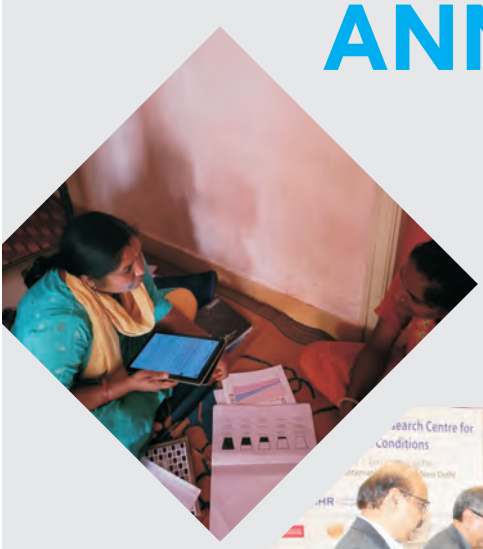
भारतीय
जन स्वास्थ्य
प्रतिष्ठान

PUBLIC
HEALTH
FOUNDATION
of INDIA

INDIAN
INSTITUTE
of PUBLIC
HEALTH
ESTABLISHED BY PHFI

GANDHINAGAR | HYDERABAD | DELHI
BHUBANESWAR | SHILLONG | BENGALURU

ANNUAL REPORT
2022-23







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MESSAGE FROM THE CHAIRMAN

Greetings from the Public Health Foundation of India (PHFI).

I am pleased to share with you with you all that the PHFI team led by Prof Zodpey along with the board leadership has worked in building and strengthening various technical and management streams of work at PHFI in the past year.

It is very encouraging to note that PHFI continues to contribute to the public health agenda of the country. The young graduates from the Indian Institutes of Public Health were part of the core G20 Secretariat. They were actively involved and contributed in the G20 meetings and events for the last one year. The University of Melbourne felicitated the students from the Indian Institute of Public Health Delhi last week in New Delhi. They were the Regional Winners of the Indo-Pacific Regional Global Health Case competition. It is worth noting that the seeds of PHFI sown over 15 years ago are taking fruit and we are hoping that we will continue to learn of such wonderful achievements by these public health professionals. We have also seen in the past those investments by eg: the Infosys Foundation in Building Public Health Leaders with a Health system and Urban and Rural connect have definitely payed dividends. We need to build public health expertise and build capacity in niche areas of public health to address the priority needs of our country. The team continues to build research expertise in various fields of public health importance. The Establishment of Dr. Cyrus Poonawalla Center for Infectious Diseases and Pandemic Preparedness at IIPH Hyderabad and the Center of Excellence – Nutrition, IIPH Gandhinagar will definitely be a game changer in advancing new knowledge and insights in these areas. With institutional strengthening grants, PHFI will continue to build its work in various technical areas like environmental health and climate change, human resources in health and also looking at avenues to advance higher education and introduction of various new public health programmes and building the academic portfolio.

PHFI is at an interesting intersection where its institutes are being devolved into independent societies where they will play a larger role. The following institutions are developing and are at various stages of evolution -IIPH Gandhingar, Shillong and Hyderabad are independent societies and we look forward to IIPH Delhi and Bhubaneswar moving ahead in that direction. I am thankful to the Board Leadership, for the various Chairs and members of the sub-committees who have played a very critical role in the running of the institution. I would like to also take the opportunity to welcome new members to the Executive Committee who are very distinguished professionals in their respective fields. We look forward to expertise, guidance and support from all of you as we advance the public health agenda for our country and beyond.

Mr S Ramadorai

Chairman

Public Health Foundation of India

FROM THE PRESIDENT'S PEN

Public Health plays a key role in shaping the future by promoting the well-being of individuals and communities, preventing diseases, and addressing health disparities. Public Health activities are built on a robust evidence-base and emphasize on prevention along with cure. Its multidisciplinary approach brings together diverse disciplines to co-create impactful solutions for improving the health of populations. Public health actions lead to healthier populations, reduced healthcare costs, and improved quality of life.

The COVID-19 pandemic reminded the world about the importance of public health and the role of health systems. The Indian public health response to the pandemic was exemplary and demonstrated a cohesive response between the various departments. The Indian COVID-19 response was appreciable for its swiftness, reliance on valid science, the roll-out of locally produced vaccines, and creating a community-level engagement for disease control. Public health professionals, including our staff and our alumni played their part in supporting these efforts at the national, state and district levels.

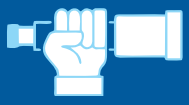
We are mandated to support the public health work in the country. We make our contributions through academic & training initiatives, research & implementation work, and by providing technical support for public health action. In the past year, there have been several new developments at the organizational level. There has been a leadership transition at the PHFI and at the institutes. I acknowledge the contributions of our staff, past and present, in advancing the institutional mandate. I also take the opportunity to acknowledge the potential within our team to unlock greater relevance and organizational value in the future.

Our activities leverage the principles of public health science for strengthening the public health system. The Indian Institutes of Public Health, Centers of Excellence and the dedicated Divisions within PHFI collaboratively participate in this capacity-building process. All our IIPHs now offer flagship Masters level program in Public Health to train the next generation of public health professionals. We also offer doctoral programs in public health to create thought-leaders in the discipline. Our forays in expanding access through eLearning initiatives provide skill-building opportunities for in-service professionals. We also support the skill-building efforts through a wide bouquet of short-term training programs. All these activities support the creation of a skilled public health workforce. Our Centers of Excellence and the Research Division are tasked with supporting the advancement of public health evidence for action. The research and implementation support work strives to create a positive imprint on health interventions for equitable outcomes through impactful knowledge generation and translation. PHFI will continue to advance its mandate in alignment with National Health Priorities and become a hub of public health excellence.

The Public Health Foundation of India supports the cause of public health and will walk alongside the pan-country efforts of the Government for a “Swasth Bharat”.

Prof Sanjay Zodpey

President, PHFI



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
- Be 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 multidisciplinary 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 and 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

2006

Launch of the Public Health Foundation of India

2007

Bhoomi pujan of the permanent campus of IIPH Gandhinagar

2008

Post Graduate Diploma in Public Health Management (IIPH Gandhinagar)

Post Graduate Diploma in Health Economics, Health Financing and Health Care Policy (IIPH Delhi)

Post Graduate Diploma in Biostatistics & Data Management (IIPH Hyderabad).

2009

Establishment of IIPH Delhi

Launch of Post Graduate Diploma Programs (Health Economics and Biostatistics)

2010

Establishment of IIPH Bhubaneswar

Post Graduate Diploma in Clinical Research (IIPH Delhi)

2011

eLearning Programs Launched

2012

PHFI accorded status of a Global Nodal Centre of the Alliance for Health Policy and Systems Research (WHO)

2013

Launch of Integrated MSc & PhD in Health Informatics and Clinical Research

2014

International Diabetes Federation awards certificate of Excellence to PHFI's primary care training program

2015

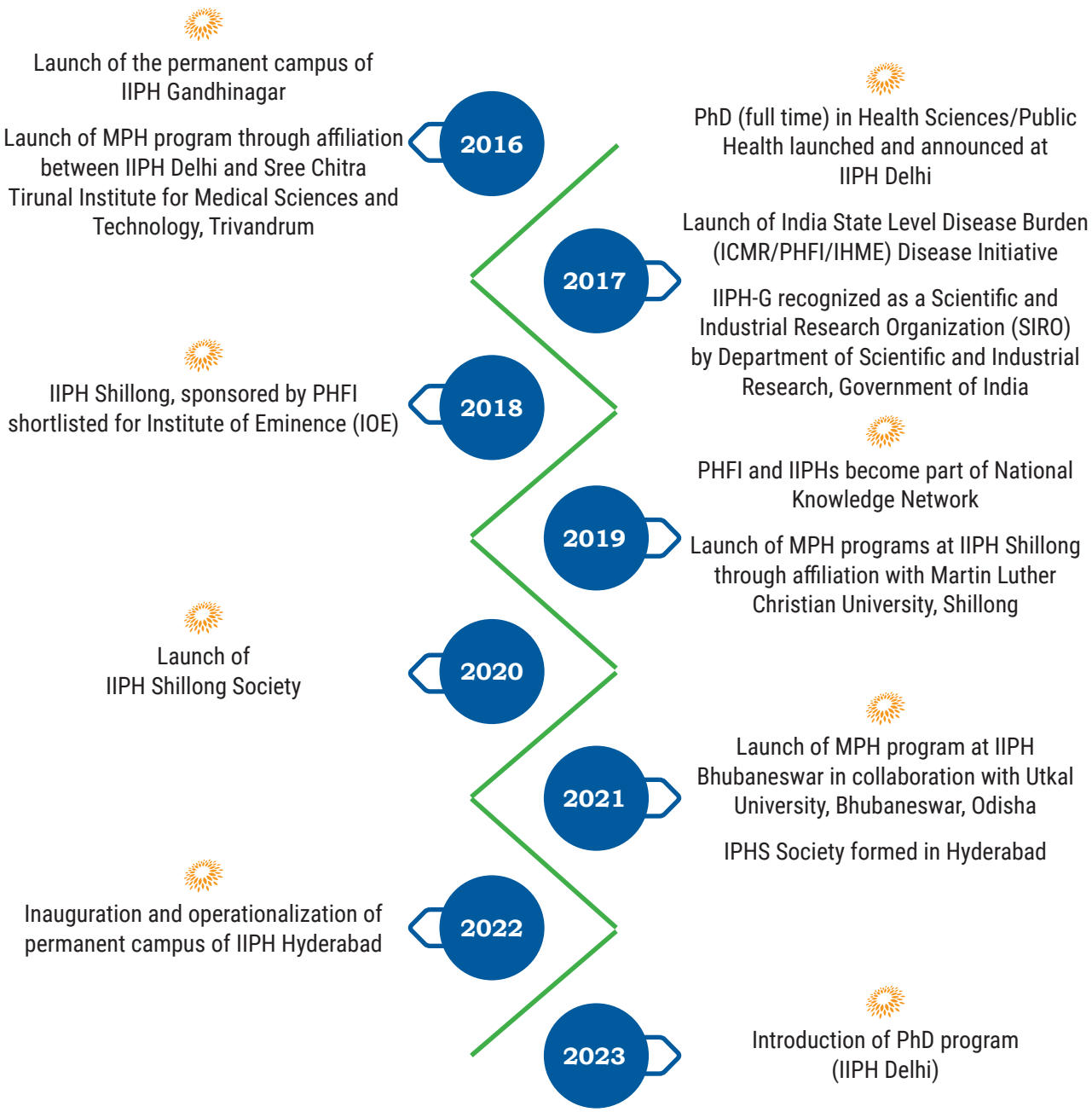
Launch of MPH Program at IIPH Gandhinagar and Hyderabad

IIPH Gandhinagar accorded University Status under the State Act

Establishment of IIPH Shillong

Bhoomi Pujan of permanent campus of IIPH Hyderabad

Our Journey So Far



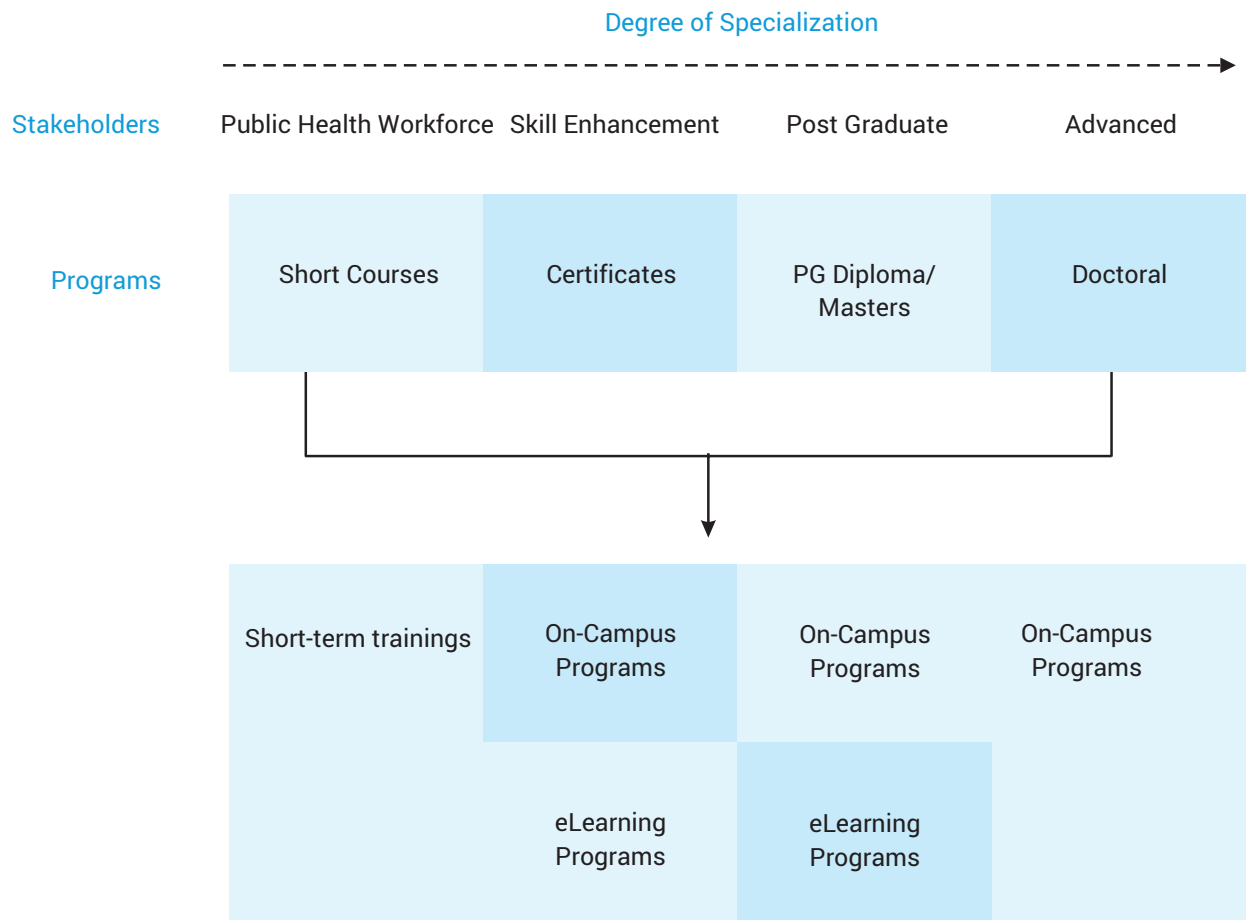
PHFI Executive Committee Members

S. No.	Name of the Member	Position in the Society	Designation
1	Mr S Ramadorai	Chairperson	Former Vice Chairman, Tata Consultancy Services
2	Mr Lav Agarwal	Member	Additional Secretary, Ministry of Health & Family Welfare, Government of India (GoI)
3	Prof K Srinath Reddy	Member	Founder, (Past) President and Honorary Distinguished Professor of Public Health (Served as President (PHFI) till 31 October 2022)
4	Prof Sanjay Zodpey	Member/ President	Appointed as President (PHFI) wef 1 November 2022
5	Dr Rati Godrej	Member	Physician and Industrialist
6	Dr Muzaffar Ahmad	Member	Former Member, National Disaster Management Authority and Former DG Health, Government of J&K, India
7	Ms Vandana Shroff	Member	Partner, Cyril Amarchand Mangaldas
8	Prof Sachin Chaturvedi	Member	Director General, Research and Information System for Developing Countries (RIS)
9	Lt Gen (Dr) MD Venkatesh	Member	Vice Chancellor (Retd), Manipal Academy of Higher Education (MAHE)
10	Mr Natarajan Ranganathan	Member	Co-Founder, Foundation Partners
11	Mr Atul K Nishar	Member	Founder and Chairman Emeritus, Hexaware Technologies Limited
12	Prof KP Krishnan	Member	Former Secretary, GoI
13	Dr Girija Vaidyanathan	Member	Former Chief Secretary, Government of Tamil Nadu
14	Lt Gen Madhuri Kanitkar	Member	Vice Chancellor (Retd), Maharashtra University of Health Sciences, Nashik
15	Mr Srinivasa Raju Chintalapati	Member	Chairman, iLabs Group

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 designed its academic programs to cater to a diverse audience, spanning both the public and private sectors. We offer multiple programs for stakeholders across the spectrum. We offer several certificate programs (eLearning and on-campus) that contribute towards skill enhancement. We visualize our academic engagements across four levels of specialization; short courses, certificates, bachelors, post graduate diploma / masters and doctoral programs.

Figure 1: PHFI Academic Programs: Spectrum



PHFI has established a network of five **Indian Institutes of Public Health (IIPHs)** - three in 2008 at Gandhinagar, Hyderabad and Delhi, fourth in 2010 at Bhubaneswar 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. Furthermore, we also operate an ancillary center in partnership with Government of Karnataka at Bengaluru since 2012.

