Latex Family Planning Promotion Trust (HLFPPT) and led by Dr. Preeti Kumar

Technical Assistance for Developing State Health Policy

According to a study done by Indian Council of Medical Research (ICMR), WHO, Institute of Health Metrics & Evaluation (IHME) on burden of diseases in India, Mizoram is one of the better performing states in India against DALY (disability adjusted life years) of Kerala (refer to the next graph). Life expectancy also increased from 66.7 years for females in 1990 to 73.8 years in 2016; for males, there was an increase of 4.3 years during the same time period (64 years in 1990 to 68.3 years in 2016).

In its endeavour to make the state of Mizoram healthy and prosperous, The Department of Health and Family Welfare, Govt. of Mizoram is desirous of developing its own State Health Policy and have requested the technical assistance of Public Health Foundation of India in drafting the same.

The Public Health Foundation will give technical assistance in drafting the state health policy which will help the state in giving strategic direction to improve the health of the people whilst also giving opportunities to identify and work on issues towards strengthening the health system of the state.

This project is funded by Directorate of Health & Family Welfare, Government of Mizoram and led by Dr. Priscilla Chingbiakhoih Ngaihte

HEALTH PROMOTION & ADVOCACY

Evaluating the Implementation of the Peer Educator Intervention for Improving Adolescent Health in India's National Adolescent Health Programme

PHFI is undertaking a descriptive study in collaboration with the Central Government, State health departments (Madhya Pradesh and Maharashtra) and the University of York. The research aims of the study are:

- 1 Describe the process of implementation, and context of PE Programme under the RKSK during COVID-19, in two Indian states.
- 2 Understand peer educators' engagement during COVID-19 pandemic and adolescent's response to PE engagement in community and accessing the health system.
- 3 Understand the resource use and implementation cost of peer educator programme and its variations across two states of India.
- 4 Identify key components of PE intervention which work to improve health system access and community engagement of adolescents during COVID-19 for informing building back better response and for scaling up (Research to Policy and program action) of adolescent health programmes in other states of India.

The study involves the collection of process evaluation data, to understand the implementation and context of the Peer Education programme of RKSK during the COVID-19 pandemic using: semistructured in-depth interviews and focus group discussions with various stakeholders engaged with the RKSK/ Peer Education programme; semistructured observations of program activities (sub-centre level meetings, village-level sessions by PEs, PE training sessions, Adolescent Health & Wellness Days); cross-sectional surveys with PEs/Saathiyas and adolescents and out of pocket expenditure cost surveys with parents of PEs and/or adolescents. In addition, routine programme data (monthly consolidated AFHC reports, AHDs, PE recruited and trained) will also be collected.

The study will explore how PE implementation was adapted in a state with Government led Model (Maharashtra) vs a state with NGO led model (Madhya Pradesh) and provide insights on scalability. The research would also help to understand engagement of PE during COVID-19 pandemic for meeting the needs of adolescents and adolescent's response to PE engagement in community (Footfall in AHD) and accessing the health system (footfall in AFHCs). It also aims to understand the knowledge, attitudes and behaviors of the adolescents and PE related to six themes of RKSK in both study districts and how it varies with exposure to PE trainings and PE sessions.

As part of the study, the situational analysis completed virtually in the study districts of Madhya Pradesh and Maharashtra during June-November, 2020. In total, thirty-one stakeholders involved in implementing the PE programme at state, district, block and village levels participated. This exercise was conducted qualitatively through in-depth interviews to understand the impact of COVID-19 on PE programme implementation, task shifting of cadres involved in the implementation of PE programme, adaptations to Adolescent Health programme implementation in study states during the COVID pandemic. The manuscript from this data is submitted in Journal of Adolescent Health (JAH).

This project is funded by Medical Research Council (MRC) and led by Dr. Monika Arora

Technical Support to National Tobacco Testing Laboratories

Tobacco product testing is a valuable procedure to support tobacco control and regulatory efforts, which can have a clear impact on population health. As per the existing body of evidence the devastating public health impact of tobacco products is primarily due to the interplay of three factors i.e. attractiveness, addictiveness and toxicity. Tobacco product testing per se does not lower the levels of toxic and carcinogenic

constituents in tobacco or reduce the use of tobacco products, which cause the exposure of both users and non-users to the harmful chemicals in tobacco product emissions. However, it can be a useful tool if the objectives and justifications are set out upfront on how data on design, contents or emissions will be used for generating evidence for regulatory purposes and for policy decisions. Currently, GOI has notified three labs, purchased equipments, recruited scientific manpower, developed Operational guidelines (OG) for NTLL to guide the functioning of these labs, however there is a need to make these guidelines more comprehensive by including additional elements like mapping of the tobacco products available in the market, sampling, methodology to be adopted for sampling, coordination across labs, reporting, etc.

With this background, the Public Health Foundation of India (PHFI) is carrying out this project which aims to provide technical support to the Ministry of Health and Family Welfare, Government of India for operationalizing the tobacco testing laboratories, thereby strengthening the implementation of the Articles 9 & 10 of WHO FCTC. This project aims to set up a Technical Support Unit (TSU) at PHFI to support MOHFW's NTTL. As a part of this project, the deliverables are

- To assist the MOHFW, GOI in expanding comprehensive guidelines for supporting the functioning of National Tobacco Testing Labs (NTTLs).
- To collate and adapt existing global best practices on tobacco product regulation to the Indian context.
- To document identified priority chemicals in tobacco products (smoking & smokeless) for laboratory testing and related testing protocols for India

This project is funded by World Health Organization (WHO) and led by Dr. Monika Arora

Development of National Alcohol Control Policy and Model Alcohol Control Bill

In India, there is an absence of a National Alcohol Control Policy based on public health approaches, and since alcohol is a state subject in the seventh schedule of the Constitution, there is a lack of uniformity of State laws. There is an absence of a single national nodal authority at the Centre to deal with all aspects of alcohol policy and prevention. There exists a conflict in policies between the Centre and State, and a greater emphasis is laid on the revenue component and promotional aspects of alcohol use. More so, an inter-sectoral approach is absent. Existing laws and policies on alcohol control fail to adequately address contemporary issues such as online sale, surrogate advertisements, new and novel products, new advertisement medium (Social Media, streaming platform) and locally brewed alcoholic beverages. This project - development of a National Alcohol Control Bill, proposing amendments to existing legislation, and drafting of a model Act (legislation) - will bridge all these gaps and fill the existing policy and legal lacuna in alcohol control in India. Following activities are planned under this project:

- To identify and address the policy and legal vacuum in national and state alcohol control efforts, and ensure alcohol control measures are addressed with an emphasis on public health objective.
- To adopt an inter-sectoral and ministerial approach while regulating alcohol, and assist the relevant ministries in achieving the alcohol control tasks as set out by the National Multisectoral Action Plan for Prevention and Control of Common Non-communicable Diseases (2017-2022).
- To regulate the access and availability of alcohol, comprehensive prohibition of advertisement and promotion, modify the drinking context, address education and community engagement, promote treatment, rehabilitation and intervention services

We undertook a comprehensive desk review of all the national and state laws and policies on alcohol control across public health interventions. A technical expert group (TEG) was constituted and



In-depth interview (IDI) with Dr. Benn McGrady, Technical Officer, Legal, WHO HQ



In-depth interview (IDI) with Dr. Benn McGrady, Technical Officer, Legal, WHO HQ

virtual in-depth interviews (IDIs) were conducted with them. Based on the inputs received from IDIs, a draft National Alcohol Policy has been prepared. The draft National Alcohol Policy was provided to the TEG for their comments. Based on the feedback received, a final draft National Alcohol Control Policy has been drafted. Thereafter, a Model Alcohol Control Bill was drafted in alignment with the draft National Alcohol Control Policy.

This project is funded by World Health Organization (WHO) and led by Dr. Monika Arora

To Develop an IMNCI Digital-Package for eLearning By Health Workers

Improvement in India's indicator could be attributed to the continuous government efforts and one such effort is the Integrated Management of Neonatal and Childhood Illness (IMNCI) strategy. In a recent communication, MOHFW has directed WHO-CO for India to undertake two major activities in support of Child Health capacity building, in a time-bound process. One of them is Digitalisation of harmonized CH training packages.

The process of digitalisation will entail coordinating with multiple agencies and institutions, including those with expertise in



Experts discussing WHO IMNCI course Structure and content (Dr. Pushkar Kumar, PHFI, Dr. Praveen Kumar, Lady Harding Medical College, Dr. Harish Chellani, VMMC & Safdarjung Hospital, Dr. Sugandha Arya, VMMC & Safdarjung Hospital, Dr. Deepti Agrawal, WHO, Dr. T.K. Jena, IGNOU)

delivering online / distance learning programmes and vendors /CSR/Foundations who have expertise in developing digital content appropriate for self or facilitated learning. With this background, Health Promotion Division (HPD) and Training Division, PHFI, aims to coordinate and provide support in the development of a strategy for digitising the IMNCI training package. It will include coordination with multiple stakeholders including government and non-government organisations as a coordinating hub (National Coordination Centre) for the digitisation and implementation of the IMNCI training package. Till now, the IMNCI course structure and content has been discussed with the subject matter experts from Lady Harding Medical College, VMMC & Safdarjung Hospital, MoHFW, Maternity Foundation, Kalawati Saran Hospital, AASTRIK, WHO during virtual meeting. Based on the feedback of experts, the course content including scripts has been revised.

This project is funded by World Health Organization (WHO) and led by Dr. Monika Arora

Project Pathway: Promoting Health and Wellbeing to Focus on Reducing the Health Burden of Non-Communicable Diseases (Pathway)

Project PaTHWay: PromoTing Health and Wellbeing was a three-year programme aiming to reduce and control the risk factors of noncommunicable diseases through the delivery of a setting-based health intervention. PHFI joined hands with the Directorate of Health Services (Government of Maharashtra) and Directorate of Health and Family Welfare Services (Government of Karnataka) for this initiative. This intervention was delivered in schools, colleges and workplaces and contributed to addressing age-specific behavioural risk factors across different age groups. While unhealthy diet, physical inactivity and tobacco use were addressed in schools, the use of tobacco and consumption of alcohol was focused on with youth from colleges. In workplaces, the project delivered a tobacco cessation intervention to help employees quit tobacco. The project was conducted in schools, colleges and workplaces of Pune and Bengaluru.

The Project was funded by AXA Business Pvt. Ltd and led by Dr. Monika Arora

Assessing the Feasibility of an AI Digital Therapeutic Technology for Smoking Cessation in India

Alex Therapeutics (AT) has developed a smart phone based app for Smoking Cessation. AT is collaborating with the PHFI to assess the feasibility of using the app for the Indian population. In this regard, PHFI carried out a feasibility study with adult tobacco smokers in India. The aim of the study was to assess the feasibility of using an AI digital and smart phone based technology for smoking cessation in India. The specific objectives of the study include: (i) To assess the acceptance of a smartphone based app for tobacco cessation guidance; (ii) To assess the uptake and retention of using 'Alex – Quit Smoking' app for tobacco cessation; (iii)To assess the facilitators and barriers in using 'Alex-Quit Smoking' app for tobacco cessation.

103 tobacco smokers registered for the study and completed the baseline survey. Through the study, the participants' experience of using the Alex-Quit Smoking app was assessed. Each participant was given full access to the premium version of the app. 29 (7 females and 22 males) tobacco smokers were confirmed to have downloaded and used the app. All study participants were between 18-52 years of age. 72% of the recruited sample had attempted to quit tobacco in the past. 47.7% of this population attempted to guit tobacco one to five times in the past 12 months. 17.8% of the population tried nicotine replacement therapy to quit and 14% of the population used counselling, including at a tobacco cessation clinic. When asked about their comfort of using a smartphone app, 37.4% of the population responded that they would be very comfortable in using smartphone apps for receiving tobacco cessation guidance. In-depth interviews were conducted with 10 tobacco smokers to assess their experiences, facilitators and barriers in using the app.

The outcome of this study will help understand the usability and acceptability of a digital intervention for quitting tobacco, especially in times of the COVID-19 pandemic. It will inform on the relevance of the 'Alex-Quit Smoking' app and provide data for adapting it for better uptake in the Indian context. We will use the results of the study to introduce further refinery into the app and translate it into regional languages, so that it is accessible across all socio-economic backgrounds of the country.

This project was funded by Alex Therapeutics and led by Dr. Monika Arora

HEALTH FINANCING/HEALTH ECONOMICS

Driving Health Progress During Disease, Demographic, Domestic Finance and Donor Transitions: Policy Analysis and Engagement with Six Transitioning Countries

The global health landscape is undergoing a rapid and profound set of transitions that threaten to stall or even derail progress in health improvement. In particular, there are four major, inter-linked transitions in diseases, demography, development assistance for health (DAH) and domestic health financing, the "4Ds" of global health transition. All countries, including India, need an overarching, "joined up" strategic approach to transition, in which they model the likely shifts in disease burden and demography, how these shifts will affect health financing needs, and the mechanisms for meeting these needs (both the financial and the delivery mechanisms). The project will focus on the state of Uttar Pradesh (UP) to understand the interlinked transitions described above.

The four key components to the research are: 1) A benefit incidence analysis to determine if the poor preferentially benefit from donor programs;2) Demographic and epidemiological modeling to project the changing needs of the population between 2019-2030;3) A costing study to determine how much it will cost to deliver universal health coverage that addresses the major contributors to UP's disease burden; and4) A study to determine if UP has the capacity to finance universal health coverage given these disease and demographic transitions; 5) A study to determine how donors target their support towards pockets of poverty within the state of Uttar Pradesh

This project is funded by Duke University and led by Dr. Sakthivel Selvaraj Barriers and Opportunities to Improve Financial Protection for the Poor Through the Prime Minister Jan Arogya Yojana in Uttar Pradesh, India

High out of pocket health expenditures by households is major problem in India: 62.6% of total health expenditures are borne by households. This has huge implications on poverty reduction and universal health coverage (UHC) in India. The government of India recently launched the Prime Minster Jan Arogya Yojana (PM-JAY) to provide financial protection for its poor and vulnerable populations. Uttar Pradesh (UP) is the most populous state in India and home to over 60 million poor people. UP performs poorly on its health and development indicators with a high burden of avertable diseases, poor health infrastructure, and low per capita government health spending. The state has a large number of beneficiaries of the PMJAY due to its high poverty incidence. The overall success of the PM-JAY will depend on the program's performance in UP to a great extent.

Given the past poor performance of the health sector in UP, this mixed method study aims to: (i) understand the key challenges around implementation and financing of the PM-JAY in UP and (ii) determine whether the PM-JAY meets the actual needs of the poor and marginalized populations in the state. The project is intended to identify barriers in the implementation of PMJAY and opportunities available for course correction for further scale up and for effectively utilizing funds in a resource-scarce state.

This project was funded by Duke University and led by Dr. Sakthivel Selvaraj
Health System in Transition Series (HiTS)

The Health Systems in Transition (HiT) review is a systematic and comprehensive review of a country's health system. It assesses the health system's core components – organization and governance, financing, physical and human resources, service provision, and health reforms.

HiTs are produced by a team of country experts in collaboration with an external editor under the guidance of the APO Secretariat. Each HiT highlights challenges and areas requiring in-depth analysis and provides a tool for the dissemination of information on health systems. The APO HiT reviews cover the countries of the WHO Western Pacific and South East Asia regions.

This project was funded by World Health Organization (WHO) and led by Dr. Sakthivel Selvaraj

Product Patents on Medicines and Its Implications in India, 2000-2016

What has been the impact of the product patent regime on the market structure and prices of medicines in India? These questions will be addressed by utilising secondary data sets involving patents on medicines to be obtained from the Indian Patents Office along with IMS (IQVIA) data for the period from 2000 to 2016. The study will assess the impact of product patents on prices and market concentration to understand access to new molecules.

More specifically, the questions the study seeks to answer are as follows:

- 1. How have market concentration and prices changed across various therapeutic segments since the introduction of the product patent regime in 2005, and how does it compare with the earlier period?
- 2. How do the prices and concentration in markets of patented medicines differ from the prices and concentration in markets of therapeutically similar medicines?

3. How do the prices and concentration in markets of patented medicines change after their patents expire and how do these changes compare with therapeutically similar medicines?

This project is carried out in collaboration with Jawaharlal Nehru University and led by Dr. Sakthivel Selvaraj

Assessment of Current ESI Beneficiary Behaviour Regarding their Health Care Insurance

The specific objectives of this research study are:

a. Understand the health seeking behaviour, needs and perceived challenges of current beneficiaries (workers and economic units) regarding their ESI health care insurance, access to services and regarding their views on the ESIC contracted health care providers. b. Obtain a good understanding of beneficiaries health insurance knowledge and attitude in general as well as on their awareness about the ESI entitlements they have. c. Obtain a good understanding of ESI affiliated employer's behaviour, acceptance and perception of ESI health insurance

This project was funded by International Labour Organization (ILO) and led by Dr. Sakthivel Selvaraj

Market Study on Pharmaceutical Sector in India

This project is aimed to examine the following: 1. To study evolving competitive landscape in the pharmaceutical distribution market in India; 2) to understand the extent of proliferation of branded generic drugs in the Indian market and its inplications for competition; 3) to identify impediments to entry of bio-equivalent drugs in INdia; 4) to ascertain enforcement and advocacy priorities for the Commission in relation to the aforementtioned issues and 5) to identify areas of cooperation between the Commission and the relevant regulators.

This project is funded by Competition Commission of India and led by Dr. Sakthivel Selvaraj

Transition from Donor Assistance: Lessons Learnt From Uttar Pradesh and Andhra Pradesh, India

Development Assistance for Health has been associated with improvements in health in low and middle income countries. These health improvements have been accompanied by economic growth and as a result some middle income countries have now reached or will soon reach a GDP percapita that triggers in a reduction in developmnet assistance for health i.e, a process known as transition. The specific focus of this study is to understand (a) whether governments have been able to mainatin coverge of priority interventions (eg family planning commodities, HIV medicines etc) and (b) whether changes in service delivery architecture, health financing arrangements, information systems and governance arrangements have influenced coverge. PHFI along with the Centre for Policy Impact in Global Health plans to undertake case studies of two donor transition programs - one funded by USAID on Family planning- the Innovations in Family Planning Services Agency Project (IFPS) and the other funded by Gates foundation on HIV namely the AVAHAN project. A Mixed methodogy approach would be adopted. An extensive desk review of all project related documents, project data analyis and interviews with Key Informants from the donor Agencies and Implementers at the national, state and district level would be undertaken.

This project is funded by Alliance for Health Policy and Systems Research - World Health Organization (WHO) and led by Dr. Sakthivel Selvaraj



OTHER MAJOR PROJECTS

Enabling Youth and Women Platform to Improve Nutritional Outcomes

Since 2018, Public Health Foundation of India has been supporting UNICEF Lucknow in behavior change communication activities to improve health and nutrition outcomes in Uttar Pradesh. In the year 2018, UNICEF Lucknow initiated partnership as a pilot project with UP State Rural Livelihood Mission (UPSRLM in three districts of Uttar Pradesh—Ambedkar Nagar, Banda, and Mirzapur, which was extended to three more districts in 2019—Sonbhadra, Bahraich, and Chandauli for layering health and nutrition agenda in the existing SHG platforms. The partnership had been developed with a multi-year goal focus



SHG members learning the modules through the medium of Poshan Tashtari at Mirzapur. (Source: UNICEF-PHFI)

of capacity building and community mobilization of SHG group members across thematic areas of nutrition (IYCN), routine immunization, sanitation and ending child marriage. With PHFI joining as a technical partner, a behaviour change communication strategy was designed and complemented by multiple intervention channels. The project is layering health and nutrition interventions women's self-help-group on platforms (SHGs), which is created around savings and credit to increase knowledge, enhance skills and promote improved practices for mother and child health and nutrition outcomes.

This Project is Funded By United Nations Children's Fund (UNICEF) and led By Dr. Samresh Sengupta.



Poshan Rangoli. Discussion on importance of nutrition by WADA Sakhi Meena, in village Sumatiya, block Chayanbe, district Mirzapur (Source: UNICEF-PHFI)



WADA Sakhi is engaged in deploying health and nutrition module through medium of flash card in Sonebhadra (Source: UNICEF-PHFI)



Mask campaign by SHG members in Bahraich (Source: UNICEF-PHFI)

Activating Social Platform of Women (SHGS) to Improve Health and Nutrition Status in Uttar Pradesh II

Despite proven family health and nutrition interventions for improving maternal and child health and nutrition, there is a dearth of scalable community-based demand-side approaches that can take these interventions to scale, thereby ensuring a rapid and sustainable impact on family health and nutrition outcomes. The self-help group (SHG) model is a promising institutionalized and scalable demand-side social platform for scaling up family health and nutrition interventions. In year 2018, UNICEF Lucknow initiated partnership with UP State Rural Livelihood Mission (UPSRLM) for layering social issues in the existing SHG platforms and to work with SRLM with a multi-year goal to develop capacity for long term community mobilization support to IYCN, more particularly with complementary feeding practices.

PHFI has partnered with UNICEF to implement the following objectives:

- To develop behaviour change strategy for WADA-SHG program based on baseline behavioural and capacity assessment
- 2. Diffuse adoption of health and nutrition behaviours through trained social platform cadres and positions
- Measure and document implementation trajectory through monitoring and learning system

A total of 425 villages in six districts WERE covered through this partnership

This project was funded by United Nations Children's Fund (UNICEF) and led by Prof. Dileep V Mavalankar and Dr. Samresh Sengupta

Preparation of the National INAP Roadmap 2021-2030

The India Newborn Action Plan (INAP) is India's committed response to the Global Every Newborn Action Plan (ENAP), launched in June 2014, laying out a vision and a plan for India to end preventable newborn deaths and stillbirths by scaling up high impact, cost-effective preventive and curative interventions at community and facility levels. India has made considerable progress in addressing neonatal mortality in recent years and has achieved significant gains in reaching its targets, including the NMR 2017 milestone of 24 (NMR for India is 23 for 2017). There is a commitment in the INAP to review and update the action plan in 2017-2020. The proposed INAP review and updating exercise provide an opportunity to review progress; align actions to achieve the newly released ENAP 2025 targets, and to adopt strategies to mitigate the impact of COVID-19 on the achievement of the NMR & SBR targets. The proposed INAP review will be undertaken within the background of the gains made so far in neonatal mortality reduction through wide-ranging system strengthening; emerging new knowledge in addressing the causes of neonatal mortality; and specificity in terms of sub-national state or district levels, based on where the need for action is the most to reach the NHP 2025 and SDG 2030 targets.

The review has the following Goals:

- Review of the INAP targets against the dashboard indicators for the six pillars of interventions for the period 2014-2020;
- In the year 2020-2021, to be declared as the year of action for newborns, develop and deploy the INAP 2021-2030

This project is funded by United Nations Children's Fund (UNICEF) and led by Prof. Rakhi Dandona

Measurement, Learning and Evaluation of the Technical Support Unit (Phase 2) to the Government of Uttar Pradesh

Uttar Pradesh is one of the largest states in India and has a population of over 219 million. The BMGF is funding the Technical Support Program (TSP) in collaboration with the state government, the goal of which includes reduction of neonatal mortality. Sambodhi Research and Communication Private Limited is responsible for monitoring and evaluation of UP TSU. PHFI in collaboration with Sambodhi is evaluating the neonatal mortality component of UP TSU.

This project is funded by Sambodhi Research & Communications Pvt. Ltd and led by Prof. Rakhi Dandona

Iterative Learning and Synthesis of New Evidence with Feedback Loops to Inform Decisions and Innovations in Bihar

The goal of this study is to evaluate the impact of interventions in Bihar on neonatal mortality reduction by 2020. The specific objectives include assessing the reduction in neonatal mortality, change in effective coverage and equity in coverage of various neonatal and maternal interventions, and change in causes of neonatal mortality in Bihar by 2020. The study involves primary data collection on a state representative sample of births. A survey was carried out in 2017 in which nearly 20,000 births were sampled, and the mothers interviewed in detail to document interventions around the continuum of care. In addition, secondary data from the program is being used to triangulate the impact of the program on neonatal mortality in the state.

This project is funded by Oxford Policy Management and led by Prof. Rakhi Dandona

Every Newborn Health Assessment & Neonatal Care Evaluation Study 2020

Every Newborn Health Assessment & Neonatal Care Evaluation 2020 (ENHANCE) is a largescale study in the Indian state of Bihar to assess the trends and determinants in newborn health over time. This study will explore innovative thematic areas, beyond the routine indicators, to provide specific guidance into addressing the new-born health initiatives not only in Bihar but also be of use in similar contexts to achieve the SDG 2030 goals for newborn health.

This project is funded by Oxford Policy Management and led by Prof. Rakhi Dandona

Improving CRVS in Bihar. Coverage, Quality and Cause of Death

We aim to understand the detailed synthesis of factors influencing the coverage and quality of the Civil Registration and Vital Statistics system in the state of Bihar. The main objectives of this study are identification of communityand facility-level barriers and facilitators in the context of improving birth and death/stillbirth registration; mapping the process of birth/death registration within the community and facility; and identify barriers and facilitators to improve the coverage and quality of birth and death/ stillbirth registration. The study involves primary data collection in community and facility.

This project is funded by Oxford Policy Management and led by Prof. Rakhi Dandona

Piloting Improvements in Civil Registration & Vital Statistics (CRVS)

We aim to understand the detailed synthesis of factors influencing the coverage and quality of the Civil Registration and Vital Statistics system in the state of Uttar Pradesh. The main objectives of this study are identification of communityand facility-level barriers and facilitators in the context of improving birth and death/stillbirth registration; mapping the process of birth/death registration within the community and facility; and identify barriers and facilitators to improve the coverage and quality of birth and death/ stillbirth registration. The study involves primary data collection in community and facility.

This project is funded by Sambodhi Research & Communications Pvt. Ltd and led by Prof. Rakhi Dandona

Role of Yoga Therapy Against Tuberculosis in People Living With HIV Infection

Both HIV and TB have potentiating effect on each other and PLHIV has 8 times greater risk of acquiring TB compared to HIV negative people. Yoga therapy has beneficial effect on lungs and immune system and it has the potential to prevent the progression of HIV. In a cohort of PHLIV on Isoniazid prophylactic therapy(IPT), we assessed the incidence of tuberculosis among PLHIV practicing yoga as compared to those not practicing yoga.

A 3-year longitudinal cohort study is being conducted from Dec-2019 to Mar 2023 at one of the ART center of Ahmedabad city. Considering the fact that TB is the leading cause of mortality in PLHIV, yoga therapy may help in preventing the occurrence of TB as an adjuvant therapy to Isoniazid Preventive therapy (IPT). The exact mechanism of action of yoga therapy against TB is unknown but we postulate that a regular practice of yoga improves the immunity. (breathing Pranayama exercise) increase respiratory stamina and expand the lungs leading to an improvement in pulmonary functions thereby preventing development of TB. Minimal investment, simplicity of implementation and lack of side effects make yoga therapy practice an extraordinary adjuvant to IPT in PLHIV. The first folow-up after the base-line, has showed significant association between practice of yoga therapy and rise of CD4 T cell count. Yoga therapy practice has an adjuvant protective effect against TB in PLHIV among patients on Anti-retroviral therapy and IPT. Further follow up will enhance the understanding of impact of yoga therapy after accounting for confounders.

This project is funded by Department of Science & Technology (DST), Ministry of Science and Technology, Government of India (under the KIRAN Scheme) and led by Dr. Arohi Sandeepkumar Chauhan

Estimation of Community Level Cause Specific Mortality Using in-Hospital Deaths at Selected Sites in India

The broad objective of the study is to generate estimates of age-sex-cause-specific mortality at the community level using available in-hospital mortality data at selected sites in India. The first data used in the study were retrieved from the death registration system of Ahmedabad Municipal Corporation for period of 2001-2016. As this death registration system is not using the International Classification of Disease (ICD), causes of deaths were coded in broad categories using the tenth revision of ICD. The second data used in the project is cause of death data from Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow with 13,770 in-hospital deaths from Jan 2009 to July 2019.

Morethan 6,00,000 death records from Ahmedabad Municipal Cooperation were included in this study. We observed that throughout the study period of 2001-2016. More than 60% of deaths have a vague cause of deaths during the years 2001-2016 for hospital deaths. The distribution of mortality for causes of deaths across various age-group with respect to the place of deaths show that the number of unidentified causes leading to in-hospital deaths decreased only 3% in 2001-16. Diseases of Circulatory System being the major group of diseases constituting 15% of total medically certified deaths. It accounts for 16% and 12%, respectively in males and female deaths in total medically certified deaths. Neoplasms being the second leading cause accounts for 8% and 7% respectively in males in female deaths in total medically certified deaths. Our analysis revealed a skewed sex ratio in death registration in Amedabad Municipal Corporation.



Figure 1: Sex Ratio at death (Female per thousand male) in various age groups Ahmedabad, Gujarat, India 2001-2016

Lowest sex ratio at death was observed in age group of 15-60 years with only 476 female death registered against 1000 male deaths followed by sex ratio at death 691 in age group 0-5 years.

Death statistics is one of the most vital information from a hospital but ignored. More emphasis must be given for the accurate cause of death recording, especially in case of the hospital deaths. If cause of death recorded with care, it will help to improve the civil registration system of India.

This project is funded by Department of Science & Technology (DST), Ministry of Science And Technology, Government of India and led by Dr. Ashish Awasthi

Implementation of Public Health Research Initiative (PHRI)

PHRI Initiative has set up a fund to provide the Indian Researchers working in institutes focused on public health, established process. The Initiative will be implemented by SERB with techno managerial implementation. PHRI will enable young Indian researcher to carry out clearly defined research project at a place of their choice up to a period of 36 months.

Objectives

- a. Strengthen and expand the knowledge base of Indian Public Health Research and Education.
- b. Help build a fleet of young researchers with potential of emerging as leaders in Public Health.
- c. Contribute to evidence generation through research in key priority areas of action.
- d. Provide scope for incubating, testing and implementing innovative new public health solutions to local and national public health issues.
- e. Findings of break through research studies will be wildly disseminated among decision makers to inform the policy.

This project is funded by Science and Engineering Research Board - Department of Science & Technology (DST), Ministry of Science and Technology, Government of India and led by Dr Deepak Saxena

Estimating India Specific Natural History TB Parameters

Despite being a curable disease, tuberculosis (TB) is the leading cause of death alongside HIV globally amongst infectious disease according to a WHO report. India was reported as one of the highest TB burden countries, contributing to nearly a quarter of the world's TB burden, in spite of having the largest TB control program in the world (The Global Plan to End TB: 2016 -2020). Disparities of socio-economic status of the Indian population coupled with a very complex healthcare system, only add to the complexity of the TB situation in India. A more comprehensive and evidence-based understanding of India's TB epidemic is therefore essential for addressing the disease burden in India and globally. This will also serve in aiding the End TB strategy goals. In order to achieve this, we need more robust methods that are complementary to the existing approaches, to better understand the TB epidemic in India. Modelling could play a crucial role in the planning and evaluation of TB control programs as conducting surveys or trials in diverse population groups is neither ethically nor logistically possible nor cost-effective. Mathematical models could account for complex nonlinear dynamics of TB transmission as well as the existing disconnect between public and private healthcare sectors in India. As important inputs, model requires parameters reflecting our knowledge of TB natural history; model findings can depend sensitively on these parameters. However, the use of natural history TB parameters from existing studies, have so far been mostly been drawn from Dutch, English, Swiss and American populations. Mathematical models for TB transmission were built-in discussion with leading TB epidemiologist and TB program managers. The model was calibrated with empirical data to estimate relapse rates. The data obtained is hoped to lay the foundations for developing mathematical models that are more specific to the TB epidemic in India: such models will aid in building more focused contro strategies.

This project was funded by Department of Science & Technology (DST), Ministry of Science and Technology, Government of India and led by Dr. Surabhi Pandey

Exploratory Randomised Trial of Face to Face and Mobile Phone Counselling Against Usual Care for Tobacco Cessation in Indian Primary Care

Tobacco cessation counselling by health care providers has been identified as an important intervention to help people quit tobacco. However, the overburdened health providers in the outpatient-clinics have limited time for counselling tobacco users. Considering the extreme shortage of tobacco cessation counselling services in primary care in India, the study has been planned to examine the acceptability, feasibility and effectiveness of mobile phone-based text message (mHealth) interventions for quitting SLT. At the state level, approval has been obtained from Odisha State Ethics Board

An exploratory randomized controlled trial will be conducted in primary care clinics in the state of Odisha, India with 250 SLT users will be recruited to the study (125 in each arm)and followed up for three months. Participants in the intervention arm will receive routine care together with a face to face counselling intervention followed by advice and reminder mobile messages. The control arm will receive routine care alone.

The health care providers in India will benefit from the proposed research through an improved understanding of the low-cost mHealth intervention model for tobacco cessation which can be integrated in primary care. The primary care clinics capacity for counselling will be enhanced by the trainings. The study will make an important contribution to the feasibility of mHealth interventions for SLT in primary care settings in Odisha.

Phase I of the study (formative research) relating to the development and finalization of the intervention has been completed

This project is funded by University College of London (UCL) and led by Dr Raj Mohan Panda.