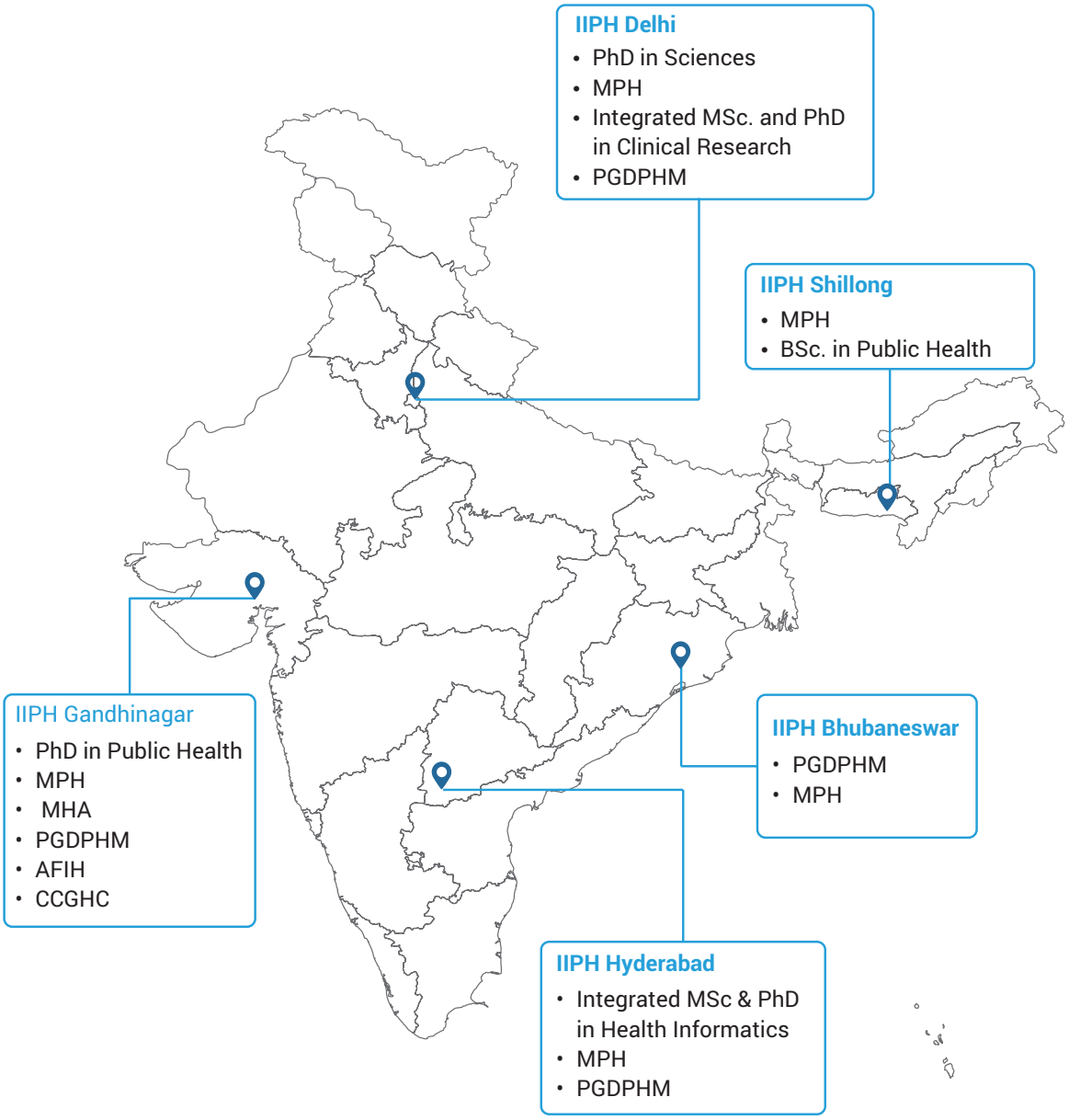
On-Campus Programs

1. PhD in Public Health [at IIPH Gandhinagar - University under State Government Act]
2. PhD in Sciences [at IIPH Delhi, offered in collaboration with the Academy of Scientific and Innovative Research (AcSIR), an institute of national importance established by Act of Parliament]
3. Integrated MSc & PhD in Clinical Research [at IIPH Delhi, offered in collaboration with AcSIR]
4. Integrated MSc & PhD in Health Informatics [at IIPH Hyderabad, offered in collaboration with AcSIR]
5. Master of Public Health (MPH) [at IIPH Gandhinagar; at IIPH Hyderabad in affiliation with Kaloji Narayana Rao University of Health Sciences, Telangana; IIPH Delhi in affiliation with AcSIR; at IIPH Shillong in collaboration with Martin Luther Christian University, Shillong; at IIPH Bhubaneswar in collaboration with Utkal University, Bhubaneswar, Odisha]
6. Master of Hospital Administration (MHA) [at IIPH Gandhinagar]
7. Post Graduate Diploma in Public Health Management [Supported under National Health Mission (NHM), Ministry of Health & Family Welfare (MoHFW), Govt of India]
8. Bachelor of Science in Public Health [at IIPH Shillong in collaboration with Martin Luther Christian University, Shillong]
9. Associate Fellow of Industrial Health [Regulated by Directorate General, Factory Advice Service and Labour Institutes (DGFASLI), Government of India (GoI)]
10. Certificate Course on Geriatric Health Caregiving [offered with support from Gujarat State Financial Services Limited and facilitated by Gujarat CSR Authority]

eLearning Programs

1. ePost Graduate program in Public Health Nutrition
2. ePost Graduate program in Health Promotion
3. ePost Graduate program in Epidemiology
4. ePost Graduate program in Management of Reproductive & Child Health Programmes
5. ePost Graduate program in Public Health & Hospital Management for Nursing & Allied Health Professionals
6. ePost Graduate program in Public Health Services Management
7. ePost Graduate program in Health Economics, Health Care Financing and Policy
8. eCourse on Tobacco Control
9. eCourse in Research Methodology
10. eCourse in Health, Safety & Environment Management
11. eCourse in Monitoring & Evaluation of Health Programs
12. eCourse in Research Ethics
13. eCourse on Public Health Surveillance
14. eCourse in Effective Grant Writing
15. eCourse in Advanced Hospital Management
16. eCourse in Clinical Research Methods
17. eCourse in Maternal, Infant, Young Child and Adolescent Nutrition
18. eCourse in Systematic Review & Meta-Analysis
19. eCourse in Public Health Disability & Research
20. eCourse on Basic Dermatology
21. eCourse on Career Development in Public Health
22. eCourse in Advanced Post Graduate Management Program in Healthcare and Hospital Leadership

Figure 2: On-Campus Academic Programs at IIPHs



Our courses employ a case-based, problem-centered learning method to cultivate public health skills. In our instructional sessions, students proactively suggest remedies for public health challenges, recognize areas for further learning, and critically evaluate and integrate fresh insights. Our courses are "Breaking the mould" by pushing the traditional discipline-based boundaries of academia, research and public health. We emphasize the significance of leadership, particularly in the context of intricate political, economic, and social dynamics, to drive global advancements in public health and foster individuals who act as change agents for public health. Our academic programs are centered on transformative learning.

Faculty Resources

Figure 3: Departmental affiliations of faculty across IIPHs

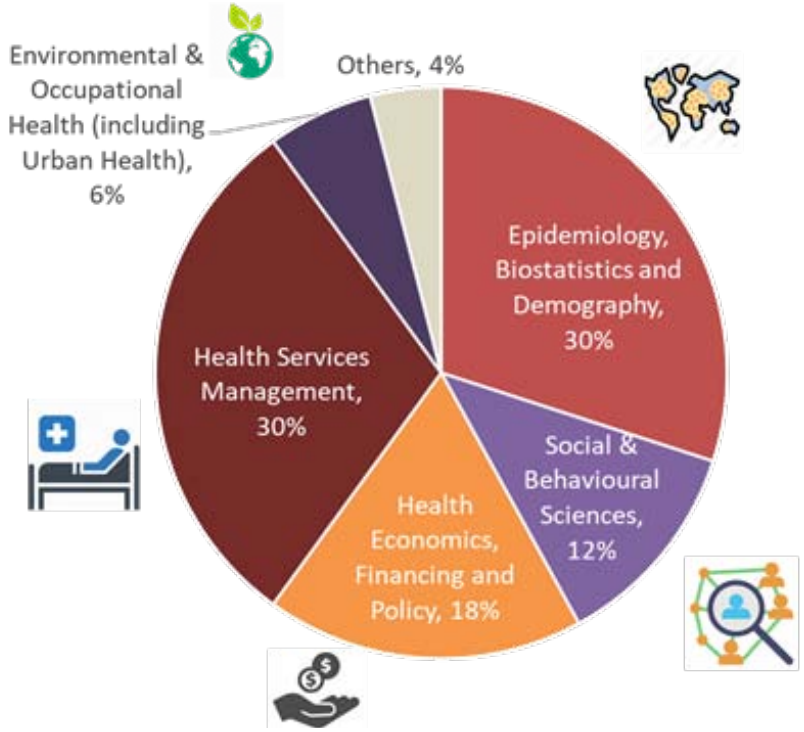


Figure 4: Number of faculty members

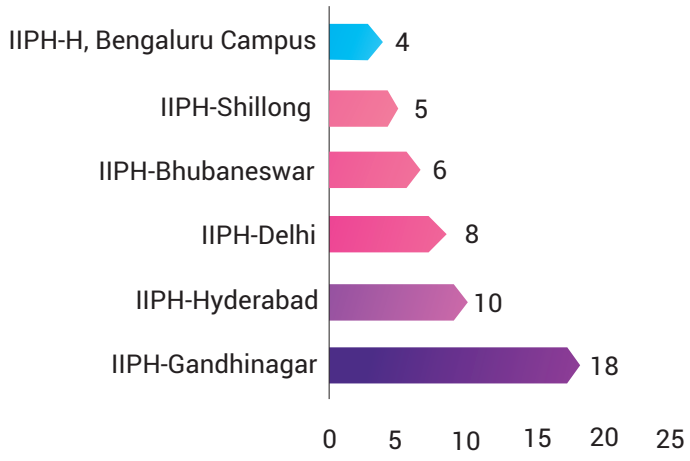
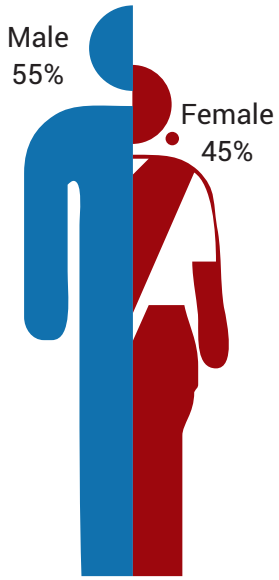


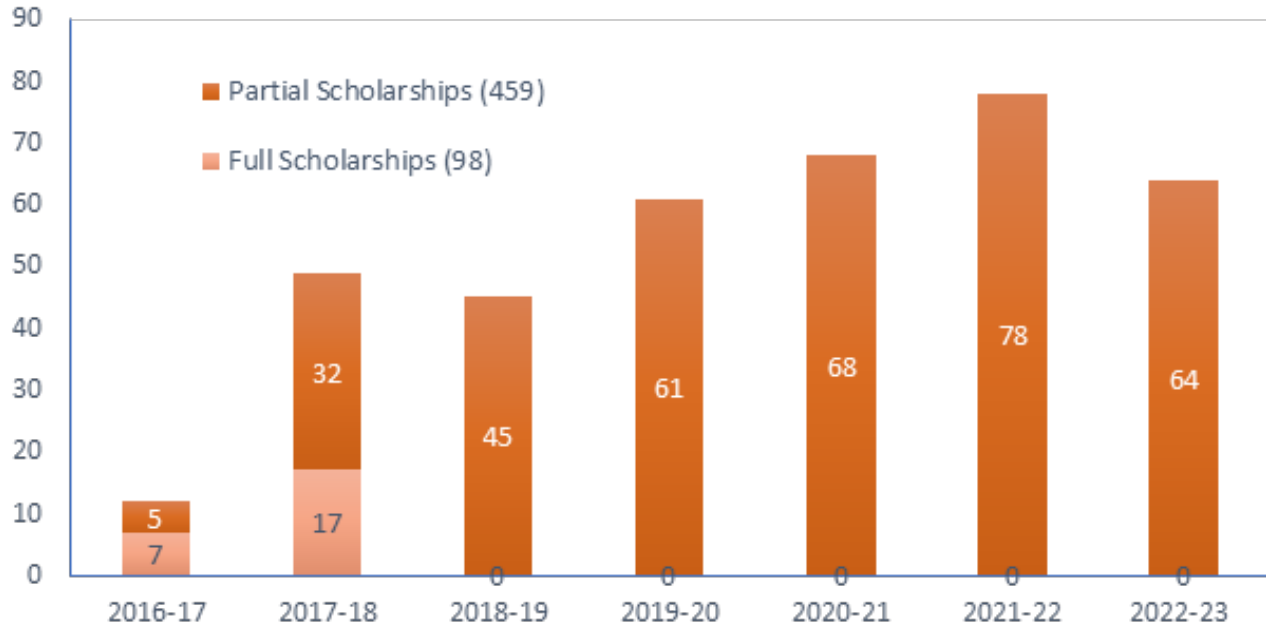
Figure 5: Gender distribution of faculty members



We have a rich pool of 55 full time faculty members, and 68 adjunct faculty members. We have consciously invested in the creation of a multidisciplinary 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 above (figure 3).

Scholarships

Figure 6: Total Scholarships awarded : 557/2605 (21%) self-sponsored enrolled students*



*graph showing the data for the last 5 years

Our Scholarships are supported by:

- World Health Organization (WHO)
- Pfizer Inc.
- MEASURE Evaluation
- MMTC Scholarship Fund
- Dr. P. G Tulpule Scholarship Fund
- INFOSYS Fellowship in Public Health
- Emmes Scholarship Fund
- McKinsey & Co. Sashaktikaran Scholarship
- P&G Health Scholarship
- PHFI

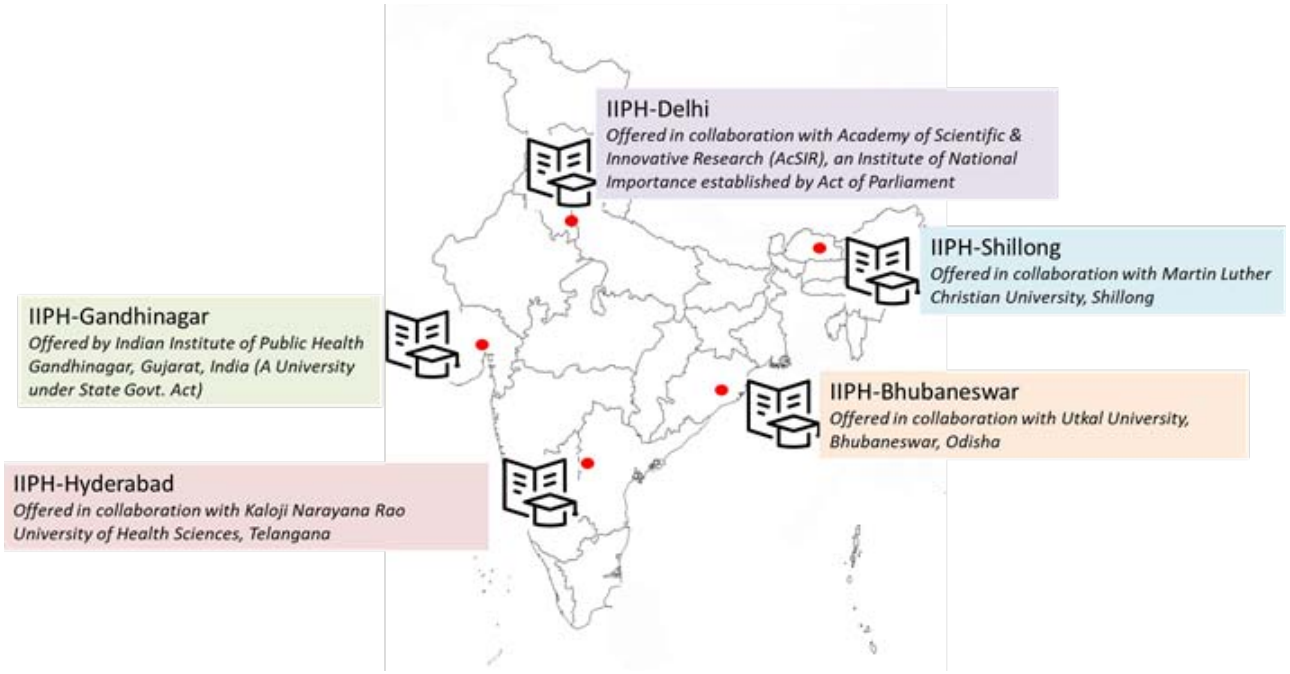
A feat in Transforming India's Public Health Education

MPH program is now being offered at all the five IIPHs

Recognizing the imperative of initiating and robustly fortifying public health education in a burgeoning economy like India, it has been consistently underscored that substantial investments in public health training are indispensable for nurturing effective public health professionals. The Master of Public Health (MPH) program, a two-year on-campus endeavor, is now being extended across all five IIPHs. Our inaugural MPH program was introduced in 2013 at IIPH Hyderabad, paving the way for subsequent programs at IIPH Gandhinagar in 2016, IIPH Delhi in 2019, IIPH Shillong in 2019, and most recently, IIPH Bhubaneswar in 2021.