A Randomized Controlled Trial to Compare Two Different Doses of Maternal B12 Supplementation on Infant Neurodevelopment and Vitamin B12 Deficiency (MATCOBIND)

Vitamin B12, also called cobalamin, is a watersoluble vitamin that has a key role in the normal functioning of the brain and nervous system. We proposed this research to compare two different doses (a treatment dose in comparison with a dose known to just prevent further deficiency) of maternal Vitamin B12 supplementation in terms of their effectiveness in removing infant B12 deficiency and neurodevelopment. We are undertaking a multi-centric trial in India and Nepal as these are countries where high incidence of deficiency is reported. We will recruit 720 pregnant women from the antenatal clinics of the department of Gynecology and Obstetrics at Sitaram Bhartia institute of Science and Research, New Delhi and Paropakar Women's Hospital, Kathmandu, Maternity Nepal. The subjects will be recruited at their first presentation to the antenatal clinic and should be vegetarian as they are at high-risk of B12 deficiency. Mothers who are >40 years of age, are already on B12 supplementation, have multiple gestation, chronic medical conditions, known psychological illnesses or those who anticipate moving out of the city before/after delivery will be excluded from the study. Recruited mothers will be randomly allocated to 2 equal groups (360 each). Group 1 (Intervention) will receive daily 250 micrograms Vitamin B12 supplementation to the mother through pregnancy and up to 6 months' post-partum. Group 2 (Control) will receive 50 micrograms Vitamin B12 supplementation to the mother through pregnancy and up to 6 months post-partum. The profile information of the mother including age, height, weight, ethnicity, education, socioeconomic status, maternal dietary assessment (by Food Frequency Questionnaire), intake of any supplements (iron, folate, Vitamin-D) etc. will be recorded. Vitamin B12 dosage will be provided at enrolment and then monthly to mothers. Mother's blood levels for Vitamin B12 status and other deficiencies will be drawn. Sampling for these biochemical



Data cleaning at PHFI

tests will be combined with other routine tests at these stages to avoid any additional discomfort for the mother. Supplementation of the mother in both groups will be stopped at 6 months after childbirth followed by evaluation at 9 months. The neurodevelopmental assessment (DASII Scale) and home environment assessment will be done by a developmental therapist and complementary feeding assessment by a nutritionist.

A positive or a negative result will generate scientific evidence on whether B12 should be supplemented in vegetarian pregnant women with a view to preventing B12 deficiency and its neurodevelopmental consequences in the infant. This will also allow the development of policies and frameworks for routine/wider usage of this supplement in high-risk populations.

The project is still in its recruitment phase.

This project is jointly funded by DBT, India, and Medical Research Council (MRC), UK and led by Dr. Manu Raj Mathur

An Adapted Version of the Rapid Urban Food Systems Appraisal Tool for Nutrition and Health Diets

The main aim of the study was to develop and pilot test a Urban Food System and Nutrition Assessment Appraisal Tool (RUFSAT) for healthy diets and nutrition in India and Nepal. The objectives of the study were to, adapt the FAO RUFSAT tool for healthy diets and nutrition and to fit it in the local context in India and Nepal,



Workshop on Design and conduct of Clinical Trials (3rd -7th May 2021)

pilot the adapted version of RUFSAT for nutrition in four cities: Ahmedabad (India), Pune (India), Pokhara (Nepal) and Kathmandu (Nepal) and disseminate the adapted version of RUFSAT for nutrition to stakeholders in these cities. Firstly, secondary report for all these cities were prepared based on the available data from government and local reports to understand food systems in each city. Following that, cross-sectional surveys of consumers, retailers wholesalers traders and peri-urban/urban farmers' were conducted to understand the food governance discussions with municipal and government services.

Data were collected through computer assisted program (CAPI) on mobiles or tabs. Geomapping of all the retailers, wholesalers and farmers survey was done using geographical information system (GIS) was on the mobile application. Additionally, interviews of municipal government officials were conducted. Online focused group discussions were held with 8 to 10 representatives from the municipal authorities, local and national government, licensing authorities and inspection services from FAO, ministry and policy makers in each city to understand the food systems approach. Data cleaning and coding were done using SPSS/STATA software. The local agencies that were hired to conduct the survey were selected based on their acquaintance with food system network and expertise. Along with local agencies and FAO, in depth training of data collection was conducted. On daily basis data were carefully monitored to identify issues if any and to maintain quality of the data. While this study is largely descriptive in nature, some comparisons were made using ANOVA or t-tests or Chi-square tests. The qualitative responses were recoded and analysed.

Five publications were generated to be published by FAO which includes a methodological tool quide explaining the study details and primary data report for each city. These were reviewed by local and international experts suggested by the FAO. The final documents are under publication process of the FAO. Furthermore, a food system dashboard was prepared by PHFI and FAO. The dashboard is largely based on Food System Assessment for Healthy Diets which explains the project details, primary and secondary data, qualitative interviews, geo mapping, resources and references related to the project. It also includes a segment of developing one's own tool which is designed for the potential use of our policy makers, researchers, academicians and students. The final report for the project has been successfully submitted to FAO and has also been approved.

This project was funded by Food and Agriculture Organization (FAO) and led by Prof. Dorairaj Prabhakaran and Dr. Manu Raj Mathur

Developing a Comprehensive Package for Promoting Healthy Behaviours

Behavioural patterns often established during childhood or adolescence track into adulthood and become difficult to change. Promoting health in children and adolescents is a 'life-course' approach to promote healthy behaviour. Focus on early years of life holds the key to create fairer societies and reduce health inequalities. India is a demographically young country with a significant proportion of the population who are adolescents. Many children and adolescents, especially those living in poor urban areas like urban slums suffer from illnesses caused due to poor general and oral hygiene and involvement in harmful behaviours like tobacco use. These diseases have a negative effect on health and the wellbeing of children. School attendance suffers greatly as a result, which means that less time is spent learning. Creation and co-designing of learning environments that promote good health equip children to develop healthy routines and, because they are healthier, to make the most of their opportunities.

Various single interventions among children specifically targeting reduction in tobacco use, sugar consumption, and promoting oral hygiene have been tested in different countries and in India, but do not cover the comprehensive and sustainable way of promoting health in urban slum settings. While there is literature around behaviour change best practices among adolescents from many countries of the world, relatively less has been explored on practices that can be adopted in India. There are many stakeholders working in multiple approaches for promoting behaviour change. However, considering personnel, resources, and material constraints are often challenged by theoretical, implementation capacity (practicability), and financial concerns. We aim to address this by co-designing and implementing a set of simple behaviour change activities for promoting healthy behaviours among adolescents and reducing their risk of developing diseases throughout their life-course.

This project was funded by Tata Industries Limited and led by Prof. K Srinath Reddy and Dr. Manu Raj Mathur

Assessment Study of Infrastructure Requirement for a Medical Health Centre (PHC/ HSC) at Kancheepuram, Tamil Nadu and Vadodara, Gujarat

Larsen & Toubro Public Charitable Trust (LTPCT) is planning to construct the infrastructure development of medical health centre (PHC/ HSC) at their Kancheepuram in Tamil Nadu and Vadodara in Gujarat campus to provide better healthcare facilities to more than 10 villages within a radius of three kilometres and with a population of more than 25000 people to help cater to their emergency healthcare nee ds.

An assessment was conducted to acquire a clear understanding of the existing strengths, constraints, opportunities and challenges of the

existing healthcare system for the community and to identify the gaps so as to help plan and execute for a comprehensive medical health centre (PHC/ HSC) to improve the healthcare indices.

The main objectives of the assessment were:

- To examine the status and problems of healthcare services available to the community near L&T campus Kancheepuram and Vadodara campus
- To examine the quality of health services being delivered.
- Gap Analysis.
- Development of action plan to suggest appropriate recommendations to improve access and quality of health services

This project was funded by Larsen & Toubro Public Charitable Trust (LTPCT) and led by Dr. Sandeep Bhalla

Political Determinants of and Attitudes to HPSR Funding

This survey was intended to examine the political determinants of HPSR funding in the six World Health Organisation (WHO) Regions considering production capacity and quality as proxy indicators. Our team was responsible for conducting the study in WHO South east Asian region.

The study commenced in the month of August,2020. A detailed literature review on HPSR funding and a thorough review of the country reports were conducted to gather information on the funding process in each of the SEAR countries selected for the study (India, Sri Lanka, Thailand, Maldives and Nepal) and to obtain an overview of the existing research landscape of the aforementioned countries.

The data gathered from the country reports, as well as the literature review, were then used to conduct a comparative analysis of HPSR funding. During the key informant interviews, these findings were shared with the participants for validation. A total of 23 key informant interviews with senior policymakers/decision makers in each country

were conducted between Oct,2020-Nov,2020. The main themes identified for the interview were a) the existing health system landscape of the country; b) organisations involved with HPSR; c) the nature of HPSR funding in the country (demand/supply led); d) budgetary allocations for HPSR; (e) barriers to HPSR funding; (f) measures to strengthen HPSR funding; and (g) suggestions for the right mix for future HPSR funding. For India, we conducted in-depth interviews with state and central government officials. Kerela, Tamil Nadu, Uttar Pradesh, Odisha, and Meghalaya were among the states represented. During the interviews, participants from some of these countries also provided us with detailed country reports, which gave us a good idea about HPSR funding in their respective countries.

The data collected was then analysed concurrently and a final report was presented to the WHO SEARO in December.

This project was funded by World Health Organization (WHO) and led by Prof. K Srinath Reddy and Dr. Manu Raj Mathur

Research Programme on Innovations for Effective Delivery of Primary Health Care

Given the broad landscape of challenges that hinder the Universal Health Coverage and the diversity of needs in a country like India, technology is the immediate solution for augmenting the current systems as well as building new paradigms of healthcare delivery focussed on primary healthcare. Also the recent announcement of National Digital Health Mission (in addition to Ayushman Bharat) will make technology a necessary component of the primary healthcare infrastructure.

PHFI is now looking to strengthen its work in health technology to fit into this evolving landscape. We look forward to optimising the ecosystem from the perspective of affordability, quality and accessibility of healthcare services for every citizen. Apart from the technology, keeping in mind the demographic dividend (and its related advantages), PHFI is also keen to focus on RMNCH-A with special emphasis on adolescent health. The second phase will be focused on building on our previous work undertaken in 2019-20.

This project is funded by Dr. Reddy's Laboratories Ltd (DRL) and led by Prof. K Srinath Reddy

Preparing a Strategy and Blue Print for the Universalisation of Health Care in Chhattisgarh

The project is aimed to develop a blueprint and investment plan for strengthening health systems and introducing UHC in Chhattisgarh, which will include:

- identifying investments needed for meeting the human resource as well as physical infrastructure requirements (after examining the potential for repurposing of existing funds and redeployment of health personnel)
- reworking the physical and financial norms needed to ensure quality, universal reach and access of health care services, particularly in under-served remote and tribal areas and to indicate the relative role of private and public service providers in this context

- listing critical management reforms in order to improve efficiency, effectiveness and accountability of the health delivery system
- developing guidelines for the constructive participation of communities, local elected bodies, NGOs, the private or-profit and notfor-profit sector in the delivery of health care.

The building blocks of the Plan of Action will contain:

- Articulation of a UHC Policy for Chhattisgarh
- Developing a State Health Investment Plan (SHIP) to provide strategic guidance, contain a plan for resource mobilization and investments in health systems strengthening, and spell out measures that are need at the block, district and state level for UHC.

A Final Report will be prepared and submitted subject to the uncertainties surrounding the COVID-19 pandemic. In addition, PHFI shall, in partnership with the Government of Chhattisgarh, organize RoundTable meetings and consultations as part of the assignment

This project is funded Professional Development Associates and led by Prof. K Srinath Reddy



RESEARCH AT IIPHs

IIPH DELHI

Design And Scale Up of Alternate Models for Responding to the Critical Shortage of Medical Specialists in Selected States (AADARSH PROJECT)

This project is an attempt to design and facilitate the adoption of alternate model(s) for responding to the critical shortage of medical specialists in selected states. Medical specialists are scarce in India, and the numbers are disproportionately lower in the public sector, at the Community Health Centre (CHC) level and above. Even district hospitals in several states have an acute shortage of medical specialists. Increasing the conventional supply side of medical specialists is expensive and slow in demonstrating results. We believe that there is an immense latent potential in utilizing District Hospitals (DHs) as a site for training medical specialists which can lead to acquisition of a formal higher education qualification as a specialist. The District Health Model of the National Board of Examinations (NBE) and the College of Physicians and Surgeons (CPS) model are two alternative models that can be adopted in selected states. This model on specialist attraction and retention is aligned to National Health Policy's 2017 section 11.3.

The expected impact of the project is to : Increase production of specialists through the district hospital in various states of India through the adoption of DNB and CPS models for responding to the critical shortage of medical specialists; strengthening participating DHs' capital infrastructure and staffing of specialists and Presence of PG trainees around the year having a domino effect leading to higher utilization/ access of hospital

So far, apart from the constitution of the Steering Committee reference no-F.No.9(5)2016-NRHM-I for Scaling-up the implementation of in States under District Hospital Strengthening, MoUs are signed with CPS, DNB and state governments (Odisha, Haryana, Gujarat, Uttar Pradesh, Bihar, Punjab, Meghalaya, Karnataka) and NHSRC to ensure smooth project functioning and also a few batches of DNB and CPS courses have been initiated.

The project is supported by BMGF and led by Prof. Sanjay Zodpey

Health Workforce in India: Where to Invest, How Much and Why?

Investment in Human Resources for health is a prime requisite in India to achieve Universal Health Coverage (UHC) and SDGs agenda by 2030. This study identifies where and how much investment is needed in the Human Resources for Health across the country. An enhanced investment in HRH in India will significantly increase availability, accessibility, acceptability and quality of HRH in India.

The present study provides estimates of the actual stock of health professionals and active health workforce in the country using data extracted from mainly two sources, NHWA and NSSO survey (Periodic Labour Force Survey 2018-19). The study also provides estimates of shortages in the health workforce and required investments to achieve WHO-recommended health worker thresholds. Since there is a difference in the actual stock available and actively participating qualified health workforce, the study estimated shortages in both actual stock and active health workforce. Some reasons for these differences in NHWA and NSSO estimates are due to mortality, retirement, migration from the stock, these parameters are not considered while updating the data by different councils and a significant portion of qualified health professionals are not working and remain out of labour force.

Our results suggested that to meet the density threshold of 34.5 skilled health worker per 10000 population, there will be a shortfall of 1.57 lakh of doctors by the year 2030. The shortages are much higher if we consider the active health workforce providing health care services, reflecting a higher shortage of 5.69 doctors by the year 2030. The estimated shortage of nurses will be about 9.12 lakh by the year 2030 to meet the threshold of 34.5 skilled health worker per 10000 population. The nurse shortages escalate to about 21.65 lakh if we consider shortages in NSSO estimated active health workforce. Investment in Human resources for health is a prime requisite in India to achieve Universal Health Coverage (UHC) and SDGs agenda by 2030. Thus the study recommends that these investments will not only improve health outcomes but also generates employment, increases labour productivity and promotes economic growth and thereby pointing out to the needs to invest in the development of HRH infrastructure by expanding the supply of graduates and increasing the health worker availability in the country. In addition to this, addressing the nurse's shortages by attracting young people to join the nursing profession is also recommended along with improvising the quality of nursing education and institutions in the country. Health professionals should be encouraged to join the labour force by creating more employment opportunities. Improving the health stock and workforce database and linking with live registries are some of the other recommendations emerging from the study.

The project is funded by WHO India and led by Prof. Sanjay Zodpey

Dietary Diversity and Nutritive Value of Indigenous Foods in Addressing Food Security and Nutritional Status of Vulnerable Tribal Communities of India

Project summary : This study intends to develop a feasible strategy for engagement with local indigenous tribal communities of India to generate evidence about the nutritive value of their indigenous food resources. This information will be used for improved utilization of indigenous and traditional foods for better health and nutritional status of women and children in vulnerable tribal communities. Four tribal groups of Jharkhand, India, namely Santhal, Ho, Munda and Sauria Paharia (a particularly vulnerable tribal group) are being studied as part of this study.

The intention is to have a cohesive, systematic effort to understand the food environment of indigenous tribal communities comprising of biodiverse agroforestry systems; enumerate their traditional ecological knowledge, document the nutritive value of indigenous foods; assess their dietary consumption and contribution to overall nutrient intake and effect on nutritional status of women and children; and identify culturally acceptable and sustainable strategies to promote indigenous food systems. The study is likely to facilitate understanding of the causal mechanisms of malnutrition in specific food environments, and ways of leveraging indigenous food sources for affordable and sustainable diets to fill nutrition gaps and guide food based interventions to address malnutrition in these communities

We expect to develop a prototype for a context specific multi-level approach for encouraging production of the indigenous foods along with Behavior Change Communication (BCC) strategies for promoting their consumption in the tribal communities. These, in the form of policy recommendations can be extensively used to strengthen already existing strategies to combat undernutrition in these communities. Additionally, the robust scientific content disseminated through academic journals and other forums would help in creating an enabling atmosphere for acceptance of indigenous foods as a bona fide and sustainable nutritional enhancement strategy in this part of the world. This would potentially translate into healthier diets, food security and improved nutrition among vulnerable tribal communities of Jharkhand as well as facilitate ecosystem conservation and biodiversity preservation.