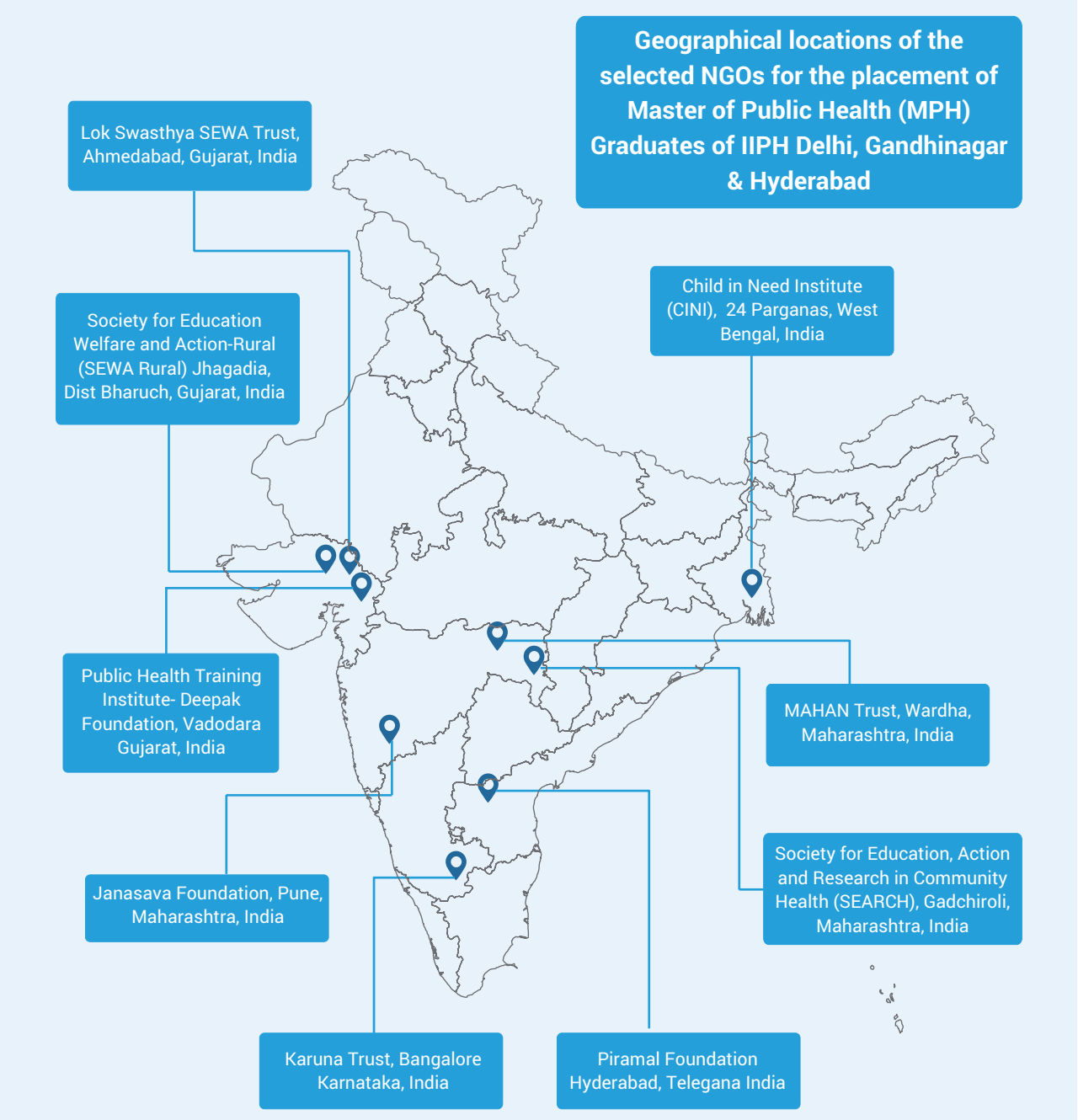
This expansive growth of MPH programs over the past decade has transformed the PHFI-IIPHs network into a vital hub for public health education, spanning five locations across the nation. Importantly, all five MPH programs are affiliated with renowned universities and institutions, ensuring the highest standards of academic excellence.

Figure 7: Current affiliations and location of MPH programs at five IIPHs (2023)



Infosys Fellowship

The Infosys Fellowships, 25 in number were open to the students (Indian Nationals) of MPH Program at the IIPHs. This fellowship program successfully ran for a duration of 5 years (2016-2021). 22 students pursuing the MPH Program at three IIPHs at Gandhinagar, Hyderabad and Delhi have been supported to pursue their masters program followed by placement support for two years at identified NGOs working in the area of public health. 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.



Building capacity for in-service candidates through eLearning programs

Program Name	State nominations/Govt. sponsorships
ePost Graduate Program in Epidemiology	West Bengal, Maharashtra, Bihar, Delhi, Chandigarh
ePost Graduate Program in Management of Reproductive and Child Health programmes	Gujarat, Rajasthan, Uttar Pradesh, Bihar, Mizoram, WHO, Odisha
ePost Graduate Program in Public Health Nutrition	Haryana, Arunachal Pradesh, Mizoram
eCourse in STI & HIV/AIDS	Tripura, Dadra & Nagar Haveli, UP SACS
eCourse on Monitoring and Evaluation of Health Programs	Haryana, Karnataka, Hyderabad
eCourse on GIS Application in Public Health	Haryana, Rajasthan, Tamil Nadu, Madhya Pradesh
ePost Graduate Program in Public Health Services Management	Odisha, Mizoram
ePost Graduate Program in Health Promotion	MoHFW, Mizoram
eCourse in Tobacco Control	MoHFW, GoI
eCourse in Good Public Health and Clinical Laboratory Practice	Indian Council of Medical Research (ICMR)
eCourse in Maternal, Infant, Young Child and Adolescent Nutrition	Tripura, Chandigarh, NHPC limited
eCourse in Health, Safety and Environment Management	Mazagon Dock Shipbuilders Limited

Updates in the eLearning Portfolio

Novo Nordisk Foundation (NNF) Partnership for Education of Health Professionals (PEP) project - 'Strengthening public health education in India'

We are implementing a NNF funded capacity development project titled 'Strengthening public health education in India'. The project's capacity development effort will strengthen PHFI's ability to support India's public health institutional and systems capacity for better health outcomes by strengthening institutional capacities within three focus areas: (i) Academic-learning unit (ALU) capacity; (ii) Faculty and program staff capacity; and (iii) Educational research capacity. Ultimately, the strengthening of ALU and staff capacity will be useful for supporting other institutions beyond PHFI in public health workforce development, conducting capacity development programs and utilizing digital technology. By the end of 2024, PHFI will have developed the institutional infrastructure, the faculty capacity, and the experiences to continue a sustainable capacity development model to scale up and support other public health institutions in India. An achievement that aligns with PHFI's vision to strengthen India's public health institutional and systems capability and provide knowledge to achieve better health outcomes for all. This commitment includes providing the continuous and necessary support to the core team and IIPHs as part of the PHFI's strategic plan.

eLearning (eL) programs [new programs]

- **eCourse on Career Development in Public Health**

This course, launched in July 2023, is the first of its kind in India to guide public health aspirants and professionals to explore career opportunities in public health and acquire necessary skills to succeed in it. The course guides students to develop a broad understanding of various career opportunities; skill sets required for these opportunities; prepare a career development plan, resume and cover letter; prepare for interviews; plan to move towards entrepreneurship etc. and make an informed career decision.

- **eCourse on Advanced Post Graduate Management Program in Healthcare and Hospital Leadership**

Advanced Post Graduate Management Program in Healthcare and Hospital Leadership is a six-months eL program aimed to develop the necessary skills among the healthcare/hospital mid to senior level managers for preparing them to internal and external challenges. The program aims to equip the participants with dynamism to handle difficult situations. The course has been developed by IIPH Gandhinagar in collaboration with Shalby Academy.

New initiatives by the PHFI Placement Cell

Public Health Career Website - www.publichealthcareer.org

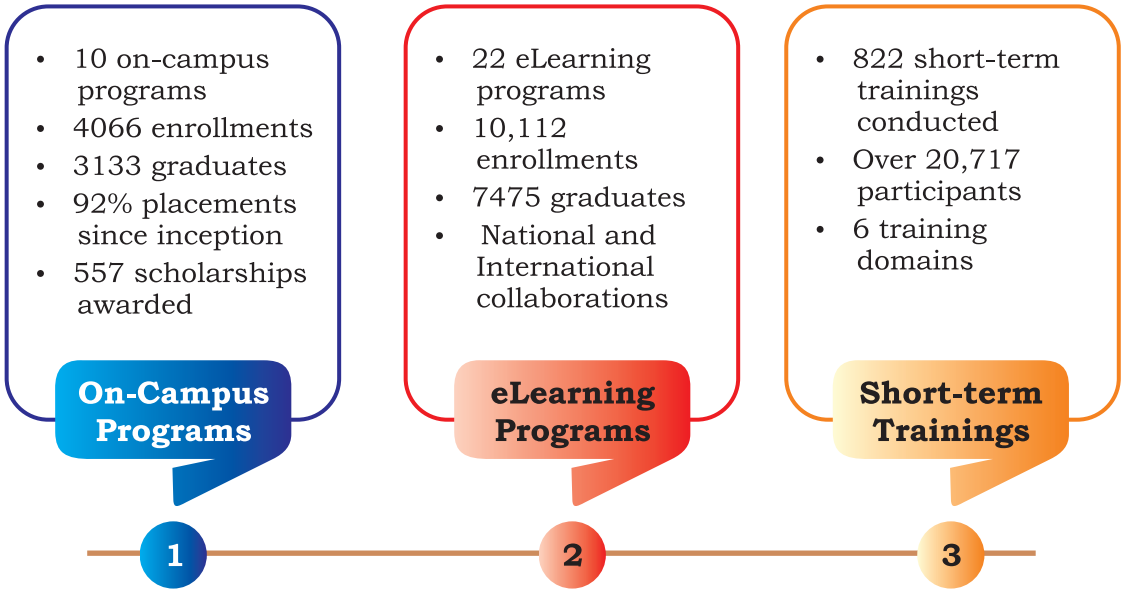
Public Health Career Website is an initiative supported by PHFI, that aims to respond to the felt need of aspirants as well as experienced public health professionals in developing and progressing in their careers in public health. In the current scenario, public health job seekers search for job opportunities on the internet, newspaper advertisements or through informal/formal references. However, being a niche area, not much information about public health job opportunities is visible on conventional job websites, which primarily cater to jobs in the corporate sector and sometimes also to the entire development sector. With this in perspective, the website is an attempt to design, develop and launch a job platform exclusively for public health related job/consultancy/ assignment opportunities.

The website is first of its kind in India and Asia and is well received by public health employers as well as job seekers and has gained popularity in public health community, in a very short span of time. The website is widely appreciated by public health employers, while looking for applicants with specific experience in public health.

eCourse on Career Development in Public Health

The course will help participants reflect on their experiences and critically evaluate their current knowledge and skill sets versus the required skill sets and competencies to be acquired for achieving their desired career path.

Figure 8: Summary of our journey across PHFI



- 55 Full-time Faculty Members
- 68 Adjunct Faculty Members
- Multiple national and international collaborations

- Peer-reviewed articles on public health education
- Regular feedback solicited
- Systems and processes in place

Alumni Awards and Accolades

Dr Ruma Bhargava, PGDPHM alumni 2014-15, IIPH Delhi, bestowed the prestigious "Bhamashah Award" by the Government of Rajasthan, India in recognition of the work done by her NGO Samarpann working for the betterment of education and healthcare for 30,000 underprivileged school children in rural India.

काना राम
आई.ए.एस.
निदेशक

प्रारम्भिक शिक्षा विभाग एवं
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Dr Deepak Rajan, MPH alumni 2016-18, IIPH Delhi, was selected for Clinical, Research & Training Programme (CRTP) One Health Fellowship and PhD program funded by DBT/Wellcome Trust India Alliance at IIPH Shillong.

Dr Aman Dua, MPH alumni, 2017-19, IIPH Delhi, was recognized with the Dr. Indrayan Award for her exceptional performance in Biostatistics. Dr Dua's commitment to promoting health is evident in her body of work and her publications. She credits her accomplishments to the guidance of her mentors, who instilled in her the values of perseverance, patience in navigating the complexities of research, and the importance of taking initiative throughout her academic career.

Ms Rubina Mulchandani, Integrated MSc & PhD in Clinical Research alumni 2014-16, IIPH Delhi, currently a PhD scholar at IIPH Delhi, has bagged several awards and accolades. She was:

- Among the top 50 participants selected across India, for the Novartis Biotechnology Leadership Camp in October 2019.
- Invited as a panelist for a webinar on 'Gender dynamics in Indian Science during the pandemic' organized by The Life of Science (a feminist media collective), in collaboration with The Wire and DBT/Wellcome Trust India Alliance in September 2020.
- Featured in the annual calendar on women, transgender and non-binary persons in Science by The Life of Science, in 2021.
- Interviewed by the News Hour BBC UK, on the occasion of the International day for women and girls in Science 2021, on the topic - Women Scientists in COVID-19.
- Recipient of the CSIR Senior Research Fellowship 2021-2024.
- Was invited to deliver a talk on 'Epidemiology for kids', organized by Talk to a Scientist India (a sci-comm platform) in April 2022.
- Featured in an episode of a Spotify podcast for emerging research scholars called 'Halftime Scholars' in December 2022.

She bagged the 1st prize in the 'Talk Your Thesis' competition at the India Science Festival (organized by FAST-India) in January 2022. She also has 10 publications (9 first author, 1 corresponding author) in national and international journals, with 325 citations. Her paper titled 'Deciphering the COVID-19 cytokine storm: Systematic Review and Meta-Analysis', is one of the top cited papers of the European Journal of Clinical Investigation and has been cited 174 times as of September 2023.

Indian Institutes of Public Health (IIPHs)

Indian Institute of Public Health Bhubaneswar (IIPH-B)

Since its inception in 2010, Indian Institute of Public Health Bhubaneswar (IIPH-B) has been striving to strengthen Odisha's public health institutional and systems capability and provide knowledge to achieve better health outcomes for all. The institute has three specific missions:

- 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

The IIPH-B upholds the trust of our multiple stakeholders and supporters and is always honest, open and ethical; acting always with integrity. The major aims of the work done in IIPH-B are: (i) To link efforts to improve public health outcomes, knowledge to action; and (ii) Be responsive to existing and emerging public health priorities. It provides an informed knowledge based, evidence driven approach by drawing on diverse and multidisciplinary expertise, open to innovative approaches. It aims for the highest standards in all aspects of its work and encourages, recognizes and celebrates the achievements. It has an independent view and voice, based on research integrity and excellence and supports academic and research freedom, contributing to public health goals and interests. The institute strives for equitable and sustainable development, working with communities and collaborating with other public health organizations.

Research and other related activities: IIPH-B has published more than 160 papers in journals of international repute and implemented more than 60 multidisciplinary public health research projects. The domains of research include - health systems, tribal health, human resources for health, health financing and insurance, nutrition, infectious diseases, vector-borne diseases, non-communicable diseases, climate change and human health, and maternal and child health. It has several collaborations with international universities including Liverpool School of Tropical Medicine, UK; University of Sussex, UK; Harvard School of Public Health, USA; John Hopkins University, USA; Purdue University, USA; University of Washington, USA; and University of Sydney, Australia. The research and capacity building initiatives at IIPH-B have been funded by several national and international; government and non-government agencies including the WHO, United Nations International Children's Emergency Fund (UNICEF), World Food Programme (WFP), United Nations Office for Project Services (UNOPS), Department for International Development (DFID), Wellcome Trust, TATA Trust, Infosys Foundation, BMGF, Access Health International, AVANTA Foundation, Department of Biotechnology (DBT), National Disaster Management Authority (NDMA), GoI, Indian Council of Medical Research (ICMR),

Government of Odisha, Government of Tripura, Government of Madhya Pradesh and National Health Mission (NHM).