This project is funded by DBT/ Wellcome Trust India Alliance and led by Dr. Suparna Ghosh-Jerath

Formative Research on lycn Practices- An Application of Pen 3 Cultural Model (IYCN Project)

The gravity of poor nutritional outcomes in district underpins the urgency for contextualized evidence-based interventions to prevent malnutrition in these children by targeting and improving complementary feeding practice. The description of the social cultural belief and practices on breastfeeding and complementary feeding practice will be an important step in facilitating the formulation of interventions to address situation.

Present study aimed to:

- a) Assess nutritional status of children under two years of age.
- b) Identify specific child feeding practices adopted by mothers related to breast feeding and complimentary feeding for children up to 2 years of age.
- c) Identify opportunities and resources that might facilitate the improvement of the practices and problems identified

This project was funded by Indian Council of Social Science Research (ICSSR) - International Center for Research on Women (ICRW) and led by Dr. Jyoti Sharma

Understanding Impact of Pharmaceutical Regulation and Policies on Access to Medicine in India

Objectives of the project were to:

- Map the legal and regulatory framework of medicines regulation in India.
- Generate evidence on medicine utilization in India through use of medicine procurement, medicine sales, and prescription data
- Examine the impact of recent pharmaceutical policy measures on consumption of antibiotics in India

This project was funded by University of Newcastle and led by Dr. Habib Hasan Farooqui

Development of Review Paper on Procurement and Supply System for Malaria Elimination Activities Under the National Vector Borne Disease Control Programme

The aim of the this research study is to provide an overview of the vector borne disease control programme in India, and particularly of health systems stewardship role of NVBDCP in areas of policy, regulation, transparency and accountability with focus on all the components of the programme management pertaining to Malaria elimination programme.

This project was funded by World Health Organization (WHO) and led by Dr. Habib Hasan Farooqui

Strengthen Health Information System Specially in Overall Srmncah, Violence Against Women and Healthy Aging in Line with Various Global Monitoring Frameworks

The objectives of the project were:

- 1. To review the existing list of SRMNCAH, VAW and HA indicators in the national data systems and surveys in the SEAR countries.
- 2. To prepare a matrix with definitions of the new indicators and possible sources of such data.
- To conduct SWOT analysis and prepare a report of readiness of data systems and surveys in SEAR countries.

This project was funded by World Health Organization (WHO) and led by Dr. Preeti Himanshu Negandhi

Strengthening Routine Health Information Systems in South-East Asia

This project includes support to WHO with development of a regional HIS technical support action plan for 2020/ 21. It would also include support to HST activities required over the course of the project duration in strengthening national HIS performance across the region. Additionally, three support activities would be conducted during the course of hte project: 1. Assist WHO with support to two SEAR countries with development and implementation of national M&E monitoring framework, 2. Assist WHO with support to two SEAR countries with development and implementation of their national HIS strategy, and 3. Organize a two-week capacity building program in RHIS.

This project was funded by World Health Organization (WHO) and led by Dr. Preeti Himanshu Negandhi

Digoxin in Patients With Rheumatic Heart Disease - a Randomised Placebo-Controlled Trial V

This is a multisite India based double blind randomised controlled clinical trial involving patients with rheumatic heart 1800 adult disease comparing digoxin versus placebo. Both groups will recieve routine evidence based therpy for heart failure. This study is propsed to be conducted at 10 clinical sites across India, with All India Institute fo Medical Sciences-Delhi being the nodal centre. The principal research questions addressed by this trial are the following: In patients with rheumatic heart disease, (i) Does digoxin use increase mortality? (ii) Does digoxin use reduce the incidence of worsening heart failure?. The primary outcome is all-cause mortality. Deaths will be classified by treating physicians as sudden, as being due to progressive heart failure, or other cardiovascular (eq., stroke) or non-cardiovascular causes. Worsening HF will be the secondary outcome of interest. Worsening HF will be diagnosed if patients receive intravenous diuretics either in the outpatient or emergency departments, or require admission for treatment of heart failure. There will be no central adjudication of outcomes. The trial project management will be done by CDSA, THSTI. IIPH-D will be providing overall Data management and statistical support for the trial. The following would be the responsibility of the DMSU. (1) Designing of Case Report Forms(CRF) (2) Designing and validation of e-CRF in CLINION (3) Generation and implementation of randomisation sequence (4) Data processing (5) Preparation of Interim Report for DSMB (6) Final analysis of the study data.

This project is funded by Indian Council of Medical Research (ICMR) and led by Dr. Niveditha Devasenapathy Do Community Health Officers Augment Comprehensive Primary Health Services? Assessing the Performance of Mid-Level Health Providers at the Health and Wellness Centres in Assam-Phase II

The study was aimed to assess the contribution of MLHP in comprehensive primary health care at sub-centres. This included in-depth interviews with the CLHP, their colleagues and supervisors. Concurrently, focus group discussions were undertaken with the community covered by the SC. In addition, performance indicators on CPHC of last three years was also measured.

This project was funded by World Health Organization (WHO) and led by Dr. Niveditha Devasenapathy

Value of Gated-Spect MPI for Ischemia-Guided PCI of Non-Culpritvessels in Stemi Patients With Multivessel Disease after Primary PCI (Spect Stemi-CRP)

Value of Gated-SPECT MPI for Ischemia-Guided PCI of non-culpritvessels in STEMI Patients with Multivessel Disease after primary PCI is a multicountry randomised control trial. Following activities were undertaken over the two-year period

- 1. Fianlise the data collection tool
- 2. Design electronic Case report form (eCRF) CRF using a webbased database
- 3. Develop data entry manual for participating site for electronic data capture(EDC)
- 4. Develop and implement randomisation using envelop technique
- 5. Coordinate with paraticpating sites to ensure completion of data forms
- 6. Facilitate query resolution
- 7. Perform data cleaning
- 8. Share monthly recruitment and follow up progress with sites
- 9. Develop statsitical analysis plan
- 10. Perform stasitical analysis of the trial data and assist in report writing

This project was funded by International Atomic Energy Agency (IAEA) and led by Dr. Niveditha Devasenapathy

Brave Bones: My Story; My Voice

This project titled "Brave Bones: My Story; My Voice" would elicit different arthritis and osteoporosis patients' own illness narratives and transform these stories into culturally appealing audiovisual format by employing a mix of traditional, and modern techniques

This project is funded by Wellcome Trust (WT) and led by Dr. Shifalika Goenka

Systematic Review of Evidence on the Cost-Effectiveness of Rota Virus Vaccination in Low and Middle Income Countries

The main goal of the INCENTIVE Consortium is to establish a cornerstone toward the development of the next generation influenza vaccines to reduce the worldwide burden resulting from disease outbreaks. This major goal will be achieved by pursing the following specific objectives:

- Address the current knowledge gap by performing comprehensive immunome profiling of responders and non-responders to influenza vaccines at baseline and post vaccination with standard vaccines to identified the underlying mechanisms;
- b) Advance the development of two next generation universal vaccines;

- c) Identified predictive biomarkers of responsiveness to vaccination to develop new diagnostics; and
- d) Perform a health systems and investment analysis, and discrete choice experiments to assess the suitability of the developed technologies for low- and middle-income countries and to identify potential downstream constraints that might affect uptake by health care systems

This project is funded by Indian Council for Medical Research (ICMR)- Department of Health and Research (DHR), Ministry of Health & Family Welfare, Government of India and led by Dr. Shomik Ray

Control of Thalassemia and Sickle Cell Disease in Odisha

This is a research study which will be conducted across districts of Odisha. Our objective would be to evaluate the implementation of specific interventions in the area of prevention and control of hemoglobinopathies such as sickle cell disease and thalassemia, specfically the screening component.

This project was funded by Indian Institute of Public Health Gandhinagar and led By Dr. Preeti Himanshu Negandhi



IIPH HYDERABAD

Centre for Health Outcomes Research and Economics (CHORE)

The project is aimed to : Generate new knowledge and disseminate the best practices in clinical research, health economics, and public health in vision sciences through big data; Create a pool of trained clinician scientists with expertise at the intersection of the above domains and Develop a training center for clinicians to assess and perform research, evaluate cost-effectiveness, and analyze big data

The expected outcomes of this project are: Establishment of a unique Centre for Health Outcomes Research and Economics, a hub for training and research in big data, health economics and public health in vision sciences; Quality research in the above domains to address important questions in eye health relevant to India through big data ; Generation of strong evidence based knowledge in Indian context for interventions and to influence policy; A novel training center for clinicians in above domains through CRTP and online modules; Develop research tools relevant beyond eye health; Niche pool of trained clinicians in clinical and public health research as well as outcomes research and health economics and Develop an online training module for clinicians, which would impart research skills and guide them in completing/ publishing their research project

So far, the team has developed the design, structure and created the online course modules for training eye care personnel in public health. The team has also finalised a proposal to carry out a situational analysis in Siddipet district of Telangana to help better integrate vision centres with primary eye care.

This project is funded by Wellcome Trust/ DBT India Alliance and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

AP Insecticide Related Mortality Project

This document outlines the memorandum to form a Special Technical Support Team (STST) to investigate the disease outbreaks/epidemics which occurred recently in West Godavari District of Andhra Pradesh and any future outbreaks that may arise. The team will submit a detailed report after extensive field study to the Government of AP, highlighting the causes for the disease outbreak and will also guide on various public health measures to prevent this type of outbreaks.

This project is funded by Department of Health, Medical & Family Welfare, Government of Andhra Pradesh and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Administrative Staff College of India-Facilitate and Strengthen Collabaration Between ASCI and PHFI/IIPH-H

IIPH-H and ASCI will shall work together with a mutual understanding and towards the successful accomplisment of Prepare the course curriculum ,preparing the course materials, designing the course brochure, marketing the programme and delivery of the programme.

This project is funded by Administrative Staff College of India, Hyderabad and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

A Comprehensive Cancer Care Plan Development and Advocacy Engagement for the State of Telangana

With the primary objective of developing a comprehensive cancer plan that is contextualized to the priorities of the state of Telangana, the project seeks to complements the state government's initiatives to deliver high-quality, affordable cancer care services. The six major activities planned include comprehensive literature review; modified-Delphi exercise with an expert panel to develop a cancer framework and subsequently the state-specific cancer control plan in two-phases; formation of a TAC (technical

advisory committee) to ensure that the plan has a 360-degree approach and addresses local needs ; organization of a round-table meeting to seek government approval for the plan finalized by TAC ; convening an advocacy engagement workshop with key stakeholders (including the members from the TAC and expert panel) from government, academia, private sector, donor organizations, media, and civil society to form the Telangana Cancer Action Plan ; facilitating official release of Telangana Cancer Action Plan by policy makers, ministry of health and the state governor as a 'policy level affirmation' through a one-day launch event.

Finally, the project aims to develop a sustainable cancer care model which could be replicated in other states of the country and in similar settings for effectively delivering comprehensive services to reduce cancer-related morbidity and premature mortality thereby contributing to the attainment of the targets specified under UN-Sustainable Development Goals in the near future.

This project is funded by Roche India Healthcare Institute and led By Prof. Gudlavalleti Venkata Satyanarayana Murthy

Strengthening of Cancer Care Plan for the State of Andhra Pradesh

The project aims to strengthen Andhra Pradesh State's own cancer plan contextualized to local priorities and learnings from global best practices / models; co-create tangible interventions for implementation at the state level and develop a robust advocacy plan and engage with policy makers / decision makers;

This project is funded by Roche India HealthCare Institute and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Evaluation of Basthi Dawakhana

This project aims to assess the impact of Basthi Dawakanas in GHMC limits; To review the linkages between Basthi Dawakanas and Urban Primary Health Centre; We have randomly selected 20 basthi dawakanas for the study. Will be interviewing the medical officer,staff nurse,support staff ,patients attending Basthi dawakana, the concerened UPHC medical officer to which basthi dawakana is attached; interviewing the SPHO of concerened basthi dawakana and DMHO

This project was funded by Director of Public Health & Family Welfare, Government of Telangana and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Cervical Cancer Vaccination Project (CCVP) - Hyderabad

Cervical cancer is a major cause of morbidity ,mortality and premature death among middle -aged women in developing countries. HPV vaccination is now widely recommended for the prevention of cervical cancer and the IARC intiated a multi-centric cluster randomized clinical trial in india in the year 2009 to evaluate the effectiveness of HPV vaccinaties

The current study aims to evaluate and implement cancer prevention and control strategies by enhancing the implementation of cancer prevention and control programmes.

The Objective of this present study is to follow up the vaccine recipients to conclusively establish whether vaccine can prevent persistent vaccinetargeted HPV infection and cervical cancer. The specific activities of the project will be to contact the girls/young women for followup, after obtaining informed consent facilitate collection of blood for assessing the anti-HPV immunological status and T cell/B cell assays ,collection of cervical cells to establish the presence or absence of HPV infection after their becoming sexually active,for screening sexually active women aged 25 years or more,follow-up care of study subjects ,to co-ordinate the study inputs/outcome evaluations with IARC

This project was funded by MNJ Cancer Hospital Hyderabad and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Data Analysis / Data Management Workshop-- Phase-I

Data Analysis workshop - August / September 2021: Full involvement of Statistician and Data Management Expert. Report / scientific Writing workshop - November 2021. Capacity building of participating teams in data analysis and interpretation and writing of results – Involvement of statistician and Data Management expert as and when required. Guide the partners meeting: in scientific report writing, journal identification and publication of the report. One presentation by team on data analysis and results: Involvement of Statistician and Data Management expert as and when required. Other Presentation by the teams on final manuscript

This project was funded by SEVA Foundation and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Build Reasearch Capacity, Participate in 2020 RCB & Building the Plan for Calendar for ORCB Activities

The goal of the project is to scale up comprehensive quality eye care services through capacity building of Seva Foundation's Partner hospitals, resulting in a direct increase in restored sight of people by 2020-2021. This goal will be achieved through operational Research Capacity Building by series of workshops and handholding is from the participating mentee hospitals' perspective.

Capacity building is an ongoing process and can have long-term impact on organizational efficiency and effectiveness. This process, when internalized, helps to improve performance through efficient use of available resources, stimulate forward thinking, solve major organizational growth problems, mobilize required resources and become financially viable. Through IIPH-Hyderabad, Operational Research Capacity Building of selected hospitals was carried out to improve capacity, with the following objectives:

• Build research capacity, particularly operational research capacity, within Seva partner programs so that over time mentors can share these skills with mentee partners

- Participate in building the plan for calendar 2020 RCB activities: institutions, projects, individuals, and timelines. The plan will include IIPHH inputs plus those from Seva partners, staff, and other current research colleagues
- Implement the agreed upon activities to support research development among Seva partners and staff.

The project was aimed at increasing and strengthening the capacity of the available staff for Operational Research which in turn will help in evidence generation, which is a step forward in reducing the unmet need of operational Research Capacity Building.

This project is funded by SEVA Foundation and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Multi Centric Collaborative Study on the Impact of Global Warming and Ultraviolet Radiation Exposure on Ocular Health in India - ICMR Phase III

Project aims to assess the association between the exposure of Ultraviolet Radiation (UVR), and aerosols with cataract, dry eye, pterygium in adults and VKC in children in urban areas of India. (Vishakhapatnam & Hyderabad) The secondary objective is to assess the occurrence of exacerbations of VKC along with its correlation in urban areas of India. The third objective is to assess the cumulative incidence and progression of cataract, dry eye, and pterygium in population more than 40 years and vernal kerato





conjunctivitis (VKC) in children aged less than 15 years, in rural cohort (Rural Prakasam district). Project is currently in its second phase. The first phase was done on rural population during the period of 2013 to 2016.

The project will help to understand the burden of various ocular diseases in rural urban parts of Coastal Southern India and its correlation with environmental factors.

This project is funded by Indian Council of Medical Research (ICMR) and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Gift Hope, Gift Life - Evaluation Report

This report presents the findings of an evaluation done on Organ donation Awareness training programs, conducted by MOHAN'S Institute, Kilpauk, Chennai . The objective of this was to identify outcomes based on interviews and to evaluate the effectiveness of the training programs. Activities carried out were : Interviews were conducted with participants who underwent training on Organ donation; carrying out awareness sessions at the MOHAN's Institute. The evaluation was focused mainly on appraising the results and outputs of training programs under the project.

This project was funded by MOHAN Foundation and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy



Research and Analysis of Pranav (COE) for Universal Newborn Hearing Screening at Niloufer Hospital

The projects aims to conduct statistical analysis of Neonatal hearing impairment. 2. Analysis of demographic data,epidomology profile,referral distribution of patients,Gender ratio. 3. Disaggreegation of data based on new born age,new born weight,maternal age,Type of delivery and Gravida etc.

This project was funded by SAKSHAM (SAmadrusti, KSHamata vikas evam Anusandhan Mandal), The Center for Excellence - Niloufer Hospital and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

REACH - Refractive Errors Among Children

This project aims to support analyzing the existing dataset and to Create a plan to conduct appropriate statistical analysis for the manuscripts listed below

- Refractive errors among children (REACH) a large scale school based eye health program - Design
- 2) Prevalence of uncorrected refractive errors among school going children across India.
- Prevalence of Visual impairment (VI) and ocular problems among school children in India
- 4) Spectacle compliance among school children in India

- 5) Spectacle coverage and met need among the school children in India.
- Referral compliance and barriers to access eye care services among school children identified with eye problems.
- 7) Prevalence of Hyperopia and the effectiveness of hyperopia screening among school children in India
- 8) Refractive errors progression after one year among school going children in India.

This project is funded by Orbis International and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Community Eye Health Journal - South Asia Region Edition 2019-2021

The main aim is Publishing of Community Eye Health Journal (CEHJ) South Asia edition for the year 2019-21.

- 1. The South Asia version of the CEH journal will carry the logo of the Trust.
- 2. The Trust will have membership on the advisory committee of the publication.
- 3. While creating Public awareness on preventive health, the journal which is to be published is distributed to public at large free of cost.

This project is funded by Tijssen Foundation and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Development of a Minimum Standards Framework for the Provision of Therapy Services for the Disabled in Tamil Nadu

Directorate for Welfare of the Differently Abled, the Government of Tamil Nadu has the mission to create an inclusive society by integrating the differently abled persons in the mainstream by eliminating all kinds of barriers to their overall development. As a part of the implementation initiative of the Rights to Persons with Disability (RPD) Act 2016, the directorate had requested technical support from IIPH Hyderabad SACDIR to develop a Minimum standards guideline for registration of rehabilitation centres and therapy service provision facilities for persons with disabilities in Tamil Nadu. Expected impact of the project is to help streamline and regulate therapy service provision for persons with disabilities in the state of Tamil Nadu as well can be replicated for other states.

This project is funded by Directorate for Welfare of the Differently Abled, the Government of Tamil Nadu and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy

Adolescent Injury and Violence Detection (AVID)

Globally, injuries and violence are among the leading causes of death in adolescents aged 10-19. About 90% of this burden resides in LMICs, especially in cities undergoing rapid urbanization. Adolescents are particularly sensitive to the rapid social, economic and ideational changes that accompany development. Addressing the major burden of disease facing this group – injuries and self-harm – is an essential component of ensuring their health and well-being.

The overall goal of this project is to develop a tool using Artificial Intelligence (AI) to detect adolescents at-risk of experiencing violence and injuries. This application focuses only on Phase I of a multi-phase project.

This project is funded by Johns Hopkins School of Public Health and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy and Dr. Shailaja Tetali

Extending an Inter-Generational Cohort to Develop a Multi Morbidity Research Platform in Rural and Urbanising India

London School of Hygiene and tropical medicine UK, National Institute of Nutrition Hyderabad and Indian Institute of Public Health Hyderabad are collaborating to capitalise on 30 years of investment and extend the inter-generational Andhra Pradesh Children and Parents Study (APCAPs) cohort into a platform for understanding the epidemiology of multi morbidity and its corresponding burden and healthcare use, which could ultimately be used to develop and test interventions.



Formative Survey with Anganwaadi workers and ASHAs, beneficiaries

Specific objectives for the current seedproposal are - To conduct preliminary analyses on life course and environmental risk factors of prevalent multi morbidity using existing APCAPs data (N=6,972),to collect pilot data on the parental generation of the APCAPs cohort to identify common clusters of multi morbidity and their incidence (N=~2,000), to conduct qualitative research with community members (with and without multi morbidity) and other stakeholders to establish priorities and design of the proposed research platform ,to explore the feasibility of establishing a low-cost disease surveillance system, to use the above findings to develop proposal for a multi morbidity research platform. The current proposal will lay the foundations for the future research platform by: using existing APCAPs data to identify key life course and environmental risk-factors and common clusters of multi morbidity, estimating incident multi morbidity to inform on the required sample size, qualitatively assessing multi morbidity burden and community wishes for future research, and evaluating the feasibility of developing a healthcare surveillance system for future lowcost data collection.

The team has developed protocols and standard operating procedures for multi morbidity screening in the APCAPS community which included tracking participants, Demographic and medical history, Disability which included visual acuity, hearing and dementia screening tools, Food frequency and physical activity recall tools, anthropometric, cardio vascular measurements and blood sample collection. The data collection is designed using ODK collect. Two pilot testing sessions have been carried out and the team is in the final stage of finalizing the protocols based on the pilot results.

This project is funded by ICMR- NIN India / Medical Research Council (MRC)-UK and led by Prof. Gudlavalleti Venkata Satyanarayana Murthy and Dr Gowri Iyer

Advanced Collaboration for Early Childhood Development and Empowerment (ACECD)

During COVID-19 pandemic, the utilization and outcomes for RMNCH+A services is predicted to have deteriorated. The pandemic has also certainly affected the ECD, due to poor access to health and nutrition, restricted social interactions and delay in early stimulation, domestic violence and safety concerns. The life cycle approach under RMNCH+A, at each stage, constitutes program interventions also contributing to the ECD through health of parents and parenting skills. We find that community based support for healthy parenting and rehabilitation for children in needs is largely missing and contributes to missed opportunity of normal childhood development resulting in residual disease, disability or disorder. In the context of the SDG, it is important to implement an integrated package for Early Childhood Development (ECD) via healthy parenting and socio-environmental support; and treatment and rehabilitation for children with special needs.

This project is funded by United Nations Children's Fund (UNICEF) and led by Dr. Samiksha Singh

Regional Resource Hub for Health Technology Assessment in India

The objectives of the project are:

- To develop a repository of high quality evidence in the field of public health and healthcare – undertake systematic reviews and meta-analysis of existing evidence with all the rigors of science, so that it would facilitate evidence-based decision-making at the policy, strategy and healthcare delivery level
- Assess health technologies, interventions, programs and policies – with economic efficiency and effectiveness lens to facilitate decision-making and efficient resourceallocation
- Improve methodologies and develop innovative customized evaluation designs

 suited to the local needs of the public health and healthcare delivery communities; a value addition to the high quality evidence generation paradigm
- To inform the population and clients about public health and health care delivery system, especially about various aspects of different operations, innovations, induction of new interventions and new policies - adding value to the regulatory framework of these instruments.
- Building the capacity of the personnel of the proposed hub for undertaking such rigorous exercises – forging collaboration with various centers of excellence

This project is funded by Department of Health Research Ministry of Health & Family Welfare (MoHFW), Government of India and led by Dr. Lipika Nanda

Assessment of Vulnerability and Threshold of Heat- Related Health Hazards in Four Cities of India

The objectives of this project are to:

- 1. To conduct vulnerability assessment for heat wave in four cities of India through household survey.
- 2. To explore opportunities and challenges of heat wave adaptation and document innovations on heat wave mitigation during summers.
- To determine temperature thresholds of heatrelated health hazards in four cities of India through scientific analysis of multi-sectoral data on morbidities & mortalities.

This project is funded by National Disaster Management Authority and led by Dr. Lipika Nanda

Assessing Determinants Related to Electronic Nicotine Delivery Systems (ENDS) Use Among School Going Adolescents and Implications for Tobacco Control in India

The study was conducted in collaboration with HRIDAY and and IIPH Hyderabad. This study was a cross-sectional study and implemented over a period of eight months in selected schools located in three urban cities (Delhi NCR, Hyderabad, Ahmedabad) representing North, South, and West zones respectively in India. IIPH-Hyderabad carried out data collection for this study in Hyderabad city-- a) 1000 school surveys b) Four Focus Group Discussions (FGDs) and c) Five key stakeholder In-depth Interviews (IDIs)

This project was funded by World Health Organization (WHO) through HRIDAY and led by Dr. Shilpa Sadanand

Supprting the Active Bleeding Control Program in India

The project is aimed at:

- a) Helping to conduct needs assessments to support the ABC program.
- b) Development of data collection tools and collection of data to evaluate program impact.

c) Sharing 6 monthly progress reports with UPIASI, and Dr. Vinay Nadkarni, Professor, Anesthesiology, Critical Care and Pediatrics, University of Pennsylvania Perelman School of Medicine, USA.

This project is funded by University of Pennsylvania Institute for the Advanced Study of India (UPIASI) and led by Dr. Shailaja Tetali

Effectiveness of the 'Care for Stroke' Intervention in India, a Smartphone-Enabled, Carer-Supported, Educational Intervention for Management of Disabilities Following Stroke. - Randomised Controlled Trial

The overall plan for the first year and second year was 1. Planning and preparation for the clinical trial. 2. Launching the trial and start enrolment of participants for the clinical trial. These activities were completed successfully as planned. The overall plan for the third year was to ensure an interrupted ethical and scientific conduct of the trial and come up with at least one collaborative proposal for submission. The key activities that was proposed and completed as a part of the third year plan (trial planning and preparation) were

 To complete at least half of the patient recruitment (total – 266) for the trial.
 We have now recruited about 240 participants

in the trial. 2. Establish collaborations with at least one

organization relevant to his research interest. Have established collaboration with the International Center for Evidence in Disability as well as the Non-communicable disease epidemiology department at the London School of Hygiene and Tropical Medicine

3. Submit at least one collaborative research proposal to prestigious funding agency.

Have submitted two international collaborative proposals and have been successful. One proposal is towards achieving universal health coverage in stroke care in South Africa funded by NIHR U.K. Another proposal is towards developing a scalable solution for caregivers of stroke survivors in Malaysia. Funded by MRC U.K. One of the main objective for the fourth year was to recruit close to 2/3rd of the participants required for the trial. i.e. 200 participants of the total 266 participants required for the trial. Up till date we have recruited about 240 participants and have achieved the set target for the fourth year as planned.

This project is funded by DBT/Wellcome Trust India Alliance and led by Dr. Suresh Kumar Kamalakannan.

Extended Follow-Up of the Participants of IARC-India Hpv Vaccination Study To Evaluate The Effectiveness of one, Two and Three Doses of Quadrivalent HPV Vaccine in Preventing Cervical Neoplasia

The long-term follow- up of the vaccinated cohort (n=800) and age matched unvaccinated cohort (n=300) is ongoing for the past 11 years. The cervical samples from the married participants are collected annually to detect any incidental and persistent HPV infections against 16 & 18 types and also any non-vaccine types of HPV infections.

Expected impact on public health in India: The overall goal of the research study is to assess the long-term clinical efficacy of two doses and a single dose of the HPV vaccine. Proof of the efficacy against long-term clinical outcomes will strengthen the evidence base for the current recommendation of two doses for adolescent girls and will contribute to the evidence base if one dose may be used for cervical cancer prevention in pre-adolescent and adolescent girls. The public health implication of either of the findings will be immense, as this will allow many of the resourcelimited countries to introduce the vaccination program at a substantially lower cost and improve compliance and access to vaccination. Given the real possibility that many developing countries may not adequately invest in organizing cervical screening services, HPV vaccination is the most potentially useful and effective intervention in the long-term. This study will also address the important issues related to the screening of the vaccinated women. During this extended 5-year period, many of the participants in the present study will reach 25 years of age and will be eligible for screening. Screening of these women with HPV testing will allow us to evaluate the performance of HPV screening in the vaccinated women, regarding which very little information is available in the literature.

This project is funded by International Agency for Research on Cancer (IARC) - World Health Organization (WHO) and led by Dr. Usha Rani Poli

Smartphone Enabled Peer-Led Diabetes Care for Last Mile Connectivity in Rural India

Objectives of this project are as below:

- Training of ASHA and ANM workers across 15 chosen health centres in the Type 2 diabetes mellitus(T2DM);
- Training of ASHA and ANM workers in conducting Peer support groups and using the telemedicine app being created
- Development of Telemedicine application for video consultation from the village centres with specialists

- 4) Assimilating existing resources and compiling a standard module for T2DM training for the ASHA & ANM
- 5) Conducting Telemedicine consultations and peer support groups for identified rural patients/residents
- 6) Evaluating the competence level changes in the trained health workers
- Evaluating the intervention for improvement in T2DM management of identified rural patient

Expected impact on public health in India: Training of ASHA & ANM workers in T2DM; Improved community level management of T2DM in rural/ semi-urban population of the state; An integrated model of technology to improve seamless flow of knowledge, medical history and consultations from primary care to next levels of healthcare.

This project is funded by Department of Science & Technology (DST), Ministry of Science and Technology, Government of India and led by Dr. Gudlavalleti Anirudh Gaurang



IIPH BENGALURU

Maternal Antecedents of Adiposity and Studying the Transgenerational Role of Hyperglycemia and Insulin (MAASTHI)

Maternal Antecedents of Adiposity and Studying the Transgenerational role of Hyperglycemia and Insulin (MAASTHI) is a cohort study based in the public health facilities of Bangalore, India. The objective of MAASTHI is to prospectively assess the effects of glucose levels in pregnancy on the risk of adverse infant outcomes, especially in predicting the possible risk markers of later chronic diseases. The primary objective of the study is to investigate the effect of glucose levels in pregnancy on skinfold thickness (adiposity) in infancy as a marker of future obesity and diabetes in offspring. The secondary objective is to assess the association between the psychosocial environment of mothers and adverse neonatal outcomes, including adiposity. Gestational diabetes mellitus, haemoglobin



Pregnant woman undergoing OGTT at hospital



Researcher Assessing chest circumference of the child during follow up visit

status, blood pressure, anthropometric markers, depressive symptoms, dietary habits, physical activity, tobacco and alcohol consumption, and socio demographic factors have been assessed.

Pregnant women recruited from public hospitals and their offspring were followed up for a period of 4 years. The research aims to harness life course perspectives on development of NCDs and contribute towards early prevention. So far, 2962 women have completed Oral Glucose Tolerance Test (OGTT). Blood samples of 2965 women have been stored for future analysis. The incidence of GDM within the MAASTHI cohort was found to be 14.3% and 45% were anaemic.

Implementation of the cohort study in public health facilities and its findings could directly inform the scaling up of screening and management of gestational diabetes in the country. The results can position the issues of maternal glycaemic control and weight management (both underweight and obesity) at the core of policy agenda.

This project was funded by DBT/Wellcome Trust India Alliance and led by Prof. Giridhara R Babu.

Ambient and Indoor Air Pollution In Pregnancy and the Risk of Low Birth Weight and Ensuing Effects In Infants (APPLE): a Cohort Study in Bangalore, South India

The project aimed to evaluate the association between prenatal exposure to ambient and indoor air pollutants and low birth weight (LBW) in newborns. The secondary objective is to explore the mediation role played by LBW in the causal path between air pollution in pregnancy and adiposity in infancy.

We followed a cohort of 519 pregnant women. Among the total study participants, 297 underwent pollution assessment twice during pregnancy in the second and third trimesters. We have completed 456/519 at birth follow ups (87.5%), 362/449 six-month (80.6%), and 356 (418) one-year follow ups (85.1%) so far. We reported the mean, standard deviation, minimum



Figure 1: Set of device with power bank and sling bag



Figure 2. Woman holding device

and maximum values for indoor, ambient and net exposure for particulate matter and carbon monoxide. The majority of the women were Hindus (62%), aged between 18 to 25 years (64.9%), had completed high school education (41.7%). 45% of the study participants belonged to the lower socio-economic status. Nearly 22% of them reported smoking habit in their spouse. Nearly 96% of the participants use LPG as the primary fuel, and 17% of them use solid biomass as the secondary fuel. Nearly 73% of the participants reported having no ventilation in their kitchen. Nearly 44% of them use incense sticks, 34% of them use Frankincense as a part of their prayer. Majority of the residences are located within 500mtrs from the main road. Nearly 26% of them reported having open garbage and construction activity near their residence. The indoor PM2.5 was found to be 30.32ug/m3, PM10 reported to be 54.18ug/m3, CO was 2.52ppm. The ambient measurements were: PM10 = 55.37ug/m3 and ambient CO = 1.07ppm.

We observed that nearly 18.3% of infants were small for gestational age at birth, and 9.6% of the infants had birth weight less than 2.5kg. We did not find any significant association between pregnancy exposures to air pollution level on birth weight. We estimated the adiposity prevalence among children considering weight for age z-score (WAZ) above the 85th percentile and sum of skinfold thicknesses (SSFT) above 90th percentile. We observed that nearly 25.2% of the children were at risk of adiposity when we considered SSFT above 90th percentile, whereas WAZ score above 85th percentile gave the adiposity prevalence of 13.8%. We found significant association between the pregnancy exposures to air pollution on infant adiposity adjusted for several potential confounders. One-unit increase in PM2.5 was associated with an increase in WAZ-score by 0.006 units and an increase in 1 unit of PM10 is associated with an increased WAZ-score by 0.003 units. Future research will explore the mechanisms of this association, as well as include continuous measurement of exposure of particulate matter in a larger sample.