Technical Assistance: IIPH-B continuously provides technical assistance and generates evidence for the Government of Odisha, and other states including Chhattisgarh, Madhya Pradesh, Maharashtra, Tripura, Kerala, Bihar and Jharkhand. Some of the initiatives where the institute has been instrumental in generating evidence and providing technical assistance to the Government of Odisha are in the development of State Health Policy, State Health Accounts, State Action Plan on Climate Change and Health, Public health cadre and its operationalization, Nursing cadre, and State Heat Action plan and regular training of district officials. Other such endeavors include providing designing and monitoring support to Biju Swasthya Kalyan Yojana (BSKY), facilitating increased production of clinical specialists through CPS and DNB, evaluation of PPP models - PHCs, Maternity Waiting Homes, KAYAKALP, providing technical support for management of COVID-19 and rapid assessment of management of COVID-19 in Odisha. Efforts taken to improve management of Human Resources for health include revising posting and transfer policies and incentive mechanisms for attraction and retention of doctors in hard-to-reach areas, improved performance appraisal and career progression for doctors, increased sanction of posts of clinical specialists at CHCs, posting of Post Graduate Diploma in Public Health Management (PGDPHM) trained public health specialists at key managerial positions at State and District levels, professional orientation of AD2 level officers to be promoted as CDM and PHOs through three months Certificate Course in Public Health Management (CCPHM).

Additionally, IIPH-B members serve on various committees constituted by the Government of Odisha such as the:

- State Health Mission chaired by the Honorable Chief Minister
- Task Force of Public Health Cadre chaired by the Health Secretary
- Committee on Public Health Management Cadre chaired by the MD, NHM
- Sub-Committee on sanctioning of PHCs and CHCs chaired by Additional Director, Human Resources for Health (HRH) and Research
- Universal Eye Health (Sunetra) Society chaired by the Health Secretary
- Member of Technical Expert Committee on COVID-19 under the chairmanship of Chief Secretary, Government of Odisha
- Member of Capacity Building Group for COVID-19 under the chairmanship of WCD Secretary, Government of Odisha
- Member of State Mentor Group for COVID-19, Government of Odisha

Future assistance is planned to be provided to the Government of Odisha as follows:

- Development of Executive MPH for in-service candidates of Public Health and Management Cadre of NHM Odisha
- Developing and delivering tailor-made short courses depending on the local public health and management needs
- Continue conducting research on locally relevant public health challenges

- Provide support to Government of Odisha in developing Public Health and Management Cadre of NHM Odisha
- Development of Center of Excellence in Tribal Health in collaboration with Government of Odisha
- Supporting Government of Odisha in establishing State Health University
- Supporting the development of a comprehensive Information and Communication Technology (ICT) ecosystem for strengthening the public health system
- Strengthening health financing functions for increasing efficiency within the health systems

Indian Institute of Public Health Delhi (IIPH-D)

Established in 2008, the Indian Institute of Public Health Delhi (IIPH-D) has been offering education, training and promoting research activities, in alignment with PHFI's vision of building institutional and systems capacity in India for a strong public health workforce in the country. In 2022-23, the institute has been actively involved with the MoHFW for the G20 summit with India at the helm. During this period, the institute has also experienced some changes; in November 2022, Prof Sanjay Zodpey, who was the Director of the Institute, took over as the President of PHFI after the superannuation of Prof K Srinath Reddy, and Prof Preeti Kumar, Vice President, Health Systems, PHFI, was appointed as the new Director of the IIPH Delhi.

Campus and Facilities: IIPH Delhi relocated to a new campus in KIIT College of Engineering, Gurugram, Haryana in April 2023. The new campus has two sections: academic and administrative sections. The academic section includes lecture halls, a training room, computer laboratory, and a library. The administrative section includes meeting rooms, administrative offices, and a pantry. Despite academic, training and research activities going on simultaneously, the shift to the new campus was achieved smoothly through meticulous planning and coordination. The campus became fully operational from May 2023.

Teaching and Training: During the period from July 2022 to July 2023, IIPH Delhi had a 14-member team of multidisciplinary faculty members. The team was composed of clinicians, epidemiologists, a biostatistician, a mathematician, a management expert, health economists and health nutritionists, all involved in creating skilled public health professionals. The technical team included the Director, five Additional Professors, three Associate Professors and two Assistant Professors. Courses at the institute are taught by the in-house faculties, along with a pool of visiting professionals drawn from PHFI and other eminent institutions from the country and globally.

Research and other related activities: IIPH Delhi has conducted over 160 projects since 2008. Between July 2022 and July 2023, eight new research projects have been undertaken across a range of thematic areas including women and child health, health equity analyses, health economics, policy and financing, pharmaceutical economics, and health technology assessment. IIPH Delhi team is also engaged in several implementation projects and assignments wherein advocacy and technical assistance to public health programs are key activities.

Indian Institute of Public Health Gandhinagar (IIPH-G)

Indian Institute of Public Health Gandhinagar (IIPH-G) is working towards building a healthier India and aims to strengthen the overall health system in the country through education, training, research, and advocacy/policy initiatives. It is India's first and largest Public Health University and is the Hub for excellence in public health teaching, public health innovation, research and practice. It is recognized as a university under the IIPH-G Act 2015 of the Government of Gujarat. It is an example of visionary leadership of Honorable Shri Narendra Modi (then Honorable Chief Minister of Gujarat), who laid the foundation stone and provided support for establishing the institute in 2008. Government of Gujarat and PHFI entered an MoU in 2007 to establish IIPH-G. Under the MoU, the Government of Gujarat allocated land and agreed to share a part of the project cost.

It is currently registered as a Society under the Societies Act. The institute has a Governing Council with four secretaries of the government as ex-officio members and four representatives of PHFI as members. The Chairperson of IIPH-G is an independent person of high repute, and currently this position is held by Shri Parimal Nathwani, Director – Corporate Affairs, Reliance Industries Ltd. The institute is functioning under the directorship of Prof Deepak B Saxena, physician by training and PhD and Postdoc in Epidemiology and working in the field of public health for the last two decades.

The institute started its operation in July 2008 from its interim location in Ahmedabad with the commencement of its 1st batch of PGDPHM. In-service medical officers from the states of Gujarat, Chhattisgarh, and Madhya Pradesh were sponsored by National Rural Health Mission (NRHM) to attend this course.

Campus and Facilities: The current state-of-the art green campus of IIPH-G is spread over 50 acres land in Gandhinagar with world-class research facilities and laboratories. The permanent campus of IIPH-G was inaugurated on 25 October 2016 by Shri Vijaybhai Rupani, Honorable Chief Minister of Gujarat in presence of Shri Shankarbhai Chaudhary, MoHFW, Gujarat and Shri NR Narayana Murthy.

Research and other related activities: IIPH-G faculties are associated with various government committees for health policy formulation and constantly provide inputs on public health issues. While the recent research initiatives at IIPH-G are discussed in the section on research and implementation projects, some of the other major projects are:

1. Deepening and Expanding Heat Health Action in India

Since 2013, the city of Ahmedabad, in Gujarat State, India has adopted and begun implementing the first Heat Action Plan (HAP) in South Asia. The HAP provides a framework for the implementation, coordination, and evaluation of extreme heat response activities in Ahmedabad. The HAP alerts those populations most at risk of heat-related illness that extreme heat conditions can exacerbate, and to take appropriate precautions. The HAP also includes active heat mitigation measures, such as the Ahmedabad Cool Roofs Program.

2. National Research Development Corporation (NRDC): Improving Air Quality in India or The Ahmedabad Air Information & Response (AIR) Plan

The ultimate goal of this project is to improve public health and contribute to building cleaner, safer and more sustainable cities in India by tackling air pollution through city-level programs. The AIR Plan is a comprehensive air pollution alert and health communication system based on real-time data through an Air Quality Index (AQI) system.

3. “India Health Co-benefit by 2030" project funded by NRDC

Ahmedabad faces air pollution challenges and is implementing climate resilience efforts. This is a collaborative project between IIPH-G, NRDC and Indian Institute of Technology Madras (IITM). IIPH-G’s experience as a collaborating partner enables access to infrastructure, baseline environmental and health data, and technical expertise needed to execute the research.

Indian Institute of Public Health Hyderabad and Bengaluru (IIPH-H/B)

Under the aegis of PHFI, the Indian Institute of Public Health Hyderabad (IIPH Hyderabad) commenced its activities on 1 July 2008, with a mission to deliver public health education and training, pursue research and advocacy and support policy development, as aligned to the public health priorities of the state and the nation. With the aim of strengthening public health capacity and achieving improved health outcomes in the state of Karnataka, the Bengaluru campus of IIPH-H was started by PHFI in 2012. This effort has been in partnership with the Government of Karnataka.

Campus and Facilities: The Bengaluru campus of IIPH-H is housed in a spacious integrated building provided by the Government of Karnataka in the Leprosy Hospital compound. The activities at the campus commenced from April 2012 and academic programs started from November 2012. The campus has a total of 10 faculty members and administrative staff and is being ably guided by Ms Deepthi Reddy (COO) in consultation with Dr Shailaja Tetali (Dean - Research & Policy), Dr Rajan Shukla (Dean - Public Health Practice & Community Engagement) and Dr Nand Kishore Kinnuru (Dean - Academic Programs & Training).

IIPH Hyderabad officially commenced its operations at its permanent campus located at Sy. no. 384, Premavatipet, Himayatsagar, Rajendra Nagar, Hyderabad, Telangana from 1 September 2022. The campus is well-equipped with essential facilities to support the academic and research requirements of the institute. The campus comprises an Academic Block encompassing classrooms, seminar hall, board room, library, dedicated staff area, faculty cabins, computer lab and staff dining area. Research Block hosts lab facilities to support research initiatives. The campus also features a functional student dining area and canteen creating a space for social interaction and relaxation.

Spanning over a total area of 43 acres, the institute has currently developed around 2.5 acres, providing a glimpse of the vast potential for future growth and development. Plans for the next phase of development are already underway, aimed at further expanding the facilities and infrastructure to accommodate the evolving needs of the institute.

Teaching and Training: The Bengaluru campus during the last three years has undertaken ten short term training courses/workshops. Approximately 10 workshops were conducted at IIPH-H in 2022-23.

Research and other related activities: Rigorous research in the Bengaluru campus spans multiple disciplines (e.g., demography, anthropology, epidemiology, genetics, health economics, psychology, and nutrition) and includes a range of study designs, ranging from prevalence and cross-sectional surveys to genetic, epigenetic, environmental and risk factor epidemiology, cohort and multi-generational cohorts, outcomes evaluation and cost-effectiveness, qualitative methods, program evaluation, clinical trials, translation research and systematic reviews. The key thematic areas addressed in the institute include prevention and control of NCDs, women, child and adolescent health, health systems, affordable technologies, social determinants of health and road safety. The institute has a team of well experienced interdisciplinary faculty and research staff. Five projects have been completed for the Government of Karnataka and six research projects are currently in vogue. At IIPH-H, more than 20 research projects were undertaken during 2022-23. Details of some of these projects can be found under the Research and Implementation Projects Section.

Technical Assistance: Technical support to the Government is a strong element at the IIPH-Bengaluru Campus, as it has developed action points for the National Urban Health Mission for the city of Bengaluru and conducted a review of nutrition programs in Karnataka to highlight key barriers, enablers and options. The campus is providing technical assistance to the Government of Karnataka in rolling out Universal Health Coverage in the pilot districts of Raichuru and Mysuru. The faculty is active in reviewing existing national and state specific programs, from their conceptualization, design, development and implementation.

Indian Institute of Public Health Shillong (IIPH-S)

The Indian Institute of Public Health Shillong (IIPH-S) was established by the PHFI in collaboration with the Government of Meghalaya in 2014 as a regional public health institute. IIPH-S is intended to redress the limited institutional and systems capacity in public health in the Northeast Region (NER) of India. In August 2020, the legal status of the institute changed, and it became an autonomous independent entity under the IIPH Shillong Society. On 19 August 2020, the IIPH-S Society was registered under the Meghalaya Societies Registration Act XII of 1983, to increase local stakeholdership. The Principal Secretary, Health and Family Welfare, Government of Meghalaya is the President of the IIPH-S Society.

The objectives of the institute are: (i) to promote health and well-being in all communities including tribal peoples and the weaker sections of society; and (ii) to establish, develop and maintain teaching and research institute(s) including a University to promote research, education, capacity building, and cost-effective health delivery systems, in the NER. The affairs of the society are overseen by the Governing Body comprising the Principal Secretary, Health, the President of PHFI, the Director of IIPH-S, public health specialists from Meghalaya and other experts from Northeast India.

Campus and Facilities: The Government of Meghalaya (GoM) has provided interim premises in Lawmali, Shillong, where IIPH-S is currently operational (initial research activities commenced in 2012 from a research cell). A Molecular Laboratory, under the Zoonotic Vector Borne Disease Research & Training Centre (ZVBDC), has been set up at the institute. The Government of Meghalaya is in the process of identifying suitable land for the permanent campus. With the growth of IIPH Shillong's activities, the campus at Lawmali is no longer sufficient for the team. Hence, a second office has been set up at Brookdene, Holy Cross, Dhanketi, Shillong.

Research and other related activities: IIPH Shillong is doing considerable work in infectious diseases using the OneHealth approach. A Tropical Medicine Research Centre (TMRC) is also being established in collaboration with CMC Vellore to undertake studies on soil transmitted helminth infections.

Research

CENTERS

Five specialized Centers of Excellence (CoEs) are spearheading PHFI's agenda in five distinct thematic areas- social determinants of health, health and development in the context of disability, chronic conditions, environmental health, and leveraging digital technology for advancements in healthcare. These CoEs stand at the forefront of PHFI's mission, actively engaging in vital activities such as research, capacity building, and public health practice. Through their endeavors, these Centers are strategically probing into major public health challenges and offering tangible solutions to effectively address them.

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

Since its inception in 2010, the Ramalingaswami Centre on Equity and Social Determinants of Health (RCESDH) has been dedicated to addressing health disparities in India. The Center's overarching goal is to enhance the health outcomes of India's population, with a specific emphasis on socio economically marginalized groups. The Center is steadfastly striving to achieve this goal through rigorous research, robust training programs, and the formulation of policies centered around the social determinants of health. Its endeavors are primarily structured around three key thematic areas: Maternal Safety and Rights, Women's Health and Well-being, and Urban Health Challenges.

Over the years, the Center's contributions have been transformative. Noteworthy activities include challenging prevailing conceptual frameworks in maternal health, pioneering innovative methodologies in verbal autopsies and intersectionality-focused analyses, and establishing critical connections between health system components and gender dynamics in the context of maternal mortality and respectful maternity care. Moreover, the Center has delved into the role of power dynamics within health systems, devising equity-centric strategies to engage a diverse range of health system stakeholders, and applying an intersectionality lens to public policy.

The Center's impact extends far beyond its immediate purview, as evidenced by its active engagement with key national and international health policy bodies. Collaborative partnerships have been fostered with esteemed institutions and universities worldwide such as the University of Toronto, George Washington University and others, as well as within India. These include associations with institutions such as the National Institute of Mental Health and Neuro Sciences (NIMHANS), IIPH Shillong, United Nations University-International Institute of Global Health (UNU-IIGH), and others. The Center members are also integral parts of significant networks like Health Equity Network India and Common Health.

The Center's vital work has been made possible through the generous support of several esteemed funding partners. These include the WHO's Alliance for Health Policy and Systems Research, WHO's Department of Reproductive Health and Research (RHR) / Research on Human Reproduction (HRP), United Nations Population Fund (UNFPA), UNU-IIGH the Bill & Melinda Gates Foundation (BMGF), the World Bank, and Nilekani Philanthropies.

Some of the major activities undertaken during the past year include:

- Continued engagement with the issue of respectful maternity care in public health facilities. This work is funded by the BMGF and has generated several knowledge products, including research papers, case studies and training materials. It has provided path breaking insights into the nature of disrespect and abuse in the intrapartum period, and its implications for training and sensitization of health providers at all levels.
- Formative research on women's health and well-being in collaboration with University of Toronto's Centre for Global Child Health, UNFPA's Technical Division (Population Development Branch, New York), Federal University of Pelotas' International Centre for Equity in Health, and George Washington University's Milkin School of Public Health. This cutting-edge work combines a life course approach with a gender and intersectionality lens and focuses on conceptual advancement as well as the development of metrics and dashboards to track progress on women's health and well-being.

- Identifying and studying examples of successful gender integration into government-run health programs in order to identify what works and doesn't. This research has been conducted in collaboration with the UNU-IIGH, the University of Western Cape and WHO-SEARO, and is generating three case studies based on promising practices in South Asia: The Gender Guidance Clinics of Tamil Nadu, Gender in Medical Education in Maharashtra and elsewhere, and the Reproductive Rights Act of Nepal.
- Providing on-going technical assistance to the World Bank, New Delhi on Reproductive and Child Health (RCH)-Social and Behaviour Change Strategy Development and Implementation for an Adolescent health program in the state of Tamil Nadu, India.