The project was funded by Dept. of Science & Technology and led by Prof. Giridhara R Babu

Gestational Diabetes in Uganda and India: Design and Evaluation of Educational Films for Improving Screening and Self Management (GUIDES)

Most women with gestational diabetes mellitus (GDM) in low and middle-income countries (LMICs) are undiagnosed and/or inadequately managed due to a lack of knowledge and skills about GDM on the part of both providers and patients. A whole systems approach targeting knowledge, skills and behaviours at multiple levels would improve detection and management of GDM. The specific project objectives are:

- To analyse the contexts (e.g. existing knowledge and skills, socio-cultural influences, infrastructure) in which the intervention is implemented.
- 2) To use this understanding to develop a package of culturally tailored, local language films aimed at improving a) knowledge and skills of health providers in detection and management of GDM, b) awareness about GDM among pregnant women and their families, and c) confidence and skills in self-management of GDM among women diagnosed with the condition and their partners
- To evaluate the effectiveness of the intervention (i.e. combined package of GDM films) in improving timely detection, glycaemic control, and adverse perinatal outcomes of GDM
- To identify learnings for scaling up low-cost behavioural interventions in LMICs using films

We hypothesize that the proposed intervention will be associated with improvements in a) detection of GDM at 32 weeks of pregnancy; b) glycaemic control (fasting glucose and HbA1C) in women with GDM at ~34 weeks of pregnancy; and c) adverse perinatal outcomes of GDM (composite of Caesarean delivery, perinatal death, or infant hospitalisation within 6 weeks of delivery) (secondary outcome).

So far we have conducted 28 IDIs and four FGDs to assess socio-cultural and health system context. Study participants included health care providers (doctors, nurses), pregnant women seeking Antenatal care (ANC) (diagnosed with GDM and without GDM), and their family members. Based on the findings of the qualitative study, five educational films were developed. For the quantitative study, 30 study sites were included in India. Films have been distributed and screened at all 15 intervention centres. So far, 11953 were recruited for the baseline study, and 1054 followed-up at 32 weeks. Lab test includes FBS, HbA1c and CBC. Nurses at respective study sites are trained for undertaking nurse led peer group GDM sessions for those who screen positive for GDM.

This project is jointly funded by DBT, India, and Medical Research Council (MRC), UK and led by Prof. Giridhara R Babu

Redesigning Primary Care to Reduce Cardiovascular Mortality: Population Preferences for Hypertension Care in India

The specific aims of this project are :

- 1. To assess health care utilization patterns, medication adherence, and stated preferences for health care among adults and older adults with hypertension in Karnataka, India;
- To conduct a rapid assessment of primary care capacity, competence and climate among health care clinics and providers responsible for managing hypertension and co-morbidities;
- 3. Based on the above data, to develop locally feasible primary care models for patient-centered, competent cardiovascular care.

This project comprises three interrelated activities conducted in one rural site of Kolar district and one urban site in Bengaluru district of Karnataka State.

So far we have conducted six FGDs among NCD patients with hypertension or hypertension with diabetes. We also conducted a household survey of 1087 participants with elevated blood pressure or past diagnosis of hypertension both in Bengaluru Urban district and rural areas of Kolar district. The activities involved collecting their baseline information and screening for hypertension among participants aged 30 years and above. The survey also involved recording the blood pressure measurements, anthropometry and administering a questionnaire to collect data on health care utilization patterns, health status, and confidence in health service providers for distinct health care needs, medication adherence, and self-rated health.

We conducted 13 facility surveys both in Bengaluru Urban and rural areas of Kolar district. The survey included audit of readiness for hypertension care based on World Health Organization guidelines



Figure 1: Focus Group Discussion among the Hypertensive patients in Bengaluru.



Figure 2: Focus Group Discussion among the Hypertensive patients in Kolar.

and the Indian Public Health Standards. Tabletbased assessment of 50 healthcare providers were conducted including background and practice areas, confidence and training, and knowledge of Non-Communicable Diseases.

Based on the results of activity 1 and 2, we will conduct a workshop for stakeholders and key informants and seek feedback and inputs for redesigning the present health care model.

The project is funded by Harvard T.H. Chan School of Public Health and led by Profs. Dorairaj Prabhakaran and Giridhara R Babu.



Figure 3: Training the data collectors for household survey.

Operationalizing Technical Innovation Learning Centre (TILC) at IIPH Bengaluru Campus

IIPH Bengaluru-PHFI is providing 'Technical Support' to Government of Karnataka (GOK) since 2013 and later in May 2017, PHFI was formally declared to be a Technical Innovation and Learning Centre (TILC). PHFI along-with GOK initiated and pioneered the concept of CPHC across Karnataka, based on the studies conducted on Out of Pocket expenditure in health, Accessibility to health care facilities and Health care utilization behaviour. These studies helped PHFI to support GOK in planning and implementing the strategies for CPHC.







Routine Supportive Supervision at SC HWCs by TILC



Review of HWC Activities , handholding HWC Staff for strengthening of CPHC UHC Programme



Technical support in the Divisional Review meet in Kalaburgi



Divisional Review: Presenting performance assessment of the division based on GoI-HWC Indicators

This program was first piloted in two districts namely Mysuru and Raichur, wherein one taluka from each district was chosen for the implementation of the programme. In the pilot phase, PHFI along-with GOK has operationalized 105 HWCs in terms of infrastructure, Human Resource, Planning of equipment, drugs and diagnostics etc. Based on the learnings, in FY 2017-18, TILC has supported GOK technically to scale up the programme across 17 districts of Karnataka including six districts of Hyderabad-Karnataka region and has operationalised a total of 5832 Health Centres as HWCs till FY 20-21.

The Overall Objective of TILC is to ensure that the concept of CPHC/HWC reaches the concerned stakeholders and support the GOK in planning and implementing the programme across the entire state.

Karnataka has been ranked first among all other states in implementation of Health and Wellness centre programme through Universal Health Coverage (UHC) in the last two quarters of current financial year 2020-21.

Karnataka Stands first in terms of NCD Enrollment amongst NCD App using states and 11th in screening. The ToTs for enrollment & screening were initiated at PHFI in February 2019. Since then, through technical support of TILC, Government of Karnataka has enrolled 2.8 Crore of its population and screened 12.2 Lakhs of its target population.

This project is funded by Directorate of Health & Family Welfare Services, Government of Karnataka and led by Dr Suresh Shapeti.

Is High Sensitivity C-Reactive Protein (HSCRP) Associated with Depression in Pre-Diabetes and Diabetes Subjects Participating in a Worksite-Based Lifestyle Modification Program in Urban India?

Individuals with type 2 diabetes mellitus (T2DM) are twice as likely to have comorbid depression compared to the general population. Since elevated hsCRP is associated with pre-diabetes and diabetes, and emerging evidence suggests a

positive association with depressive symptoms, chronic low-grade systemic inflammation could be a mechanistic link between the two disorders.

This sub-study aims to determine if high systemic inflammation (as measured by high-sensitivity C reactive protein hsCRP) is positively associated with depressive symptoms in individuals with prediabetes and diabetes in the Indian population.

Till date 6265 individuals (1192 women) have been screened across 11 sites in India. 2108 participants (477 women) met the inclusion and exclusion criteria. Baseline data collection and 16 intervention classes designed to reduce the risk of cardio-metabolic disorders have been completed at all sites.

Depressive symptoms were measured using the 8-item Patient Health Questionnaire (PHQ-8). 4.24% of the participants had a PHQ-8 score ≥ 10 (score cut-off for 88% sensitivity and specificity for diagnosed depression) during baseline, which reduced to 0.63% and 0.77% during the first and second annual follow-ups respectively.

Mean (SD) depression scores increased with increasing stress levels at work (0.602 (1.84) in very low stress vs 6.54 (6.69) for very high stress). Although the absolute values were lower, similar trends were observed for the two annual follow-ups.

Interestingly, mean (SD) hsCRP levels are also higher among those with high levels of stress during baseline (1.83 (2.21) mg/L in very low stress vs 2.94 (2.62) mg/L for very high stress). As with depression scores, trends for hsCRP levels were similar for low vs high stress during both the follow-ups: 1.89 (2.15) mg/L in very low stress vs 3.30 (3.25) mg/L for very high stress during the first FU and 2.58 (2.35) mg/L in very low stress vs 4.47 (2.98) mg/L for very high stress during the second FU.

This project was funded by Department of Science & Technology and led by Dr. Debarati Mukherjee an INSPIRE fellow, as a sub-study of the INDIA-WORKS project funded by NIH.

IIPH BHUBANESHWAR

Heat Stress Assessment of Bhubaneswar, Odisha

The project aimed to conduct vulneerability assessment of marginalized population living in Bhubaneswar city, in terms of their health status, effect of getting exposed to extremes of heat and economic loss due to adverse climate situations. The evidence gathered from this survey were presented to the department for brining about heat stress mitigation programme for the city. We closely worked with OSDMA and BMC on these issues. The dissemination and capacity building activities conducted for the key stakeholders working in various departments of the government.

This project was funded by Integrated Reseach and Action for Development (IRAD) and led by Dr. Bhuputra Panda

Public Funded Health Insurance Implementation Research --Process Evaluation of Publicly Funded Health Insurance Scheme in India

The main objective of this project was to undertaker a process evalautio of PMJAY for porvidng inputs to stregthen the implementation process. The major activities included : 1) Literature review (published) ,2). review of Policy documents, guidelines, SOP's 3) qualitative interview 4) Direct observation 5) Consultations, 6) Report writing

This project was funded by ACCESS Health International, Inc and led by Dr. Sarit Kumar Rout

Evaluation of Comprehensive Primary Health Care Services Through Health and Wellness Centres in Odisha

The objectives of the project were to:

 To Conduct a rapid assessment of comprehensive primary health care services being offered under HWC PHC/SC as compared to stand alone PHC/SC.

- 2. Document best practices and challenges in Implementation the Programme.
- 3. To recommended a scaling up strategy to the state government.

This project was funded by National Health Mission, Government of Odisha and led by Dr. Bhuputra Panda

External Evalution of Urban Primary Health Centre

The project was aimed at:

- I. To assess the effectiveness and impact of the services provided by the urban Primary health Centre(UPHC) after taken over by the NGO
- II. To assess the extent of the utlisation of UPHC services by the people, their perception of service delivery and their expectitions.
- III. To find out any Innovations/best practices done by the NGO for value addition to the project.
- IV. To ascertain the patient satisfaction perspective on service provision in the health facility

This project was funded by National Health Mission, Government of Odisha and led by Dr. Nallala Srinivas

Prevention Effective of Homeopathic Medicine on Malaria- an Interventional Cluster Study in Odisha

This is the first of its kind prophylactic trial conducted in Pallahara block of Angul district, that reported API of 200 during 2015-17. Under the study, we conducted baseline by undertaking mass screening of about 14000 people living in 48 villages across four sub centres. Through randomization, we administered homeopathic medicines in three arms and placebo in one arm. After 10 months of active surveillance, we have conducted end-line involing the same 14000 population, to analyze and compare the results. Preliminary findings indicate a ten fold reduction in incidence of malaria in the intervention area. However, comparative analysis is yet not ocmplete. Over next two months, the final report will be prepared and submitted to the Ministry of AYUSH, Govt of India.

This project is funded by Central Council for Research in Homoeopathy and led by Dr. Bhuputra Panda

Providing Monitoring Support to Laqshya Initative in Odisha

The objectives of this project were to:

- 1. Undertake Assessment of CHCs for LaQshya Certification.
- Sharing the finding of the assessment and providing monitoring support to 17 CHC for Laqshya Certificatiuon
- 3. Sharing of Final project Report to NHM for further action.

This project was funded by National Health Mission, Government of Odisha and led by Dr. Ranjan Patnaik and Dr. Bhuputra Panda

Sickle Cell Disease and Thalassemia Control Program in Odisha: a Situation Analysis

Objectives of the study are to:

- Map all existing programmes, institutions and infrastructure (including diagnostics) for prevention, control and treatment of thalassemia and sickle cell disease.
- To review the existing data and literature in this domain to get a rough estimate of the problem.
- 3. Assess community understanding/ awareness, perceptions, needs and demands.

This project is funded by Christian Medical College and led by Dr. Nallala Srinivas.

A Roadmap for Improving the Health Status of Women Belonging to the Scheduled Tribes in the 89 Tribal Development Blocks of Madhya Pradesh

The project aimed to conduct a qualitative study on socio-cultural barriers for Tribal Women to access health services in representative blocks across 89 Tribal dominated blocks of Madhya Pradesh. Based on the findings from the empirical study, evidence based recommendations for a road map to improve the health of general tribal population in MP was made.

This project was funded by Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis (AIGGPA), Government of Madhya Pradesh and led by Dr. Upasona Ghosh

Strengthening of Special VHND-RI Intervention Under the Sampurna Scheme in Odisha

Delivery of health services in recent years such efforts have been complimented by many programmes that aimed to further strengthen the existing health systems. Despite of having a sharp pace of decline in the maternal mortality ratio (MMR) during the period 2006-2012, India fell short of meeting the Millennium Development Goals (MDG) on improving maternal health. The National Rural Health Mission (NRHM) aimed to offer a basket of maternal and child health services, such as, antenatal care, child care, immunization, family welfare and adolescent health care services under one platform, branded as "Village Health and Nutrition Day" (VHND) for improving access to maternal, newborn, child health and nutrition (MNCHN) services at the village level. In Odisha, the guidelines for organizing VHND sessions were developed in 2009 and the programme was re-launched as "Mamata Diwas", in which sessions were planned to he held on a fixed day excluding the Fixed Immunization Day (FID); and health and nutrition services to women and children became a priority. In this context in 2017 the state government strategized and expanded the scope of VHND services to difficult-to-reach areas under the brand "Sisu Abham Matru Mrityuhar Purna Nirakaran Abhijan" or SAMPurNA, designed to achieve 90% complete immunization coverage by 2020 with special emphasis on the vulnerable pockets across 15 tribal dominated districts of the State, and, in turn achieve the desirable IMR and MMR goals. During last four years of implementation of SAMPurNA strategy, several sub-district level activities were undertaken: preparation of special micro-plans at sub-district levels for the vulnerable pockets; training of frontline health workers; special VHND sessions for those vulnerable pockets; timely indenting of logistics and supply; efficient cold chain management; timely delivery of vaccines at session sites; and concurrent monitoring cum review of achievements in weekly and monthly meetings.

UNICEF Odisha in consultation with the state government commissioned a study to IIPH Bhubaneswar as to undertake a rapid assessment of the current status of implementation of SAMPurNA strategy in 15 high priority districts, to examine the systemic enablers and barriers in such implementation, and to offer actionable recommendations on the basis of key findings. Study objectives were:

- Undertake a rapid assessment of VHND and routine immunization services under the SAMPURNA strategy with special focus on accessibility, coverage, effectiveness, and quality of services.
- 2. Explore opinion and perspectives community members, service providers and programme managers about enablers and barriers in successful implementation of SAMPurNA strategy in Odisha.
- 3. Provide actionable recommendations for strengthening the programme implementation in the State.

The findings of this study helped the state government revise the SAMPurNA strategy in phase II of implementation

This project was funded by United Nations Children's Fund (UNICEF) and led by Dr. Bhuputra Panda

Assessment of Impacts of Varying Incentives (Monetary & Non-Monetary) on the Motivation and Performance of CHW (ASHA)

The IIPHB and KHPT (Karnataka Health Promotion Trust) jointly developed study tools for the collection of primary and secondary data. Suggestions from the theme experts were considered prior to the pretesting of the tools. The tools were then translated in local languages and pretesting were done in the respective states. Necessary changes were made for the contextualization of the tools in accordance with the observations from the field testing. For Odisha, the finalized tools comprised topic guides to conduct in-depth interviews (IDI) with the ASHA, ASHA Sathi, Health Supervisor, ANM, Block Programme Manager, Public Health Extension Officer (PHEO), Block Accounts Manager, District Level Managers and District Accounts Manager.

Secondary data pertaining to the incentives given to ASHAs were collected for the financial year of 2019-2020 from four blocks in two study districts and its analysis is being done. The primary data collection was initiated in both districts (Rayagada and Balasore) of Odisha in the month of February, 2021. Following, preliminary meetings with the respective district officials, 2 blocks in each districts were selected. For Rayagada, two blocks namely, Ramnguda and Kashipur were selected. Similarly, for Balasore district, Remuna and Jaleswar blocks were selected to undertake the project. In both the districts primary data collection is completed and qualitative data analysis is in progress.

This project is funded by ACCESS Health International Inc and led by Dr. Shridhar Murlidharrao Kadam

TRAINING DIVISION

Training Division, PHFI, is involved in building capacity of healthcare professionals in various disciplines, both in India and abroad, by way of contact based courses, online courses and workshops. There are 30 capacity building courses / workshops being conducted with the objective of upgrading skills, knowledge and core competencies of healthcare professionals. The Capacity Building Courses are being conducted in over 600 centres across 121 cities in 28 states and UTs. Till date, a network of over 36,000 healthcare professionals have been trained with a completion rate of over 90%. Training Division is also working with 12 State Governments who have adopted these initiatives for training of their medical officers.

For Doctors	For Healthcare Professional
For Doctors	Healthcare Quality
Diabetes Management	Cybersecurity in Healthcare
Diabetic Retinopathy	Applications of Artificial Intelligence in Healthcare
Gestational Diabetes	Patient Safety and Communication
Cardio – Diabetes	Public health management
Common Mental Disorders	Disaster Management
Thyroid Disorders	Healthcare Technology
Women's Health	Public health management
COPD and Asthma	Maternal and child health nutrition
Palliative Care	MDP on Health program management
Geriatric Care	MDP on Monitoring and Evaluation of
Obesity Prevention and Management	Healthcare Programs
Diabetic Foot Management	Barefoot Counselling
Anti -Microbial stewardship	Workplace Safety
Occupational Safety & Health	Covid-19
Medical ethics and Medico-legal issues	
Comprehensive immunisation	

Training Division: Capacity Building Initiatives
Government Collaboration



Training programs adopted by 26 state governments 12,000 Govt. Medical Officers trained

MoU Signed

- 1. Training Division signed an MoU with USV Private Limited for 4 ½ years for the flagship Diabetes course (CCEBDM) to train 7,800 doctors across 130 centres across India till Feb 2026. First batch has been launched to enrol 2600 doctors and curriculum revision is being undertaken.
- 2. Training Division, PHFI signed a MoU with National Health System Resource Centre (NHSRC) and Association of Healthcare Providers, India (AHPI) for 3 years for the implementation of Certificate Course in healthcare quality (CCHQ).
- 3. Training Division, PHFI extended its MoU with NHM, Tripura for another year. Under this MoU, PHFI will act as skill building/training partner for the healthcare professionals of the state.

Activities done since November 2020

- 1. Certificate Course in Evidence Based **Diabetes Management (CCEBDM): CCEBDM** is a nation-wide capacity building program in collaboration with Dr Mohan's diabetic education Academy (DMDEA), to provide training on evidence-based diabetes management, by enhancing knowledge, skills, and core competencies of PCPs. In June, 2021, Cycle-6 of CCEBDM had ended, during the cycle an 2422 doctors were trained in the course at 137 centres. The new batch of the course was announced from September 2021 with the able support of DMDEA, 16 national experts and 130 faculty. The course has received the educational support from USV Private Ltd for the next 3 batches with the aim of training 7800 doctors across the country.
- 2. Certificate Course in Common Mental Disorders (CCCMD): CCCMD is a joint program conceptualised, developed and implemented by Public Health Foundation of India (PHFI) in collaboration with The Live Love Laugh Foundation (TLLLF) and Association of Healthcare Providers (India) (AHPI) in the field of common mental disorders in India. The second cycle of the program enrolled 140 primary care physicians and was launched at 4 centres viz. Bangalore, Delhi, Kolkata and Mumbai on 27th June 2021. The total duration of the course is 5 months. A total of 143 participants have already been trained in the first cycle of the program last year from across the country (64 districts from 17 states).
- 3. Certificate Course in Gestational Diabetes Mellitus (CCGDM) Cycle VII: CCGDM is a flagship joint certificate program designed and delivered by PHFI and academic partner Dr. Mohan's Diabetes Education Academy (DMDEA), Chennai. The seventh cycle of CCGDM enrolled 147 primary care physicians from 17 states, 2 UTs, 75 cities in 8 regional centers across the country.
- 4. Certificate Course in Antimicrobial Stewardship (CCAMS): PHFI and Delhi Society for Promotion of Rational Use of

Drugs (DSPRUD), an NGO actively working in the field of rational use of drugs for last 25 years partnered together to deliver this unique 5 modular certification program. The first batch of the program was launched on 19th December 2020 and since then the program has trained 153 primary care physicians in subsequent three batches [52 physicians in first batch, 61 in second batch and 40 in the third batch].

- 5. Certificate Course in Occupational Safety & Health (CCOSH): PHFI developed this 5 modular course to build a strong cohort of primary care physicians and allied health professionals with core competencies in providing occupational healthcare. This online 5 modular virtual session based program was implemented from 12th to 17th March 2021 with 50 primary care physicians from all across the country.
- 6. Certificate Course in Healthcare Technology (CCHT): CCHT is a collaborative effort of Public Health Foundation of India (PHFI), New Delhi, Association of Healthcare Providers (India) (AHPI), Indian Institute of Science, (IISc), Bengaluru and Indian Institute of Space Science & Technology (IIST), Bengaluru. This program comprises of online flexible learning on Learning management system (LMS) with recorded sessions by renowned faculty. The course comprises of 5 modules with each module having 4 sub-topics. The course was launched in July 2021 and so far, 32 participants have been trained in the course.
- 7. Certificate Course in Obesity prevention and management (CCOPM): PHFI and Chellaram diabetes Institute (CDI), Pune have developed a new online course – "Certificate Course in Obesity Prevention and Management (CCOPM)". CCOPM is a 6-modular course aimed to develop the knowledge and skills of primary care physicians and to play a crucial role in helping patients achieve sustainable weight loss. This course is endorsed by the World Obesity Federation. Till date, 93 doctors have completed this course.

- 8. Certificate Course in Diabetic Foot management (CCDFM): Another initiative with Chellaram diabetes Institute (CDI), Pune. The course has been endorsed by the Leicester Diabetes Centre, UK. This course has been divided into six modules and is presented in video format for easy learning. The course was announced in December 2020 and till date 22 doctors have been trained in the course.
- 9. Certificate Course in Comprehensive Immunization (CCCIM): It is a 4 modular online certification program designed, implemented and delivered by Public Health Foundation of India for training on immunization and vaccination. This weekly online program started from 5th September 2021. 15 doctors were enrolled for this particular course.
- 10. E-Learning Certificate Course in Evidence Based Management of Diabetic Retinopathy (CCDR): It is a 4 modular online certification program designed, implemented and delivered by PHFI in collaboration with its academic partners; Dr. Mohan's Diabetes Education Academy (DMDEA), Aravind Eye Care System and technical support partner; Robert Bosch Engineering & Business Solutions Private Limited (RBEI) to develop CCDR course into E-learning platform. Total 73 participants were trained in two batches.
- 11. Certificate Course in Applications of Artificial Intelligence in Healthcare (CCAAIH): CCAAIH is a unique 5 modular online certification program designed, implemented and delivered by PHFI in collaboration with InnovatioCuris (IC), an innovative organization amalgamating IT solutions to optimise healthcare delivery in the country. Total 97 participants were trained in the course from various state governments, PSUs and private sector.
- 12. Certificate Course in Integrated Geriatric Care (CCIGC): It is a six modular online certification program designed, implemented and delivered by PHFI in collaboration with six eminent experts in the field of Geriatric Medicine. The fundamental objective of the course is to enhance the skills of PCPs in Geriatric care and to develop the network among the specialists. Total 282 PCPs has been trained in this program over 5 batches.

- 13. Certificate Course in Palliative Care (CCPC): CCPC is a 6 modular online certification program designed, implemented and delivered by Public Health Foundation of India in collaboration with academic partner; Trivandrum Institute of Palliative Sciences (TIPS), a WHO Collaborative Centre for Training and Policy on Access to Pain Relief, Pallium India. 97 participants in 2 batches were trained.
- 14. Certificate Course in Barefoot Counselling: Certificate Course in Barefoot Counselling is a 3-modular training program developed and Implemented by MIND India in collaboration with Public Health Foundation of India (PHFI) for the purpose of improving access to trained manpower to provide the basic psychological first aid in resource constrained settings. The first batch of 15 participants belonging to The Ant, a grassroot level organisation in Assam were trained at Guwahati.
- 15. Certificate Course In Management of COPD And Asthma (CCCA) - NHM, Govt. of Tripura: CCCA is a joint certificate program designed, implemented and delivered by Public Health Foundation of India (PHFI), Delhi; Chest Research Foundation (CRF), Pune; Narayana Health, Bengaluru. National Health Mission , Govt, of Tripura has adopted the CCCA training model for training of their 40 Medical Officers from March 2021 to October 2021.
- 16. Training initiatives for NHM, Govt of Madhya Pradesh: PHFI has been partnering with the NHM, Govt of MP for the last 5 years and conducted over 20 training programs for more than 1200 Medical Officers, Staff Nurse and other health professionals nominated by the State. Last year, following activities were carried out for NHM, M.P.
 - Certificate Course in Evidence Based Management of Diabetic Retinopathy (CCDR), started from 16th Aug 2021(module 1) at Bhopal centre. Total 100 medical officers (eye specialist) will be trained in approved 4 divisional centres (Bhopal, Indore, Gwalior and Jabalpur), course will be completed in all four centres by Feb 22.

- PHFI implemented Certificate Course in Health Care Quality (CCHQ) in collaboration with National Health System Resource Centre (NHSRC) & Association of Healthcare Providers (India) (AHPI) to support with NHM for training of 130 DPMs/ SNs/Maternal Health Coordinators.
- Certificate Course in Women's Health (CCWH) is a six modular certificate course was implemented by the Public Health Foundation of India (PHFI) in collaboration with Govt. of Madhya Pradesh for training of their lady medical officers. A total of 150 LMOs, were trained at seven centres (Indore, Bhopal, Jabalpur, Gwalior, Sagar and Rewa).
- PHFI has successfully completed 3 batches of Training Workshop on Patient Safety & Communication for Nursing Personnel held at SIHMC, Gwalior. Total 80 participants successfully completed the workshop.
- PHFI has successfully completed ten batches (five batches each of Medical officers and Staff Nurses) for 3 days state level training workshop of Comprehensive Geriatric care. Each batch consisted of 20 participants (MOs/Staff Nurses) nominated by NHM-M.P from various NCD clinics across all 51 district of Madhya Pradesh under National program for health care of elderly (NPHCE) to undergo this training workshop at two centers-Indore and Gwalior.

17. Training initiatives for NHM, Odisha:

- NHM, Govt. of Odisha (NHM) has adopted CCCA for training of 90 Medical Officers in four centres covering nine districts.
- Govt of Odisha has sanctioned 6 batches (180 participants) of Certificate Course in Patient Safety & Communication
- 18. Development of e-Learning IMNCI package of Health Workers: Training Division in collaboration with Health Promotion Division at PHFI has received a grant to develop E-learning training package on Integrated Management of Neonatal and Childhood

Illness (IMNCI) for training of health workers. The training package is expected to be used by the Ministry of Health & Family Welfare, Govt of India for training of health workers in various states.

- 19. Assessing the Impact of COVID-19 on Primary Healthcare Services and Antibiotic provision by rural healthcare providers in India: The study is a collaboration between LSHTM (UK), PHFI, Institute of Development Studies in Brighton (UK), Royal Veterinary College in London (UK) and the West Bengal University of Animal and Fishery Sciences in Kolkata (India), funded by UK Research and Innovation (UKRI). Training Division completed the survey among the Doctors and informal providers across the country and further steps in the study are undergoing.
- 20. Webinar Series on COVID 19 Fighting COVID-19 - Translating Knowledge to Action: PHFI conducted a Webinar Series on COVID 19 in collaboration with the Global Coalition for COVID- 19 Medical Care (GCCMC) and Association of Healthcare Providers (India). A total of 722 physicians from various state governments, PSUs and private sectors attended the webinar series.
- 21. COVID-19 Vaccination E-Learning Program: A unique 3 modular online certification program designed and delivered by PHFI in collaboration with GCCMC and AHPI for preparing the clinicians for undertaking COVID vaccination for their patients. A total of 200 physicians from various state governments, PSUs and private sectors attended the program.
- 22. KNOW COVID- NO COVID: Training Division, PHFI won a global grant from Pfizer Inc., for implementing the COVID trainings for Healthcare professionals and community. Under this project, Training Division developed and implemented 9 e-workshops series "KNOW COVID-NO COVID" to provide credible information on the COVID-19 pandemic to various groups. A total of 1888 participants were trained that include doctors, HCWs and community members from various state governments, PSUs and private sector were trained in prevention and management of various aspects of COVID-19 pandemic.

India Health & Wellness Award 2020





The Training Division bagged the prestigious India Health & Wellness Award 2020 for Public Health Initiative, at the 6th India Health and Wellness Summit, held virtually on 29th December 2020. PHFI was adjudged winner for Silver Category Award for its capacity building initiative on COVID-19.

The award ceremony was graced by Mr. Ramdas Athawale, Minister of State for Social Justice and Empowerment, Mr. J.V.R. Prasada Rao, former Union Health Secretary, Government of India, and Dr. Atul Mohan Kochhar, CEO , NABH amongst other dignitaries.

National Health Conclave 2021



AHPI & PHFI jointly organized the National Health Conclave 2021 on "Mental Health – From Distress to Wellness" on 12-13 March, 2021 and an Awards ceremony was conducted on 06th August 2021. The Conclave was organised in the backdrop of the ongoing COVID-19 pandemic that has greatly aggravated the mental health burden, the impact of which is likely to be felt in the coming years.

KNOW COVID-NO COVID sessions







Prof. Vinod Kumar, , Emeritus Professor in Medicine, St Stephens Hospital, Delhi and former Professor of Medicine from AIIMS, New Delhi, Dr. Sandeep Bhalla, Dr. Himanshu Bhushan, Advisor, Public Health Administration Division, National Health System Resource Centre, MoHFW, Govt. of India and Shri Jayanto Narayan Choudhary during the inauguration of CCIGC course



Launch & Inauguration of webinar series on COVID-19 by Mr. Hari Hegde, Senior Vice President & Global Health- Operations- Wipro Ltd, Dr. Alexander Thomas, President, AHPI, Prof. K. Srinath Reddy, President, PHFI, Dr. Sandeep Bhalla, Director, Training, PHFI, Dr. Vijay PV, Advisor, GCCMC, Partner Integra Ventures, Dr. Varun Arora, Associate Prof., Deptt of Community Medicine, PGIMS Rohtak, Haryana and Dr. Pushkar Kumar, Senior Public Health Specialist, PHFI



National Expert Cum Faculty Consultation Meet held on 20th – 21st Feb 2021 on online platform to finalize the curriculum of CCCMD for Cycle-II attended by partner members, national experts & faculty. The program has 6 National Experts, 1 Expert & 4 Faculty.



Launch cum Inaugural Session of CCAMS (from R to L): Dr. Shivangi Vats (CCAMS team, PHFI), Dr Sangeeta Sharma (Prof. & Head, Deptt. of Neuropsychopharmacology, Institute of Human Behaviour & Allied Sciences, New Delhi & President, DSPRUD), Dr. Sandeep Bhalla (Director-Training, PHFI), Dr. Renu Gupta (Assistant Prof., Deptt. of Neuro-psychopharmacology, Institute of Human Behaviour & Allied Sciences, New Delhi & Secretary, DSPRUD), Dr. Anuj Sharma (Technical focal point for AMR, IPC & Labs, World Health Oragnization [WHO], Country Office for india)



Prof. (Dr.) G. Jayaraj (Managing Trustee- Occupational Health Foundation & Managing Partner- Occupational Health Services, Chennai] conducting the session of CCOSH



CCDR Module-1 session in Bhopal for NHM, Madhya Pradesh doctors



Dr. Suneela Garg - Professor, Community Medicine & Dr. Warish Mariam - Sr. Resident, Community Medicine Maulana Azad Medical College, Delhi taking technical session of CCCIM Course



Participants during CCCA session at Bhubneshwar, Odisha

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Stroke caused 7.4% of total deaths in 2019, says study

BENDU SIEAJAN PERAPPADAN NEW DELAU

The contribution of non communicable neurological disorders and injury-related neurological disorders to the total disease burden has more than doubled between 1990 and 2019, said the first comprehensive estimates of disease burden due to neurological disorders and their trends in every State of India published in The Lancet Glo-bul Houlth by the India State-Level Disease Burden Initia-tive and released here on Wednesday.

Stroke caused 6,99,000 deaths in India in 2019,



Neurological disorders can

also affect the mobility of patients. which was 7.4% of the total

India's neurological disease burden rising

deaths in the country, it stat-The burden of non-o municable neurological dis-orders was increasing in the country, mainly due to the ageing of the population, the paper noted. "Stroke, hea-dache disorders, and epilep-sy are the leading contribu-tors to neurological tors to neurological disorders burden in India."

High blood pressure, air pol-lution, dietary riska, high fasting plasma glucose and high body-mass index were found to be the leading contributors among the known risk factors for the neurological disorders' burden. The disorders include non-communicable ones (stroke, headache disorders,

epilepsy, cerebral palsy, Alz-heimer's disease and other dementias, brain and central nervous system cancer, Par-kinson's disease, multiple sclerosis, motor neuron dis-eases and other neurological disorders), communicable ones (encephalitis, meningi-tis and tetarus), and injury-related disorders (traumatic brain injuries and spinal cord injuries).