With regard to the capacity building efforts, the Center offered a course on 'Quality, Equity and Access to Health Care" to Post Graduate Diploma in Public Health Management (PGDPHM) students at the IIPH Bengaluru for the doctors in Karnataka state government service.

As part of advocacy efforts, the Center has held three Policy Dialogues in the last year. Two dialogues were held at RCESDH campus from 10-11 April 2023. On 30 August 2023, a third dialogue was held in collaboration with the Beyond Beijing Committee in Nepal. All three dialogues were well received, and created an enabling environment for the public health community by harmoniously collaborating with intersectoral agencies including the state government departments, researchers, academia, NGOs, funding agencies etc.

In addition, the Center is working in collaboration with the Health Department, Government of Karnataka, to study the implementation of the LaQshya program at urban Primary Health Centers and other health facilities.

Inaugural Session- Policy Dialogue - 10-11 April 2023

The Center is currently operating under the able leadership of Prof Shreelata Sheshadri with support from Prof Gita Sen as the special advisor.

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

The mission for the Center is 'Inclusive Millennium: Evidence for Empowering Persons with Disabilities'.

South Asia Centre for Disability Inclusive Development & Research (SACDIR), a Center of Excellence, was established in collaboration with the London School of Hygiene and Tropical Medicine (LSHTM) and its component institution, the International Centre for Eye Health (ICEH) in London, UK. The Center was officially launched on 3 October 2010. It strives to enhance the quality of life and health outcomes for individuals with disabilities through targeted public health interventions.

Driven by the high burden of disability, and lack of concerted efforts to understand and address it, SACDIR is employing a multipronged approach to alleviate the situation through research, evaluation, and advocacy.

Guided by the capable leadership of Prof GVS Murthy, the Center broadly aims to:

- Develop an evidence base for understanding the prevalence of disabilities in the South Asian context.
- Conduct high-quality, needs-based research encompassing epidemiology, operations, sociology, and outcomes-based studies to enhance the quality of life for individuals with disabilities.
- Evaluate existing programs for individuals with disabilities in India and other South Asian countries.
- Organize modules on the application of the International Classification of Functioning (ICF) as recommended by WHO.
- Train and reorient healthcare personnel to the unique needs of individuals with disabilities.
- Administer short-course training modules on disabling conditions and inclusive development.
- Develop a Masters Course in Disability Management and Research.
- Innovate modalities for identifying individuals with disabilities and providing appropriate care.
- Advocate for disability inclusive development at relevant forums and congregations.
- Assist and influence policy development initiatives to promote disability inclusive development in the country and the region.

Centre for Chronic Conditions and Injuries (CCCI)

The Centre for Chronic Conditions and Injuries (CCCI) was established with a clear mandate to generate world-class knowledge that can inform policies and practices aimed at alleviating the burden of chronic conditions, not only in India but on a global scale. The Center undertakes cutting-edge research to comprehend the dynamics, determinants, and dimensions of chronic conditions while simultaneously developing, evaluating, and facilitating the scaling up of evidence-based solutions. Policy development, and training in chronic conditions are the other focal activities.

The work is especially pertinent considering that the chronic conditions constitute one of the most formidable health challenges of the 21st century, transcending economic boundaries. In India, rapid societal and economic transformations have placed people at heightened risk of developing a range of debilitating and potentially life-threatening chronic conditions. These conditions now account for most deaths in India and are a leading cause of disability. Their often-underestimated impact not only threatens to hinder economic development but also traps millions of families in poverty.

The Center's overarching objective is to create knowledge that can drive meaningful changes in policy and practice, ultimately lessening the impact of chronic conditions on individuals and communities in India and beyond. The extent of the impending chronic disease crisis hinges on the decisions and actions taken by policymakers today. Timely interventions hold immense potential for reducing suffering and boosting economic productivity. During the period leading up to 11 September 2022, Prof D Prabhakaran served as the Director of CCCI. Effective 12 September 2022, Prof Sailesh Mohan took on the role of Director, ushering in a new chapter in the Center's journey towards advancing research, policies, and practices to combat chronic conditions and injuries.

Center's major achievements during the past year include winning highly competitive global grants including the National Institute for Health and Care Research (NIHR), UK's Global Health Research Centre grant for research on Multiple Long-Term Conditions (MLTCs). This Global Center, one of the only five selected after a rigorous three stage global competitive process, is led by Prof D Prabhakaran and Prof Sailesh Mohan from CCCI, in which we have partnered with several national and international institutions. In addition, various trainings and short courses were conducted in partnership with the Centre for Chronic Disease Control on various aspects of Environmental Health Research. Dr Nikhil SV, Senior Research Scientist was awarded the DBT/Wellcome Trust India Alliance Early Career Clinical and Public Health Research Fellowship to co-design, implement and evaluate an mHealth intervention to help people with hypertension in primary care to reduce blood pressure.

Centre for Environmental Health (CEH)

The Centre for Environmental Health (CEH) came into existence in May 2016, fortified by the support of Tata Sons and Tata Consultancy Services, with a clear mandate to tackle the pressing issue of environmental health challenges in India. The center seeks to establish collaborative partnerships with multiple institutions, aiming to leverage combined capabilities, raise awareness, and engage in meaningful discussions to address environmental health issues on local and holistic levels.

CEH is dedicated to conducting comprehensive, multidisciplinary research targeted towards national priorities. The research agenda is broad and encompasses critical thematic areas

such as Air Pollution, Water, Sanitation and Hygiene (WASH), Climate and Heat Stress, Chemical and Heat Exposure, and other pertinent topics. Research activities are designed to consider influences across the entire lifespan.

The Center places a strong emphasis on nurturing a substantial community of environmental health researchers and policymakers in India, offering research opportunities, short-term trainings, and educational programs. This includes organizing short courses on essential subjects like toxicology, air pollution modeling, food and environment, which have so far benefitted a diverse group of over 250 individuals representing more than 50 institutions from India and abroad.

Moreover, it actively strives to implement remedial actions directed at addressing critical environmental issues, aiming for tangible improvements. It further endeavors to develop policy recommendations informed by robust evidence, tailored to the unique environmental landscape of India. CEH keenly engages in high-level interactions on research and policy with key stakeholders. The aim is to foster focused and constructive dialogues that inform policy development, particularly advocating for renewable energy in a sector heavily reliant on non-renewable sources. The Center also collaborates closely with nodal ministries and organizations including National Centre for Disease Control (NCDC), MoHFW, WHO, UNDP, and more.

CEH is deeply committed to impactful community-based participatory research and intervention methods. It collaborates with community-based organizations to raise awareness and ensure effective outcomes of its activities. The Center conducts numerous activities to raise public awareness on environmental risk factors, including air pollution and WASH, through nationwide collborations with civil society groups, NGOs, and schools. It extends its engagement to urban slum communities, and is poised to continue its efforts with schools, striving to raise awareness on pressing environmental issues, notably air pollution.

Some of the pivotal research projects include work on Air pollution and cardio-metabolic diseases, The GEOHealth (Global Environmental and Occupational Health), Health impact assessment near thermal power plants, PHILAP (respiratory health of adolescents), White Paper on Situation analysis of Household Air Pollution and Health in India, HEART (Household Energy Assessment Rapid Tool) along with establishing Air Pollution Monitoring Network in Hospitals among other activities.

Through these multifaceted initiatives, CEH is actively contributing towards a healthier and more sustainable environmental landscape for India and beyond. The Center was operating under the dynamic stewardship of Dr Poornima Prabhakaran till February 2023, and is now being led by Dr Raj Shankar Ghosh.

Centre for Digital Health (CDH)

The Centre for Digital Health (CDH) was established by PHFI in April 2020 with the objective of streamlining ongoing research initiatives and pioneering transformative projects in the field of digital health. This unit is dedicated to exploring the applications of digital health technology in the realm of public health and strives to spearhead India's efforts in healthcare transformation. The CDH endeavors to foster collaborations between public and private sector entities, as well as civil society organizations. Anchored by PHFI's evidence-based research, characterized by its regional focus and global outlook, and bolstered by a team of dedicated professionals with diverse expertise, the CDH serves as a nexus between PHFI's

expertise in research, training, and extensive knowledge of public health, and a network of partners who are at the forefront of technology.

The CDH seeks to expand, scale, and implement existing health technology tools and systems developed by PHFI, including Decision Support Systems (DSS) and Computer-Aided Diagnostic Tools (CADT), along with literacy and referral pathway systems and data repository systems.

Key projects under the purview of the CDH include:

- **Digisahayam:** This is an assisted telemedicine solution aimed at promoting digital health equity.
- **Health Technologies Division:** Hi Rapid Lab: This division has developed various health technologies with a focus on population health.
- **Swasthya Sahayak:** PHFI has created Swasthya Sahayak, a point-of-care technology operated via an Android tablet, offering numerous benefits in healthcare delivery.
- **Cardiology Masterclass:** This specialized educational program imparts new and practical knowledge in the field of cardiology, catering to clinical cardiologists and those in training (DM and DNB, as well as aspiring cardiologists).
- **Endocrinology Masterclass:** Another specialized educational program, the Endocrinology Masterclass provides updated and practical knowledge in the field of endocrinology, targeting endocrinologists and those in training (DM and DNB, and aspiring endocrinologists).
- **Cardiology Short Courses on ECG and Heart Failure:** These short courses are educational programs focusing on selected topics related to cardiovascular disease management and prevention. They are designed by leading cardiologists with the aim of enhancing capacity among physicians.
- **Certificate Course in Management of Hypertension (CCMH):** A joint certification program by PHFI, Centre for Chronic Disease Control (CCDC), International Society of Hypertension (ISH), and British Hypertension Society (BHS), this course equips healthcare professionals with the necessary skills in managing hypertension.

Prof Dorairaj Prabhakaran is providing visionary leadership to the Center.

Health Promotion Division

The Health Promotion Division at PHFI is dedicated to undertaking activities in the field of health promotion. The Division is led by Prof Monika Arora, Vice-President Research and Health Promotion and activities are undertaken by a multidisciplinary research and implementation team. The Division focuses on all population age groups and its activities around research, training and evaluation span across different settings. It aims to nurture interdisciplinary health promotion research, programs and practices and focuses on promoting multisectoral coordination.

Key Focus Areas

What Do We Do ?

The Division adopts a settings-based approach to design health communication, health literacy, and community outreach activities that mainstream health promotion policy and practice. It works on designing theory-based interventions to develop healthy settings in diverse contexts and generates evidence to support effective messaging, programming and policy development. The Division brings together approaches ranging from health education, health campaigns, community empowerment, legislative reforms, and fiscal policy change to organizational change and strengthening health services to address social inequalities in health. It undertakes rigorous evaluation of outcomes, context, implementation and processes to assess the impact of these health promotion interventions on population health and well-being.

Research evidence from the interventions and programmes conducted at the Health Promotion Division has established that healthy behaviours can be successfully inculcated from an early age as most risky and protective behaviours get etched during the early school years. Programme Evaluations led by the Division have successfully informed National Health Programs in India. Research on the impact of programs in influencing the health of individuals and populations is a core activity undertaken at the Health Promotion Division. In doing so, the Division engages a wide array of stakeholders, including central and state governments, national and international donors, civil society organizations, academic and research institutions, as well as health promotion settings including schools, colleges, workplaces and the communities. The team members serve on various Expert Groups formed by the Ministry of Health and Family Welfare-Government of India and international expert committees formed by WHO, World Heart Federation, etc.

Some of the recent collaborations of the Division include the Ministry of Health and Family Welfare (Government of India), National Health Mission (Madhya Pradesh), Public Health Department (Government of Maharashtra), NITI Aayog, World Health Organization (WHO-Country Office), Medical Research Council (United Kingdom), National Institute of Nutrition (NIN), Institute of Economic Growth (IEG), UNICEF-India, Deakin University, CDC Foundation, Pratham Education Foundation, University of York and AXA Business Services. The recent research initiatives at the Health Promotion Division are discussed in the research section of the Report.

RESEARCH AND IMPLEMENTATION PROJECTS BY THEMATIC AREAS

Adolescent Health

Adolescent encompass individuals undergoing significant transition period marked by swift physical, cognitive and psychosocial development. As such, they require comprehensive support in the form of proper nutrition, education, counseling, and guidance to navigate this critical period of health transition effectively. Addressing prevalent adolescent health concerns demands a multifaceted approach, spanning research in crucial domains such as nutrition (encompassing eating disorders, obesity, and malnutrition), substance abuse, sexual and reproductive health and mental health (including anxiety, depression, and injuries). Within the domain of adolescent health, some of the major projects undertaken by PHFI are mentioned below.

Adolescent Violence and Injury Detection System-AVID

Principal Investigator: Shailaja Tetali

This is an ongoing project and is funded by Johns Hopkins University.

Project Summary: This project focuses on the development of an innovative Adolescent Violence and Injury Detection System. In India, injuries and self-harm are among the leading causes of death among 10 – 19 years old. This research study is timely and innovative in its use of artificial intelligence as well as the development of a tool for early identification of children and adolescents who are at-risk for experiencing violence and injuries. This project would enable early intervention and prevent violence and injuries among adolescents, thereby improving the quality of life of children and adolescents in India. Phase 1 focuses on formative work that will lay the foundation for phases 2 and 3 during which an early detection system for adolescent violence and injuries will be developed. The project is taking place in the Warangal district, Telangana.

Exploring the implementation of the Peer Educator Intervention for improving adolescent health in India's National Adolescent Health Programme during COVID-19 (i-Saathiya)

Principal Investigator: Monika Arora

This is an ongoing project and is funded by the Medical Research Council (MRC).

Project Summary: Under the guidance of MoHFW-GoI, PHFI conducted an Implementation Research, i-Saathiya (2020-23), to explore the implementation of the Peer Education Program for improving adolescent health in India's National Adolescent Health Strategy (Rashtriya Kishor Swasthya Karyakram-RKSK). The Research aim to: (i) Describe the processes of implementation and context of the Peer Education Program under the RKSK, in two Indian states- Madhya Pradesh and Maharashtra; (ii) Understand the engagement of Peer Educators during the COVID-19 pandemic and adolescents' response to their engagement in the community; (iii) Understand the resource use and implementation cost of Peer Education Program and its variations across the two states; and (iv) Identify key components of Peer

Education Program which work to improve health system access and community engagement of adolescents for scaling up of adolescent health programs in other states of India. The study highlights the potential of peer educators in addressing the needs of adolescents and the community. As part of the dissemination component of the study, multi stakeholder workshops at the state and national levels were held, enabling Peer Educators to hear the voices and perspectives of adolescents (program beneficiaries).

National Dissemination Workshop organized on 1 August 2023 in New Delhi

Environmental and Occupational Health

This thematic area focuses on investigating the health impacts of various pollutants present in the air, water, or soil in the environment, homes or workplaces. Additionally, it encompasses research pertaining to the effects of climate change on both health and the environment. Research endeavors in this area have the potential to yield strategies for pollution and climate change control, minimizing exposure to a diverse array of pollutants, and addressing the repercussions of climate change on human health. The research projects within this thematic area at PHFI are outlined below, providing valuable information on this critical intersection of public health and environmental well-being.

Environmental toxicants, child development and school readiness: a preliminary study with intra-familial exposures in communities affected by battery recycling facilities in Patna, Bihar

Principal Investigator: Aditi Roy

This project was funded by Research Development Grant, Centre for Environmental Health, Tata Consultancy Services and is now completed.

Project Summary: The overall objective of this study was 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 was conducted in Patna, Bihar, where informally used lead acid battery (ULAB) recycling or repairing operations are often located in densely populated residential areas with minimal safety precautions in place. The data collection was hugely impacted by COVID-19 pandemic. Based on this pilot work, further funding was received from DBT/Wellcome Trust India Alliance to conduct a longitudinal follow-up study.

Early Child Development and learning in deprived Urban environment: Influence of Pollution (ECD- Urban Pollution)

Principal Investigator: Aditi Roy

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Project Summary: The study seeks to examine the impact of two contextually-relevant pollutants on child neurodevelopment and school readiness. This longitudinal study with 500 low-income urban children in Patna, Bihar will investigate whether heavy metal lead (Pb), a known neurotoxin, and ambient particulate matter <2.5 micron (PM2.5), a suspected neurotoxin, are independently and/or jointly associated with neurodevelopmental outcomes in preschool children. Exposure to neurotoxins such as Pb and PM2.5 could alter brain structure and functions via several underlying physiological and molecular mechanisms. Epidemiological data on risks posed by neurotoxins independently or jointly with other chemical or non-chemical stressors could be useful for India and other countries with similar exposure burden. The study builds on a preliminary study conducted in Patna last year by the project team.

Prenatal and postnatal exposure to pesticides and neurodevelopment of infants: Findings from DHANI Cohort

Principal Investigator: Monica Chaudhry

This project was funded by the Science and Engineering Research Board (SERB) and is now completed.

Project Summary: The study aimed to find the association of in-utero and early life pesticide exposure to the infant's neurodevelopment at 12 months of age. It built on the cohort DHANI (Maternal DHA Supplementation and offspring Neurodevelopment in India) established to examine the effects of in-utero and early life DHA exposure (through maternal supplementation) on postnatal neurodevelopment and body-size of Indian infants (NCT01580345). The study objectives were to assess: (i) the association between the pesticide organochlorine (OC), organophosphate (OP), synthetic pyrethroids (OC, OP and SP) residue levels detected in cord blood as well as breast milk with the DASII score assessed at the age of 12 months; and (ii) the correlation between the pesticide OC, OP and OC, OP and 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 findings were suggestive of an association between maternal pesticide exposure and child neurodevelopment.

Green and Climate-Resilient Healthcare Facilities in Gujarat

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by UNICEF.

Project Summary: The climate continues to change, and risks to health systems and different levels of facilities are increasing and reducing the ability of health professionals to protect people from a range of climate hazards. Healthcare facilities (HCFs) are the first and last defense against climate change impacts; however, they lead to significant emissions of greenhouse gases (GHGs). HCFs can also produce large amounts of environmental waste and contamination (GHGs and other contaminants), which may be infectious, toxic or radioactive and, therefore, a threat to the health of individuals and communities. Further, many countries often lack functioning infrastructure and an informed and trained health workforce to address environmental challenges and are subject to inadequate energy supplies, water, sanitation and waste management services. Improving these is a priority and is critical to building resilience and contributing to environmental sustainability. Given the current gaps and opting towards climate resilience compliance, the purpose is to ensure that the HCFs in Gujarat are climate resilient. The overall aim of this research is to develop a contextual understanding of Green and Climate resilient standards in the state of Gujarat through a comprehensive facility assessment and planning tool, to develop a facility focused contextualized standard operating procedures for developing and upgrading the existing healthcare facilities towards climate resilience, to develop a standardized capacity building package in local language for facilitating the healthcare providers and enhancing their capacity to develop Green and Climate resilient HCFs, and to provide on-job support to selected 12 HCFs in developing a model costed action plan for Green and Climate resilient HCFs and document case studies and learnings from pilot clean and green HCFs.

Are citizens of Delhi willing to stop using private vehicles for their daily office commute in order to reduce air pollution and related ailments? A Contingent Valuation Study

Principal Investigator: Shomik Ray

This is an ongoing project and is funded by ICMR.

Project summary: The project aims to understand the willingness of citizens of Delhi to shift to public transport for their daily commute or to pay a premium to continue to use their private vehicles to reduce environmental pollution and related morbidities. The study will meet the following objectives: (i) To summarize evidence on contingent valuation studies identifying the willingness to pay (WTP) or willingness to accept (WTA) of private vehicle users to continue to use private transport modes or shift to public transport

respectively; (ii) To assess the attitude and perceptions of private vehicle users in Delhi on the current public transport system, air pollution in Delhi and related morbidities; (iii) To assess the willingness of private vehicle users to shift to public transport for their daily commute to the office and determinants thereof; and (iv) To assess the willingness of private vehicle users to pay to continue using their private vehicles for their daily commute to office and associated welfare gain.

The study will yield information about the knowledge among office commuters about diseases caused by air pollution and about the knowledge and attitude of vehicle users towards the services provided by the transport department.

Improving Water, Sanitation and Hygiene in 9 Health Care Facilities in Canning Subdivision, West Bengal

Principal Investigator: Deepak Saxena

This project was funded by Terredes Hommes, India and is now completed.

Project Summary: The project aimed to contribute to the application of national health norms for the prevention and control of infections linked to a lack of access to WASH in nine Health Care Facilities (HCFs) in the Canning subdivision of Sundarbans in West Bengal. The study objectives were as follows: (i) Development of the guidebook integrating KAYAKALP & WASH FIT. IIPH-G was the technical supporting partner for three major working packages; (ii) Development of a comprehensive guidebook by reviewing and gap analysis of the WASH domain in existing KAYAKALP with respect to international standards (WASH FIT and WASH FIT 2.0; (iii) Developing Training module for cleaners based on KAYAKALP, National IPC guidelines, and international guidelines (Teach Clean, CDCs Environmental Cleaning Best Practices; and (iv) Capacity building of the implementing team through continuous capacity building.

Co-Benefits of Large scale Organic Farming on Human Health (BLOOM): A cluster-randomised controlled evaluation of Andhra Pradesh Community-managed Natural Farming

Principal Investigator: Poornima Prabhakaran

This project was funded by the UK Research and Innovation (UKRI) with additional support from Scottish Council and is now completed.

Project Summary: The Co-Benefits of Large scale Organic Farming on Human Health (BLOOM) study aimed to determine if a government implemented agroecology program reduces pesticide exposure and improves dietary diversity in agricultural households. This was a collaborative research grant with University of Edinburgh, UK. The protocol paper has been published (10.1371/journal.pone.0281677).

Urban climate-health risk management in India (CHARISMA)

Principal Investigator: Poornima Prabhakaran

This project was funded by the Flemish Government and is now completed

Project Summary: In collaboration with the Flemish Institute for Technological Research, the CHARISMA project aimed to support India in drawing up climate health adaptation plans for the management of health problems caused by climate change with a focus on urban areas. In this project, a climate-health information platform was developed through co-creation with local stakeholders at state and city-level including disease surveillance officers, epidemiologists, urban planners and public health officials besides the state meteorological services. Using information on current disease trends from surveillance data, heat spots, socio-demographic data and urban growth scenarios and simulations for future heat waves, the climate-health information platform will offer the ability to download and visualize data and maps at city-level on urban climate conditions, including heat vulnerability and vector-borne diseases. The project focuses on two demonstration cities (Climate and Health Data Analysis/Projections) - Lucknow and Guwahati and 48 pilot cities across India (Climate Data Analysis/Projections).

Climate, Health and AIr pollution Research in India (CHAIR-India): Addressing Gaps in Achieving the Sustainable Development Goals

Principal Investigator: Poornima Prabhakaran

This is an ongoing project and is funded by the Swedish Research Council.

Project Summary: This international multidisciplinary consortium, funded by FORMAS (Sweden) aims to estimate daily fine particulate matter pollution (PM2.5) and ambient air temperature at 1×1 km and at 200x200m across India between 2008-2020 using spatiotemporal machine learning models. CHAIR-India will link environmental data (PM2.5 and temperature, independently and jointly) to health datasets, and study associations of short and long-term air pollution and temperature with mortality and cardiometabolic and respiratory disease in rural and urban areas across India. The project further aims to foster public awareness, collaboration and policy change by providing an interactive tool, and engaging multiple stakeholders and end users. This will be achieved by creating a public website with environmental data on a 1x1km grid that can be used by planners, policy makers and the general public to increase awareness and aid decision-making. Key stakeholders will be engaged 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.

A comprehensive study of Occupational Health hazards and remedial measures for traffic police in the state of Gujarat

Principal Investigator: Shyam Pingle

This is an ongoing project and is funded by Director General & Inspector General of Police, Gandhinagar.

Project summary: The project aims to undertake following activities across the selected locations (Ahmedabad, Gandhinagar, Vadodara, Godhara, Morbi, Surat and Rajkot) in the state of Gujarat: (i) Undertake the situational analysis of Occupational Health (OH) hazards faced by traffic police personnel; (ii) Study the best practices at national and international level, study and document the current status of OH Infrastructure for traffic personnel in Gujarat; (iii) Identify the needs of the department, traffic police personnel and Government in relation to providing optimal OH; (iv) Develop suitable strategies and suggest feasible plans for OH to traffic police personnel of Gujarat; and (v) Study the health system preparedness in providing optimal OH to traffic police personnel in Gujarat.

Impact of industrial pollution on public health due to use of coal gasifiers in ceramic industry in Morbi-Wankaner area and assessment of damage to health

Principal Investigator: Shyam Pingle

This project was funded by the Central Pollution Control Board (CPCB) and is now completed.

Project Summary: The objectives of the study were: (i) To assess damage to health due to the operation of coal gasifiers by ceramic units in the Morbi-Wankaner area, Gujarat; and (ii) To collect and analyze data on socioeconomic status, cost of health illness, and out of pocket expenditures of the impacted population.

The data from air pollution analysis showed a clear increasing trend in some of the parameters of air pollutants values during the coal gasifier period. The participants variably reported mild-obstructive lung disorder and mild-restrictive disorder. The participants working in the process area had 8.5 times higher abnormal pulmonary function test (PFT) than participants from the office areas. The lung function parameters were reduced with increase in work experience in coal gasifiers. In the community survey, no major significant health impacts associated with the presence of coal gasifiers could be found.

Health Promotion

The health promotion programs at PHFI have a fundamental goal of actively engaging and empowering various groups, including individuals, communities, and institutions. These initiatives seek to educate and equip them with the knowledge and tools needed to adopt healthy behavior and make positive lifestyle changes, ultimately reducing their susceptibility to various diseases. Health promotion stands as a cornerstone of public health, and at PHFI, it is supported by a wide array of projects focused on this critical thematic area.

Developing a comprehensive package for promoting healthy behaviours

Principal Investigator: K Srinath Reddy

This project was funded by Tata Industries Limited and is now completed.

Project Summary: Behavioral 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 behaviors. 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. There are many stakeholders working in multiple approaches for promoting behavior change. However, personnel, resources, and material constraints are often amplified by theoretical, implementation capacity (practicability), and financial concerns. The study aimed to address this by co-designing and implementing a set of simple behavior change activities for promoting healthy behaviors among adolescents and reducing their risk of developing diseases throughout their life-course. As part of this implementation research project, campaigns on safe hand washing, oral health awareness, mental health

strengthening, and menstrual hygiene were organized for adolescents in urban slums and re-settlements areas of Jaipur. Nukkad natak, and rallies for NCD risk factor awareness were conducted. Awareness session about the harmful effects of tobacco and alcohol on adolescents was also carried out.

Promotion of healthy diets among adolescents through adolescent participation and institutional capacity building for adolescent participation in public, policy and nutrition literacy discourse

Principal Investigator: Monika Arora

The project was funded by UNICEF and is now completed.

Project Summary: PHFI in collaboration with UNICEF and its consortium partners, including ICMR-National Institute of Nutrition, the Institute of Economic Growth (IEG), Deakin University, and the World Obesity Federation, launched the 'Let's Fix Our Food' (LFOF) initiative to enable adolescents' meaningful involvement and create a conducive food environment in the country. The initiative was aimed at creating health-promoting norms among adolescents, in families, homes, and communities. It has also supported policies that help combat malnutrition comprehensively in India by addressing Double Duty Actions, Taxation of HSFF (High in Fat, Salt, and Sugar) foods and Front of Pack Labelling (FOPL), regulating the marketing and advertising of HFSS food and promoting adolescent-led nutrition literacy. 'Let's Fix Our Food', a pan-India survey (U-Report Poll), was designed to understand young people's perceptions of what influences their food choices and what in the food environment needs to change. The survey received responses from more than 1.4 lakh adolescents between the age group of 10 to 19 years across 36 Indian states and union territories. 67.57% of adolescents reported that food advertisements influence their food choices. Reading of food labels was reported by 72.58% of respondents and 62.81% responded that it is very important to simplify the nutrient information available on food packs. To create a two-way dialogue platform for adolescents, activities like webinars, capacity-building workshops, and modules to raise awareness on the importance of fostering a healthy food environment were conducted with adolescents.

A network of adolescents (aged 10-19 years) representing 30 states of India convened in collaboration with IIPHs and partners to contribute to the development of knowledge products

A podcast on the food environment and how it shapes the future of a country was recorded and taken live from our social handles

Development of Policy Briefs and Scientific Papers: Food Policy Strengthening: Prevention of Maternal, Adolescent and Childhood Overweight and Obesity

Principal Investigator: Monika Arora

The project was funded by UNICEF (India) and is now completed.

Project Summary: PHFI developed policy briefs and scientific papers in collaboration with UNICEF and other consortium partners [National Institute of Nutrition (NIN), Institute of Economic Growth (IEG), and Deakin University] to synthesize the evidence for Food Policy Strengthening: Prevention of Maternal, Adolescent and Childhood Obesity. This initiative

was in the follow-up of the National Consultation on Prevention of Maternal, Adolescent and Childhood Obesity held under the chairmanship of Dr Vinod Paul, Member (Health), NITI Aayog on 24 June 2021 to develop policy options for the prevention of overweight and obesity in children, adolescents and women in India, covering health, education and food system programs. Subsequent to the National Consultation, a consortium of organizations was put together by UNICEF, to arrive at a coordination mechanism, harmonize support, and seek advice and direction from the partners. In the meeting held on 11 August 2021, data and information gaps were identified by all the partners, and they agreed to support the development of scientific papers that identify current evidence and gaps in the Indian context on prioritized themes and areas related to overweight and obesity among mothers, children and adolescents and to get overweight and obesity included in Poshan V.2.

Health Champion Course - PHFI and Pratham

Principal Investigator: Monika Arora

This project was funded by Pratham Education Foundation and is now completed.

Project Summary: The collaboration between Pratham and PHFI aimed to address health-related challenges and provide innovative solutions and opportunities by empowering adolescents and youth to become change agents and health champions. Young people can play a critical role in disseminating and amplifying preventive messages regarding healthy living habits, both during the COVID-19 pandemic times and in the future. PHFI was responsible for carrying out the following activities: (i) Conducting a desk review and developing the technical content on selected themes in consultation with the Pratham team; (ii) Formulation of the Expert Committee, and coordination and engagement with the members; and (iii) Finalization of the technical content for the development of the course modules, and review of the developed modules. Short audio-visuals/snippets by health experts on addressing vaccine hesitancy, preventing community infection, and strengthening mental health well-being during the second wave of COVID-19 in India were developed in regional languages. Webinars with experts provided opportunities to clarify the myths related to COVID-19.

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

Principal Investigator: Shalini Bassi

The project was funded by AXA Business Services and is now completed.

Project Summary: The Health Promotion Division conducted a study to support the GoI's effort to enhance awareness and increase the acceptance and uptake of COVID-19 vaccinations. The project was implemented in Pune in collaboration with the Janaseva Foundation. The study aimed to disseminate comprehensive knowledge about COVID-19 vaccine(s), with the goal of alleviating apprehensions surrounding the vaccine, ensuring its acceptance and promoting its uptake among both health workers and community members. A pool of 140 frontline health workers were trained as Master Trainers to sensitize community members on various aspects of COVID-19 vaccination, through various expert sessions and sensitization workshops. Two villages were reported to be fully vaccinated during the study duration.

Sensitization sessions with healthcare workers

Household visits by healthcare workers to sensitize community members on COVID-19 vaccination

Health Systems, Policy and Financing

Health system research encompasses a multidisciplinary approach that scrutinizes factors such as access to healthcare, availability of healthcare practitioners, and associated costs. This field also delves into healthcare financing, investigating how financial resources are allocated and utilized within the healthcare system. The overarching aim of research within this thematic area is to assess and enhance the attainment of collective health objectives, while also analyzing the interactions and contributions of various stakeholders in healthcare towards policy outcomes. Below, a diverse array of research projects within this domain at PHFI are detailed, providing insights into the functioning and optimization of health systems.

Redesigning primary care to reduce cardiovascular mortality: Population preferences for hypertension care in India

Principal Investigator: Dorairaj Prabhakaran

This project was funded by the Harvard T.H. Chan School of Public Health and is now completed.

Project Summary: Overall aim of the project was to inform the provision of primary care for hypertension based on population preferences for high quality care. The specifics objectives were: (i) To assess the health care utilization patterns, medication adherence, and stated preferences for health care among adults and older adults with hypertension in Karnataka, India; (ii) To conduct a rapid assessment of primary care capacity, competence and climate among health care clinics and providers responsible for managing hypertension and comorbidities; and (iii) To develop locally feasible primary care models for patient-centered, competent cardiovascular care.

In this cross-sectional study of 1085 adults with hypertension, it was found that urban respondents are less likely to use public primary care services than rural respondents. Stated population preferences suggested that consistent medication availability and quality of clinical assessment should be prioritized in primary care services in Karnataka, India. The heterogeneity observed in population preferences supports considering additional models of care, such as fast-track medication dispensing to reduce wait times in urban settings and physician-led services in rural areas.

Preventing Childhood Blindness and Visual Impairment: Strengthening health systems for low vision care - Reaching the children with low vision in Telangana state

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This project was funded by The United States Agency for International Development (USAID) and is now completed.