The paper found that the burden of many disorders

varied substantially across the States. Dr. Lalit Dando-na, director of the India State-Level Disease Burden Initiative and senior author Initiative and senior author of this paper, stated that the study, based on collabora-tion with leading neurology experts in the country, pro-vided policy-relevant in-sights into the trends of the disorders across the States. "While the burden of in-fortione neurobardial disor.

"While the burden of in-fectious neurological disor-ders has fallen in India, this burden is higher in less deve-loped States. On the other hand, the burden of the disorders related to injury is orders related to injury is higher in more developed States. Among non-com-municable disorders, stroke is the third leading cause of death, and dementias are the fastest growing disor-ders," he said.

Why countries abandoned 'Zero Covid' strategy This aims at nearly zero daily fresh cases, using boder-dusing, qu e testing and Covid-appropriate beha

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Air pollution sliced off 1.4% India's GDP last year

EXPRESS NEWS SERVICE (6 Non Dath

AIR pollution killed 1.7 million Indiana secounting for nearly 18 per cent of total deaths in 2019 and resulted in an econom-ic loss of 2.2.6 linkin crore, nearly new scientific paper published in the Loncet.

is loss of 2.8 labkh crore, nearly lab of GDP, according to a link Lance. The conomic loss as a per-fectage of the state GDP was higher in the northern and cen-higher in the northern and cen-higher in the northern Pradesh (2.2 %) and Blaz (2%). The Indias State level Disease showed that while the mortal and Blaz (2%). Burden Initiative (SLDIB) also showed that while the mortal and 2018, deaths from out-cased by 64 per cent between door ambient air pollution in-increased by 116 per cent 2015 as a collaborative effort he Foundation of India, Institute for Health Metrics and Evalue takkeholders under the ages of stakkeholders under the ages of state st

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Malnutrition among women, children continues to paralyse healthcare

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ven as India stru against the spread of cov id-19, the country's struc-tural fault lines in health continue to be a cause of concern Despite the government's efforts to fight malnutrition ong women and children. 68% of under-five-year deaths in India can be attributed to child and maternal malaour-islanent, while KPs of neonatal deaths is due to low birth-

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(PHFD, and Institute for Health Metrics and Evaluation (HME), ministry of health and family welfare other Indian natitutions, is the first comprehensive estimate of district-level trends of child mortality. Another scientific paper child growth fathere was published in EClinicalMidicine. The findings show that although child mortality and

child growth failure indicators have improved substantially across the country between 2000 and 2007, inequalities between districts have increased in many states.

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the second high-est-childmortality rate is 2007, such districta included

Cachar, Dima Hasao, Hallak andi, Karbi districts show growing variance in improvement Anglong, Karimrani and West Early Anglong. In that efforts targets Bihar, the highest ing poorly per-priority washound in the north forming districts as identified ustern parts (Jäshanganj and

Purnia), and in south-west (Aurangalisel and Kainnet) "India has had significant improvements in stanting, wasting and underweight ilidren since 2000 using ch Flowever, there consider affive-fold variation in the prev-

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alence of these indic between the districts," said IV R. Hemalatha, director, National Institute of Natrition In Assam, which recorded | ICMR, and the lead author of India's child

the child growth failure paper. "The relative inequality of this prevalence between districts has increased within several states, indicating

by our analysis can potentially help hastrn overall improve-ments in child growth failure in India." If the trends observed age for 2017 were to continue the Loncet study said, India will, not be able to meet the Statian able Development Geals NMR

mortality rate has fallen from 2000 to 2017; but

target by 2030.

PollutionTOLL

The economic loss due to air pollution in India is a staggering \$37 bn; need to fight household pollution more effectively

NANALYSIS OF the loss of lives, disease burden, life expectancy and economic losa due to air pollution across Indian states by the Indian State-Level Disease Bunden Initiative, published in Loward, notes that the total number of deaths due to air pollution in India in 2019 were around 1.67 million -- of which, 0.98 Δ million deaths were due to anobient particulate matter pollution and 0.61 million due to household oir pollution. The death rate due to ambient particulate matter pollution increased by 115,3% from 1990 to 2019, due to ambient ozone pollution increase of 139.2% and housebold air pollution increase by 64.2%. Of the total deaths attributed to air pollution, 32,5% were due to COPD, 29,2% due to inchaemic heart disease, 16,2% due to stroke and 11.250 due to lower respiratory infections. The report states that India's economic loss due to air pollution was estimated to be around \$36.8 billion, or nearly 1.4%s of the 2019 GDP. Increasing air pollution, therefore, is a significant obstacle for

India's target to become a \$5-trillion economy by 2024. To be sure, the government has lounched several programments outbair policities. The of Clean Air Programme Lunched in 2019 aims for a 20-309 involuction in PM2.5

Air pollution has killed 16.7 lakh Indians since 1990: Study

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OUR BUREAU

Air pollution killed 16.7 lakh Indians, accounting for nearly 18 per cent of total deaths in the two decades since 1990, and resulted in an economic loss of ₹2.6lakh crore, nearly 1.4 per cent of gross domestic product, according to a study published in the *Lancet*.

The India State-level Disease Burden Initiative pub-lished in the prestigious medical journal also showed that while the moralin tality from indoor air pollu-tion reduced by 64 per cent between 1990 and 2019, that from outdoor ambient air pollution increased by 115 per cent.

The economic loss due to air pollution as a percent-age of the state GDP (GSDP)

was higher in the northern and central Indian States, with the highest in Uttar Pradesh (2.2 per cent of GSDP) and Bihar (2 per cent of GSDP), the study found. The ISLDBI was launched

in 2015 as a collaborative effort between the Indian Council of Medical Research (ICMR), Public Health Foundation of India (PHFI), Institute for Health Metrics and Evaluation, and a nun ber of other key stakeholders in India, including academic experts and institutions, government agencies and other organisations, under the aegis of the Ministry of Health &

Family Welfare. Over 300 leading scientists and experts represent-ing about 100 institutions across India are engaged in this collaborative work.

Economic impact

"Improved methods in this paper have led to a higher estimate of the impact of air



Mortality from indoor air pollution reduced by 64 per cent between 1990 and 2019 and that from outdoor a ent al pollution increased by 115 per cent

pollution on health and disease in India than previ-ously estimated. The economic impact of this health loss due to lost productivity is huge, at 1.4 per cent of the country's GDP in 2019, besides a roughly estimated expenditure of 0.4 per cent of the GDP on treatment of air pollution-related diseases. The health and eco nomic impact of air pollu tion is highest in the less developed States, an in-equity that should be ad-

dressed." said Lalit Dandona, ISLDBI Director and senior author of the paper.

Pollution control

"India has many initiatives to reduce air pollution, which can benefit further from the state-specific insights provided in this pa-per. Investing further in air pollution control will more than return that investment in terms of better health and economic development in India," remarked Dandona, also a professor at PHFI and National Chair of

Population Health at ICMR. "Various government Various government schemes such as the Pra-dhan Mantri Ujjwala Yojana and the Unnat Chulha Abhiyan have aided in redu cing household air pollu-tion in India, the benefits of which are suggested in the reducing death rate from it as seen in this paper. Such success encourages us to enhance efforts to reduce outdoor air pollution as w ell said Balram Bhargava, ICMR chief and another senior au-thor of the study, in a state-

The findings also show that while 40 per cent of the disease burden due to air pollution is from lung dis-eases, the remaining 60 per cent is from ischaemic heart disease, stroke, diabetes, and neonatal deaths related to preterm birth, highlighting the broad ranging impact of air pollution on hu-man health, Bhargava said.

id pollution is a chatthe Unnat sential tools to and affeviating

LOGISTICS

Capturing maximum value from drone delivery for medicines requires a combined effort from technologists, government leaders and healthcare and social advocates

Dr Suresh Munuswamy, Head - Technology Innovations and Health Informatics, Public Health Foundation of India (PHFR), in an interaction with Kalyani Sharma, talks about recently adopted. Medicaines from the sky' initiative by Telangana government and high its various appeds.



Influence and inspiration

Not. Probleman grew up in Bangdore, the eldest of five children, where his father was a ballow cuit servers with the Government of Prof. Probations greav up in Bangdore, the eldert of five children, is when his fasher was a barlor cut around when the Government of Mak-while his mobile looked after the family. Note 59, and Vice Prevident (Junnarch, and Policy) at the Public Health Frontation of India and Encludin Director of the Orders for Chronic Disease Control in New Delik, there are a another of people who have induarced him, presonally and prediminativ.

professionally

HYDERABAD

HYDERABAD, APRIL 19, 2021 00:18 IST

Vaccinating priority groups should be the immediate target: IIPH Director

'At least 70% of population need to be vaccinated for herd immunity'

Study shows that at least 20% of the population need to be vaccinated if the 'berd immunity' for COVID.19 is to be achieved to break the transmission chain with efficacious vaccines that prevent infection. Given the level of vaccine hestiancy. Therefore, at the moment, preventing death and werer COVID by vaccinating the priority groups sheald be the target, asserts Indian Institute of Public Heady, Hyderabad (IIPH), Director G.V.S. Murthy on Standay.

Murthy on Sunday. While the government had permitted Russian "Spurnit's vaccine for emergency use, he expects more permissions in the offing and certainly bats for clearing the gath for "effective proven vaccines that have undergone Phase 3 clinical trials in other countries and have validated efficacy". This has to be considered for find abes to the sheer population size, rapid transmission of COVID and the need to size, provide the start of the start of the start of the stockpile vaccines, he says.

stockpue vaccines, ne nays. In this second part of an exclusive interaction conducted recently (Finst part: "Vins surges will continue"), the Director of the Public Health Foundation of India (PHFI) founded institute, also stated that the 'Ikhavioural' or 'Social' vaccine of face masks, social distancing and hand or personal hygiene was still eur "best bet" and this needs to be marketed effectively, "at least for the next few years".

years . If all clickery people and people with co-morbidities, imrespective of age, are to be vaccinated, 200 million people would need 400 million doess within the works. If the entire population of hove the age of 20 years, were to be rarry 8 million doess will be required, the logistics and rationale of chave to target the important peiority ment," says Dr. Murthy.

Essential healthcare workers form the first category while the second is those who might experience severe harm from COVID-19 that necessitates admission to hospital, critical care and death like populations above 65 years, those with high risk health conditions and those in close contact with people at high risk of poer outcomes. Even those of 55 years and above could be considered for our country.

Rest of the population is only the third priority Rest of the population is only the third priority, this is a globally accepted norm and India is no exception. Additional priority groups are like pople with any chronic condition like diabetes, hypertension, cadiac conditions, renal conditions, irrespective of their age. The other group could be poople with disabilities and their care givess," he observed.

School teachers could be considered as the next priority since schooling is impertant for child development and for the poor, the mid-day meal supplement is essential for their natifice. The Director also cautions that the extremely available COVID vaccinations only "reduce the risk of severe disease and death".

disease and deate." "All studies unequivocally show that the risk of severe disease and death is significantly higher among the older population and those with co-merbidities, compared to the other population groups. Therefore, the current phase of the vaccine should target these outcomes. Since available vaccines do no reduce transmission, these would not be very effective in control of COVID through a mass immunitation drive," he maintains.

With strained resources and logistical issue with strained resources and logistical issues around toring after vaccination, public health needs would be best served by optimising resources to vaccinate the priority groups, teating of suspected COVID infections, contact tracing and better therapoutic agents being provided, adds Dr. Murthy.

Pandemic study reveals lack of trained health personnel

Only 1 Nurse For NURSE-DOC RATIO 1.7:1, OECD AVG 4:1 Every 670 People In India, WHO

Norm Is 1:300 Sesteni.Dey@timesproup.com

behaviolety efferences processor. New Delht: A pandemic-per-riod study found that India's beatin systems straughed with low numbers of trained hashin personnel, including modes it analogic paramolicits with India's nurse-ductor ar-tio at a poor 1.73. A report by the World He-shih Cognasianton (WHO) and the Public Heddh Foundation of Landas (PEP) underthese has due showed skille enix ratio in the handh workscew sith wi-de variations across status and the report estimation the overall traine is 6 doctor ratio at 173 and that of adiab the aith workers to doctors at 1.1 The second is Prof. K. Sen Date Haah Sandston offi-meter bases advised at meter bases advi

Number of health professionals/wo NMBA NSSO (no qualification adjustment) ors per 30,000 persons (2008) NSSO (qualification adjustment) Allopathic Doctors Dentists Nurses/Inid-wives 17.4 14.1 Allied 112 121 Overall NOTES figures indicate health workers, professionals as registered. NSSO Agartes depict these who are active, before and after qualifications are considered

depct hims one are action, before and after and features are considered These estimates further: deteriorate if qualifications pert Grossy (BLGG) recom-mentalizion for the nurse-doc-ingrings. The labour Pirce-bai-sed estimate (NSS0 2077-41) of docietor to anservantion isba-redy LiJa after adjusting for adequate qualification. Certpare this with moot ORCD countries, where the number docide to any docide mere docides, others have more merses. The marse to adequate qualification. Purpable (53) and Delhi (53) ORCD countries, where the on the higher side and Blais-ammu & Kashanir and Mai-

one nurse per doctor. Even in Kerala, where the number of nurses is very high, the wor ker marke to doctor ratio was less than 1.1. Worker nurses are boaically nurses who are both registered and active. Similarly, for allied health workers, there are large vari-

Similarly, for alloce housts workers, there are large work-ations across states marging from more than five allocation personnel per allopathic doc-tor in HUmaschal Predish-toos low as 01 allocet boult profes-sionals per doctor in Bihar. A few states such as Debh, Punjah, Humachal and Chaba-tiggart have a high warre doc-tor ratio bat the density of doctors per BibAD persons is extremely lew According to the 15th Finance Commis-sion, antirare to oppilationar-tion statistica, and and the HSD norm of 1300. In MP and West Bengai, the density of doctors is farily high bat

FRatio very low in UP, P 14

13.7



Ecosystem key to human health | Deccan Herald Ecosystem key to human health The UN Decade on Ecosystem Restoration is a rallying cry for the protection and revival of ecosystems around the world 🕥 f 🔰 👰 in 🖂 🤗 Sanjay Zodpey, JUN 04 2021, 23:41 IST | UPDATED: JUN 05 2021, 01:50 IST advocating actions and inspiring positive change towards environmental issues a entire planet. It reminds us that we humans are not alone on this planet. A huge biological ecosystem co-exists with humans. Ecosystems and their biodiversity form the basis for economic growth, sustainable development and human wellbeing. 11 You Retweeted PIB in Telangana 2 #AmritMahotsav 😍 @PIBHyderabad - Sep 11 Cito. #MedicineFromTheSky #vikarabad @JM_Scindia @MoCA_Gol @Pib_MoCA on preventing, halting and reversing the loss of degraded natural eco Jublic Health Foundation of India (PHFI) 🧐 @thePHFI - Sep 11 Ecosystems support all life on earth. Healthy ecosystems enhanced @hepicopter : A collaboration between MARUT Dronetech @thePHFI & biodiversity. The wellbeing of the human population in the coming o of ecosystems, thereby contributing to sustainable development. Alpha DigitalTech showcased a custom-built heavy payload, long-range drone paired to a #MadeinIndia modular temperature-controlled box restoration, climate change, food and nutrition security, 'One He #MedicineFromTheSky in Vikarabad @KTRTRS @JM_Scindia protecting our future. @EmergingTechTS @NITIAayog The real deficit in the health care system 200,2 new report by the World Health Organization (WHO) and the Public Health Foundation of India (PHFI) has revealed that India's health system struggled during CARUT Covid-19 because the country doesn't have an adequate number of trained health personnel. For example, the nurse-doctor ratio is 1.7:1, and that of allied health workers to doctors is 1:1. India's High-Level Expert Group on Universal Health Coverage recom-Q 4 11 5 1 mends a nurse-doctor ratio of 3:1. The State's focus has been on building physical infrastructure and buying equipment. To be sure, Prime Minister Narendra Modi has spoken of the need for health workers at all levels, but this will take time to translate into reality. The second problem is the focus on tertiary care instead of prim Telangana 🕮 Today secondary health care centres, and a focu number of specialised health care profes when India also needs frontline medical Wednesday, September 22, 2021 onals. Third, India produces only 13 net graduates (doctors and nurses) per ann Home Hyderabad Telangana Andhra Pradesh India World Entertainment Science and Tec graduates (uocio) s and nuises) per ann 100,000 persons, compared with more developed countries. More than 30% of and 50% of the nurses are not part of t Telangana > Telangana to adopt drone tech for healthcare delivery The government is setting up 157 new ges and 50 nursing institutions, likely Telangana to adopt drone about 22,500 doctors and 2,000 nurse tech for healthcare delivery This implies, a PHFI calculation show 100% of the new graduates join the w take more than 10 years to add 250,0 to the existing health workforce (170 PUBLISHED: 10TH SEP 2021 12:28 BY M. SALGOPAL erate the pace, India must build mo for producing professionals and cro environment, with adequate pay pr and retain the best talent in the we I ATEST HP unve KTR trig Cantonn

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