Project Summary: Visual impairment can result in developmental delay that has a negative impact on performance at school, social and emotional development, and health outcomes. The prevalence of Low Vision (LV) in children is greater than 10 times that of paediatric blindness. Retinopathy of prematurity (ROP), paediatric cataract, and post paediatric eye surgery management need a longer follow-up to ensure proper anti-amblyopia treatment and spectacle compliance for good visual outcomes.

The overall goal was to reduce preventable blindness and visual impairment in the paediatric age group by strengthening LV care. The main objectives of the Child Blindness Program (CBP) were: (i) Designing and implementing a community-based sustainable model integrated with primary health care for screening, assessment, treatment and long-term follow-up for LV care in five districts of Telangana state; (ii) Building capacity for screening, assessment and care of the ophthalmic assistants/optometrists and RBSK field team in the public health system at the primary and secondary level of care and augment the District Early Intervention Centers (DEIC) to provide patient-centered LV care; (iii) Strengthening the screening and referral network from the primary to the tertiary levels of care for LV using technology-supported tele-consultation embedded in the program and support for LV care in Telangana; (iv) Creating a pool of community-based volunteers and parent support groups for community empowerment; and (v) Assessing the potential for scaling up and long-term sustainability through a robust monitoring and evaluation matrix. A community-based integrated model involving government frontline workers was developed with an objective to screen children under 10 years for LV. 826 out of 13380 children (0-19 years) screened for LV were referred to PHC, DEIC and Pushpagiri Vitreo Retina Institute (a tertiary eye care hospital). 1129 frontline health workers were trained. A total of 19 parent support groups were established and made operational.

India Primary Health Care Support Initiative (IPSI)

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by Johns Hopkins University.

Project Summary: Primary Health Care Support Initiative (IPSI), focuses on supporting the Health and Wellness Centre (HWC) component of the Ayushman Bharat program. The primary focus of IPSI is to assess PHC performance and components of the HWC operational guidelines issued by National Health Systems Resource Centre (NHSRC). The study is being implemented in the states of Orissa, Meghalaya and Gujarat. It envisages impetus on providing design, implementation and capacity building to one district in each state for improving HWC/PHC performance and coverage of the selected HWC package of services. The model proposed in Gujarat will focus on developing and demonstrating improvement of the selected Health Care Services package with reference to Urban Health and will also focus on converging Occupational Health with existing efforts of HWC implementation and PHC outcomes. The execution in Gujarat is undertaken by IIPH-G with technical inputs from State Health Systems Resource Centre (SHSRC) and Government Medical College, Bhavnagar. The overall aim of the present project is to technically support development of a cohesive Comprehensive Primary Health Care (CPHC) team for effective implementation of selected package of CPHC in Bhavnagar city and district with an objective of integration of CPHC with provision of Occupational Health services within the PHC approach and other components as per the HWC operational guidelines issued by NHSRC. SHSRC Gujarat and IIPH-G are technically assisting IPSI in implementation of the project with assistance from local Medical College in Bhavnagar, Office of the Chief District Health Official and Urban Municipal Corporation of Bhavnagar.

Closing the gaps in TB Care Cascade (CGC)

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by USAID.

Project Summary: The primary objective of the study is to demonstrate a set of practical interventions that can comprehensively improve TB care cascade. The framework is utilized to implement six multicomponent, targeted Quality Improvement (QI) interventions including: (i) Informal provider engagement for case-finding (diagnostic cascade gap); (ii) Integration of AI assisted chest X-rays (CXRs) for automated probable TB diagnosis (diagnostic cascade gap); (iii) Treatment access with improved supply chain models (e-pharmacy) complementing the e-Aushadhi system (treatment cascade gap); (iv) Differentiated care strategy for patient support (treatment cascade gap); (v) Post-treatment follow-up to ensure recurrence-free survival and rehabilitation support for patients; extension of the care cascade to include rehabilitative endpoints; and (vi) Demand generation for information and services through continuous engagement of patient communities and advocacy, communication, and social mobilization (ACSM) strategies (engagement of ACSM specialists for technical support). Ni-kshay Setu has been developed as a ready reckoner and decision support tool with 39.5K+ subscribers across 35 states and UTs. Of these, >70% of subscribers are frontline workers, and 15k+ assessments have been undertaken by the health staff of the public and private institutions. Secondly, the TB Death Audit has been done to understand various factors and causes of death. A Care Cascade Monitoring Framework has been developed for district leadership to assess cascade gaps and implement QI interventions.

Situational Analysis and Understanding influencing factors to address delays in cancer healthcare seeking in Meghalaya

Principal Investigator: Rajiv Sarkar

The project was completed and was funded by National Centre for Disease Informatics and Research - Indian Council of Medical Research.

Project Summary: Northeast India has the highest incidence of cancer in the country and has been witnessing an alarming rise in the number of cancer patients in recent years. Delay in healthcare seeking contributes to substantial increase in cancer morbidity and mortality. Lack of trust in the healthcare system, lack of access to healthcare services, limited early detection services and lack of knowledge of warning signs of cancer among general practitioners are some of the factors responsible for the delay in cancer care seeking. In order to prevent and control non-communicable diseases (NCDs), the National Programme for Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS) was launched in India in 2010. However, in Meghalaya, the NPCDCS program has not been implemented uniformly throughout the state thereby contributing to the growing cancer burden in the state. This study aims to investigate the barriers and facilitators for healthcare seeking in cancer at the individual patient and the community levels, as well as identify the programmatic gaps of the NPCDCS program in Meghalaya. The results highlight the major hurdles in the program implementation, which include lack of manpower and training, lack of Information, Education & Communication (IEC) materials and diagnostic tools for cancer awareness and screening. The individual factors responsible for delayed health care seeking behavior were associated with misconception about cancer and its treatment, fear and denial of cancer, attribution of symptoms to trivial conditions, and family responsibilities. Use

of traditional herbal medications and financial constraint were the most common factors associated with prolonged patient delay. Family and friends' support was found to be the major enabling factor toward seeking treatment.

Quality Evidence for Health System Transformation (QuEST)

Principal Investigator: Dorairaj Prabhakaran

This is an ongoing project and is funded by Harvard T.H. Chan School of Public Health.

Project Summary: The landmark Lancet Global Health Commission on High Quality Health Systems in the Sustainable Development Goals era found critical gaps in the quality of care and no data on the quality of maternal and newborn health in Ethiopia, Kenya, South Africa, and India. To address this critical gap, Quality Evidence for Health System Transformation (QuEST) network centers have been established to develop and evaluate standardized tools for assessment of the health systems' competence and performance in delivering care to pregnant women during the pregnancy and postpartum period. The QuEST center at PHFI will be conducting two projects: (i) Maternal and Newborn Health mobile phone e-cohorts (MNH e-cohorts); and (ii) Service Delivery Redesign (SDR) which collectively have an overarching goal to improve health system competence for mothers and newborns and improve their survival. The specific aims and objectives of the study are: (i) To assess health system quality across the continuum of care for antenatal care, and build a flexible measurement tool for assessment of health system performance using mobile phones; and (ii) To inform service delivery redesign by diagnosing the prevailing capacity of the health system and identifying the major gaps in the health system particularly in the context of assessing opportunities for integration of redesign within existing or planned programs.

Assessment of relative efficiency of COVID-19 vaccines granted Emergency Use Authorisation (EUA) In India and their respective modes of delivery - An Economic Evaluation

Principal Investigator: Shomik Ray

This is an ongoing project and is funded by ICMR.

Project Summary: The study aims to assess the relative efficiency of the most used COVID-19 vaccines granted Emergency Use Authorization (EUA) by their modes of delivery through a complete economic evaluation.

The following objectives will lead to the achievement of the study aim: (i) To synthesize evidence on cost and economic evaluation of COVID-19 vaccination in low and lower middle-income countries; (ii) To assess the cost of vaccination for the COVID-19 vaccines granted EUA by their modes of delivery; (iii) To assess the cost of COVID-19 illness in Government

and Private service providers; and (iv) To assess the relative efficiency of the most used COVID-19 vaccines granted EUA in India.

Detailed protocols have been prepared for the two reviews and registered on Prospero (CRD42023432680, CRD42023433006).

Time-Motion study of Accredited Social Health Activist (ASHA) workers in India

Principal Investigator: Himanshu Nalin Negandhi

This is an ongoing project and is funded by NITI Aayog.

Project Summary: This study will be conducted in 12 districts in 12 states of India with other partner organizations. Participants will be ASHAs workers, ASHA supervisors, and mothers of under-5 children. This time motion study will involve interviews with all these participants and tracking of ASHAs during their entire day to understand the time expended in tasks related to service delivery, familial responsibilities, and second-income work. The data will be analyzed, and the study report will address two research questions: (i) How much time do ASHAs typically have and how much incentive do they receive for their current work?; and (ii) What is the readiness of ASHA workers to engage in new activities and whether they have time to undertake them?

Policy research and analysis on the impact of Maximum Retail Pricing on medicines in South-East Asia Region

Principal Investigator: Preeti Kumar

This is an ongoing project and is funded by WHO SEARO.

Project Summary: To conduct policy research and analysis on the impact of MRP on medicines prices, its challenges and gaps, and recommendations to further refine the policy in countries of Southeast Asia Region. Project activities will include stakeholder interviews and surveys, framing cross-country recommendations, working in consultation with the Essential Drugs and Medicines Unit, SEARO.

Independent Verification Agency (IVA) for System Reforms Endeavours for Sustained Health Transformation Achievement (SRESTHA)

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by the Health and Family Welfare Department, Government of Gujarat.

Project summary: The Health and Family Welfare Department, Gujarat, with the support of the World Bank is implementing the Systems Reforms Endeavours for Transformed Health Achievements in Gujarat (SRESTHA Gujarat). The SRESTHA- Gujarat is proposed as a five-year program (2022-2028), across all the 33 districts and eight municipal corporations. This project aims to transform key health delivery systems in Gujarat. Being a Program for Result (PfR) financing, the funds' disbursements are linked to the periodic achievement of measurable program outputs or results. IIPH-G is appointed as the Independent Verification

Agency (IVA) for the verification process. The objectives of the study are: (i) To verify the disbursement linked indicators of SRESTHA Gujarat program; (ii) To provide technical support in the implementation of the program by providing necessary feedback based on the verification process; and (iii) Documentation and synthesis of knowledge product.

Assessment of Pradhan Mantri TB Mukt Bharat Abhiyaan (PMTBMBA) initiative

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by IPE Global and USAID.

Project Summary: The objectives of the project being undertaken in the states of Uttar Pradesh, Bihar, Meghalaya, Gujarat, Madhya Pradesh, Andhra Pradesh, Karnataka are: (i) To analyze the key program parameters through desk review and secondary data analysis of the reported data; (ii) To identify the barriers and enablers of the program implementation framework through mixed-method research involving the key stakeholders; and (iii) To explore the perspectives of TB patients and Ni-kshay Mitra on support delivered under this initiative.

Multi-Stakeholder engagement on primary healthcare services and antibiotic provision by rural healthcare providers in India and co-designing a multi-stakeholder intervention

Principal Investigator: Priya Balasubramaniam

This project was funded by London School of Hygiene & Tropical Medicine (LSHTM) and is now completed.

Project Summary: The study aimed to assess 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. It aimed to understand the antibiotic use and its drivers in human and animal health in India.

Pharmaceutical task force for the development of a self-regulatory, evidence-based code of marketing for antibiotics

Principal Investigator: Priya Balasubramaniam

This project was funded by London School of Hygiene & Tropical Medicine (LSHTM) and is now completed.

Project Summary: This is a collaboratively developed code of conduct for evidence-based marketing that is acceptable to the pharmaceutical sector that improves the existing Uniform Code for Pharmaceuticals Marketing Practices (UCPMP) and aligns with evidence-based guidelines to support rational use of antibiotics. The study gathered perspectives on

a code of conduct that can be applied as part of a pharmaceutical self-governance strategy that improves the existing UCPMP code; and evaluated the feasibility and acceptability of a pharmaceutical code of conduct, specifically regarding voluntary compliance. A zero draft of *A self-regulatory, evidence-based code of marketing for antibiotics* has been developed and has been shared with Industry Partners and the NITI Aayog and Department of Pharmaceuticals.

While the UCPMP offers broad guidance on the marketing and promotion of all drugs, the focus of this new voluntary Code is to specifically address the marketing and promotion of antibiotics. This self-regulatory Code has been developed through a unique democratic deliberation involving key industry stakeholders on the content, implementation and monitoring mechanisms of such a Code. The self-regulatory aspect of this Code underscores an objective to move away from traditional top-down, command and control type of regulations that are difficult to implement effectively. It draws on innovations in regulatory theories such as the SMART regulatory approach.

Driving health progress during Disease, Demographic, Domestic Finance and Donor Transitions (the "4Ds") in India

Principal Investigator: Preeti Kumar

This project was funded by Duke University and is now completed.

Project Summary: 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.

In this project, the Center for Policy Impact in Global Health built upon its foundational work on donor and domestic health transitions to generate data, evidence, and analysis to support policymakers in developing such a "joined" up strategy. PHFI was identified as one of the country partners for this work in India. The work in India mostly focused on the state of Uttar Pradesh. Activities included Benefit Incidence Analysis (BIA). Demographic epidemiological modeling, implementation of the Pradhan Mantri Jan Arogya Yojna (PMJAY) and impact of donor transition on sub-national governments.

Lessons on key service purchasing reforms

Principal Investigator: Preeti Kumar

This project was funded by Duke University and is now completed.

Project summary: India has several publicly funded financing schemes, including the NHM, Central Government Health Scheme (CGHS), and Employees State Insurance Scheme (ESIS). During the initial years, financial intermediaries in the form of voluntary health insurance agencies acted as pooling agencies for the public insurance schemes. With the introduction of PMJAY, states in India are moving towards a model of autonomous agencies (trust mode) managing the pooling and purchasing functions. The overall objectives of this study were to: (i) record and document the strategic purchasing (SP) reforms process in India; (ii) assess the impact of such reforms on universal health coverage (UHC) objectives; and (iii) synthesize key lessons learnt about major purchasing reforms in India. The study identified the current progress, challenges and opportunities for harmonization and coordination of purchasing arrangements in the state of Kerala.

Evaluation of the National Institute for Health and Care Research's (NIHR) Global Health Research Portfolio with a focus on projects relevant to India /South Asia and care research

Principal Investigator: Preeti Kumar

This is an ongoing project and is funded by the National Institute for Health and Care Research (NIHR).

Project Summary: Ecorys has been contracted by the Department for Health and Social Care (DHSC) and the National Institute for Health Care Research (NIHR) to undertake the Global Health Research (GHR) Portfolio Evaluation. The evaluation's objectives are to assess the suitability of the design and implementation of the first phase of the portfolio (2016/17-2020/21) for achieving its intended outcomes and impacts, and to identify key learning to inform development and delivery of the portfolio's second phase (2021/22 onwards). The evaluation also aims to provide accountability for the GHR portfolio performance to date, through identifying the portfolio's contribution towards emerging outcomes, assessing whether the portfolio is on track to achieve desired outcomes and impact, and determining the Value for Money of investments to date. PHFI was selected as Regional Partner for Delivery of technical and key operational inputs across the evaluation schemes, with a focus on projects relevant to India / South Asia.

Strengthening multi-sectoral partnerships for delivering public health services in primary care settings

Principal Investigator: K Srinath Reddy

This project was funded by Infosys Foundation and is now completed.

Project Summary: A major weakness of public health planning and delivery across India is the inadequacy of multisectoral planning for coordinated delivery of several services relevant to public health. While consultations are sometimes held at senior levels, capacity for catalyzing multi-stakeholder consensus building and promoting convergence of coordinated actions is often a missing element in primary care which is the main arena of service delivery. Not only is convergence missing between the official agencies, but partnerships are not forged with the local communities and field-based NGOs.

PHFI sought to redress this by creating models of consultative and collaborative partnerships at the level of primary healthcare in both rural and urban settings. This effort required PHFI to engage with government departments, community representatives and NGOs.

Project funds were utilized to support the multidisciplinary technical teams undertaking this capacity building initiative for strengthening multisectoral actions in primary care settings, convening multi-stakeholder consultations, providing on-line support to implementing partners, evaluation of the impact and dissemination of the results within and beyond the three states of Andhra Pradesh, Odisha and Uttar Pradesh.

Understanding impact of pharmaceutical regulation and policies on access to medicine in India

Principal Investigator: Habib Hasan Farooqui

This project was funded by University of Newcastle and is now completed.

Project Summary: The study: (i) Mapped the legal and regulatory framework of medicines regulation in India; (ii) Generated evidence on medicine utilization in India through use of medicine procurement, medicine sales, and prescription data; and (iii) Examined the impact of recent pharmaceutical policy measures on consumption of antibiotics in India.

Inequity in access to medical devices in India

Principal Investigator: Preeti Kumar

This project was funded by Astrum Management Advisory Private Limited and is now completed.

Project Summary: A high import dependency on medical equipment has created a dual market in India between public and private providers of healthcare. The latter is often found to be in advantage of importing devices with relatively less cumbersome procedures compared to the former. It is equally possible to assume that the current government procurement procedures are often observed to be stringent and less transparent while the tertiary health care facilities are found to be importing high-end medical devices with less difficulty. This is likely to have contributed partly to an ever-rising inequity in access to health care services in the government facilities.

The study investigators undertook evidence-based research quantifying the magnitude, and identifying factors that contribute to the current inequity in access to top-end medical devices in India. In specific, the objectives were to: (i) Assess the current import and procurement procedures/rules for import of top-end medical devices in 2-3 specialties by public and private health facilities in India; (ii) Identify factors that hinder access to high-end medical devices and to suggest remedial actions to remove the obstacles in the public procurement of medical devices in India; and (iii) Disseminate the key findings among key stakeholders and to augment advocacy efforts in removing hindrances in procurement and import procedures.

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

Principal Investigator: Preeti Kumar

This project was funded by Alliance for Health Policy and Systems Research - WHO and is now completed.

Project Summary: 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 per capita that triggers a reduction in development assistance for health, a process known as transition. The specific focus of this study was to understand: (i) Whether governments have been able to maintain coverage of priority interventions (e.g., family planning commodities, HIV medicines etc.); and (ii) Whether changes in service delivery architecture, health financing arrangements, information systems and governance arrangements have influenced coverage.

PHFI along with the Centre for Policy Impact in Global Health undertook 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 BMGF on HIV namely the AVAHAN project.

Revising the Health Equity Profile for India and 5 Indian states using the NFHS-5 data

Principal Investigator: Preeti Himanshu Negandhi

This project was funded by the WHO and is now completed.

Project Summary: The study had the following objectives: (i) To analyze the latest available NFHS-5 data for the seven thematic areas (maternal and child health, nutrition, communicable diseases, NCDs, water and sanitation, financial risk protection) as conducted previously with NFHS-3 and 4; (ii) Use socio-demographic stratification to disaggregate the NFHS-5 data for India and five states to develop the health equity profile; and (iii) Update and submit the Health Equity Profile (HEP) report for India and the five States, including NFHS-5 data.

It was found that across India, those living in rural areas, those in the low socioeconomic groups, and those in the SC/ST community are more affected than others in terms of health equity.

Crosswalk of Essential Health Service Packages, Service Standards and Staffing Norms in the South-East Asia Region

Principal Investigator: Aashna Mehta

This project was funded by WHO SEARO and is now completed.

Project Summary: The study aimed to collect, consolidate and review existing essential national and sub-national service packages/associated standards, with focus on primary level in the SEA region, with analysis across countries on common elements for essential services and associated standards. Through literature review and key informant interviews, challenges and positive practices were identified towards the development and operationalization of service packages/standards, including alignment to local burden of disease, health system context and Universal Health Coverage.

Intersectoral Collaboration and Health Services during COVID-19: A multistage, multi-level mixed methods study in Ahmedabad, India (OHSSIN/CoV Intersect)

Principal Investigator: Deepak Saxena

This project was funded by DFG, Germany and is now completed.

Project Summary: This was a mixed method study conducted in Ahmedabad where a survey was carried out amongst 278 women to document their access to health care, primarily Ante-Natal Care (ANC) services, during the pandemic and 150 community health workers to know about the health service delivery parameters. In-depth interviews were carried out among administrative officials of the health department and other departments, medical officers of primary health centers of Ahmedabad, private practitioners of Ahmedabad, veterinary doctors, mothers, and community health workers. The objectives of the study were to: (i) Evaluate the degree of intersectoral collaboration during the COVID-19 pandemic response at three levels (administrative, provider, community) of the health system; and (ii) Assess how the COVID-19 pandemic has disrupted the provision of essential routine health services (public and private).

It was found that there was a significant difference in access to ANC, Intra-Natal Care (INC), Post-Natal Care (PNC) and childcare services between women who tested positive and did not tested positive for COVID-19 during their pregnancy. The majority of community health care workers reported that there has been a complete disruption of essential health care like NCD screening during the first wave, which was improved in the 2nd and 3rd wave. Intersectoral collaborations between the health department and other departments like the education department, fire safety department, police department, estate departments happened to manage the pandemic.

On a larger scale, various convenience and need-based measures were undertaken by the Ahmedabad Municipal Corporation (AMC) in collaboration with other departments. Collaboration was also seen at the private practitioner level to manage the workload and towards providing uninterrupted health care services in Ahmedabad.

Health Labour Market analysis in Gujarat

Principal Investigator: Dileep Mavalankar

This project was funded by WHO and is now completed.

Project Summary: An efficiently functioning health system relies on enough qualified and motivated health workers. The availability, accessibility, acceptability, and quality of human resources for health are important components of ensuring universal health coverage. Nevertheless, the training, distribution, retention, productivity, and financing of the health workforce remain a challenge to policymakers. To create responsive and reactive policies to optimize access to health services, it is essential to understand the dynamics and challenges of the health labor market. The specific objectives of the study were to: (i) Review and analyze the key factors affecting the demand for health workers, and their supply; (ii) Identify the challenges and bottlenecks related to the health labor market; and (iii) Make recommendations and define strategies for addressing key challenges.

Results highlighted the need to: (i) rapidly increase availability of active Human Resources for Health (HRH) in the state; (ii) integrate and synchronize all the Grievance Redressal of the health department to ensure completeness and transparency of information; (iii) establish HRH policy and a Human Resource Management Information System in Gujarat; and (iv) focus on the timely provision of induction training to both permanent and ad-hoc Medical Officers at the time of their joining the system.

Strengthening the Medical Certification of Cause of Death practices in public and private healthcare facilities in India: Research to Implementation

Principal Investigator: Rakhi Dandona

This is an ongoing project and is funded by ICMR -National Centre for Disease Informatics and Research.

Project Summary: The percentage of medically certified deaths to total registered deaths in India currently is dismal at 20.7%. Studies have shown that almost 100% of the certificates had at least one error; at least one major error was observed in 82-88% of the certificates. Studies have shown that a simple training, auditing of Medical Certification of Cause of Death (MCCD) with feedback to the certifying doctor can significantly improve the quality of MCCD. It has been observed that systemic barriers like complexity of organizational structure, inadequate staff, lack of quality control, lack of training of staff are responsible for the inadequate MCCD data in India. There is a need to address these barriers. This study shall include assessment of the system in six selected states (Tripura, Punjab, Andhra Pradesh, Karnataka, Delhi), and assessment of the MCCD practices at facility level in eight selected facilities (which are reporting MCCD data) in two districts of each state. Barriers for implementation would be identified and interventions will be planned at the state and facility level, and these would be evaluated to develop a framework of technical solutions for strengthening MCCD.

Regional Resource Centre for Health Technology Assessment (HTA RRC)

This is an ongoing initiative and is funded by the Department of Health Research (DHR), MoHFW, GoI.

Initiative Summary: To facilitate the process of transparent and evidence-informed decision making in the field of health, GoI has created an institutional arrangement called the Health Technology Assessment in India (HTAIn) under the Department of Health Research (DHR). HTAIn is entrusted with the responsibility to collate and where needed, generate evidence related to clinical effectiveness, cost-effectiveness, and safety of medicines, devices and health programs using the Health Technology Assessment (HTA) approach. The objectives of the HTAIn are to: (i) Undertake HTA studies aimed at maximizing health in the population, reducing out of pocket expenditure (OOP) and reducing inequity; (ii) Support the process of decision-making in health care at the Central and State policy level by providing reliable information based on scientific evidence; (iii) Develop systems and mechanisms to assess new and existing health technologies by a transparent and inclusive process; (iv) Appraise health interventions and technologies based on available data on resource use, cost, clinical effectiveness, and safety; (v) Collect and analyze evidence in a systematic and reproducible way and ensure its accessibility and usefulness to inform health policy; and (vi) Disseminate research findings and resulting policy decisions to educate and empower the public to make better informed decisions for health.

Different IIPHs have been identified as regional HTAIn hubs with the mandate of carrying out HTA for government and various other relevant agencies in their regions, and received grants from the DHR. Some of the major projects under this initiative are described below.

Health Technology Assessment of Total Knee Replacement (TKR)

Principal Investigator: Lipika Nanda

Project Summary: As India aims to achieve Universal Health Coverage, there is a need to introduce public-funded health insurance and assurance schemes to finance healthcare. Pradhan Mantri Jan Arogya Yojna (PMJAY), being one of the insurance choices in the public exchange place, cost-effectiveness of important disability-alleviating procedures like Total Knee Replacement (TKR) assumes extreme importance as this may help to allocate resources efficiently for such critical procedures within the ambit of insurance and address the issue of moral hazard effectively. Health Technology Assessment of TKR suggested that TKR is cost-effective in the Indian setting among all the scenarios, ages, and severities considered. TKR is most effective when the individual is 50 years old, suffering from KL Grade 3 OA knee with only one-time replacement followed by conservative management after the expiry of the implant. For grade-2 severity, the lowest Incremental Cost Effectiveness Ration (ICER) value of ₹36,107 per QALY gain was observed in scenario 1 at 50 years of age and the highest ICER value of ₹ 61,363 per QALY gain was seen at 70 years of age. For grade-3, the lowest ICER value of ₹32,284 per QALY gained was observed in scenario 1 at 50 years of age and the highest ICER value of ₹55,209 per QALY gain was seen at 70 years of age. Therefore, ICERs for all scenarios were less than willingness-to-pay (WTP) threshold value.

Regional Resource Centre for Health Technology Assessment (HTA RRC)

Principal Investigator: Somen Saha

Summary: Support informed policymaking, and economic evaluation forms one of the core components of Health Technology Assessment (HTA) studies. The Regional Resource Centre for Health Technology Assessment (RRC HTA) will contribute to establish a transparent and comprehensive mechanism of HTA for prudent and better allocation of resources ensuring better equity in and access to healthcare in India. The hub works with the vision to formulate safe, effective health policies that are patient/population focused and cost-effective. So far, five HTA Studies have been completed; (i) Project Lifeline - portable ECG machine for PHCs; (ii) TeCHO+ (Technology for Community Health Operations)- a mobile and web-based application; (iii) HTA on Intravenous Iron Sucrose Therapy (IVIS) vs parenteral therapy; (iv) Tuberculosis Monitoring Encouragement Adherence Drive (TMEAD) - Digital adherence technology for TB; and (v) Operational Models and Costing of chest X ray services for TB Patients. A total of eight Scientific research papers have been published. Currently, the study team is actively engaged in three ongoing HTA studies: (i) Electronic Vaccine Intelligence Network (eVIN) in India; (ii) Essential Drug List (EDL) in Gujarat; and (iii) Cardiovascular (CVD) assessment. This is the first state-level HTA Technical Advisory Committee (TAC) body, which is led by the Commissioner of Health and Co-chaired by MD – NHM. All esteemed additional directors – Public health / Family welfare / Medical services / Medical education are members and Executive Director – SHSRC is State Nodal Officer for Gujarat – HTA Centre. Findings from these HTA studies generate the evidence and help policymakers, healthcare practitioners, and administrators make well-informed decisions about which healthcare interventions, treatments, or technologies to adopt, prioritize, or modify. TMEAD and Project Lifeline studies are approved by the Medical Technology Assessment Board (MTAB) Government of India.

Regional Resource Centre for Health Technology Assessment (HTA RRC)

Principal Investigator: Sandra Albert

Summary: The Regional Resource Hub (RRH) for the Northeast region has been established at the IIPH Shillong. Major projects undertaken by the hub are described below.

Costing and Assessment of Manipur's Pradhan Mantri Jan Arogya Yojana (PMJAY) Health Benefit Packages

Project Summary: In order to achieve Universal Health Coverage, the GoI is focussed on reducing the financial burden on the poor and vulnerable groups arising out of catastrophic health expenditure and ensuring access to essential and affordable healthcare services. AB-PMJAY is a centrally funded scheme launched on 23 September 2018 under the MoHFW. It provides a coverage of INR 5,00,000 per family per year, covering ~10.74 crore families for almost all the secondary and tertiary care procedures in all the public and empanelled private hospitals across the country. Conducted in collaborations with the DHR, GoI, State

Health Agency, Government of Manipur, and Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, this study has the following objectives: (i) To assess costing of the existing packages based on the burden of disease in the state; (ii) To assess appropriateness of packages being offered by rationalization (e.g. based on utilization of services in comparison with disease burden); and (iii) To make recommendations for expansions of health benefit packages (HBP) while also ensuring financial sustainability.

Project Member at PGIMER Chandigarh

Cost Effective Analysis of Thiamine Supplementation among postpartum women to prevent infantile beriberi deaths

Project Summary: Thiamine deficiency results in disorders such as beriberi, which in infants could result in high case-fatality of ~100% and neurological disorders (dry beriberi). Data from micronutrient assessment indicated thiamine intake was lowest in the Northeast Indian states such as Manipur (0.5 mg), Meghalaya (0.57 mg), Assam (0.66 mg) v/s national 1.15mg (NIN) which is alarming. The fact that there are no simple diagnostic tests to detect thiamine 20 deficiency, early diagnosis and prevention of potential consequences are missed - leading to morbidity and mortality. There is increasing evidence that thiamine deficiency is contributing to maternal and infant deaths in the Northeast Region (NER). State governments in NER often rely on central policy guidelines for programmatic implementation especially when there are cost implications. The study aimed to determine the incremental cost effectiveness of thiamine supplementation as compared to standard of care among postpartum women to prevent infantile beriberi.

A systematic review was conducted to extract the probability values and costs necessary for the effectiveness of thiamine supplementation in pregnant and postpartum women to prevent infantile beriberi in Southeast Asian population. Due to the dearth of data, the team conducted clinical expert opinion interviews with clinicians from hospitals in four states. A decision tree and a Budget Impact Analysis (BIA) were done to estimate the CEA values. The study team collaborated with the Department of Health Research, MoHFW and Makunda Hospital, Karimganj, Assam.

Cost effectiveness of inducing Therapeutic Hypothermia using Phase Changing Material (MiraCradle) to reduce Mortality and Neuro-developmental morbidity in Moderate and severe Hypoxia Ischaemic encephalopathy (HIE)

Project Summary: Birth asphyxia (BA), assumed to be related to intrapartum hypoxia-ischemia, accounts anywhere from 30 to 35% of neonatal deaths. In India, the reported incidence varies from 2 to 16.2% in community-based studies, with the reported case fatality rates ranging from 38.5 to 74%. For those infants that do survive, the multi-organ damage that can ensue means the risk of developing severe life-long morbidities is high. Intrapartum asphyxia results in a burden of 42 million disability years (DALYs). Hypoxic Ischemic Encephalopathy (HIE) occurs in about 14 per 1000 live births in India. Phase-changing material (PCM) is one of the low-cost technologies used for cooling asphyxiated neonates. Studies have shown that inducing therapeutic hypothermia (TH) using PCM has a neuroprotective effect in newborns with moderate HIE in neonatal units. In collaboration with the DHR, the study aims to perform a cost-effectiveness analysis on MiraCradle devices for cooling infants with HIE and the different costs related to the treatment of HIE. Specific objectives of the study are: (i) To conduct a systematic review of the available evidence on effectiveness in inducing TH using PCM (MiraCradle) in HIE among neonates; (ii) To develop an economic model to estimate the cost effectiveness of PCM (MiraCradle) compared to other cooling devices/standard of care; and (iii) To estimate the incremental costs per quality adjusted life years gained with the use of PCM (MiraCradle) over other cooling methods/ standard of care for HIE.

Estimation of Cost-effectiveness Threshold (CET) for India

Project Summary: Increasing healthcare costs and limited resources warrant the need of evidence-based priority setting followed by efficient resource allocation. Consequently, the use of Health Technology Assessment (HTA) and economic evaluations has gained importance worldwide as a tool to guide sustainable allocation of resources. To allow for replication of the evidence generated from an economic evaluation, it is important to quantify the results in terms of benefits that will be forgone if an intervention is funded by the government. A cost-effectiveness threshold (CET) is defined as a measure of cost per unit health outcomes which are forgone, i.e., it expresses the opportunity cost of displacing any existing service/program/health technology to fund the intervention under evaluation. India is still striving to achieve Universal Health Coverage (UHC) for which increase in resource allocation to health is imperative. The availability of CET is thus pivotal to precisely use the evidence generated by economic evaluations. The current attempt, in collaboration with PGIMER, IIPH-G, AIIMS (Bhubaneshwar), JIPMER and Academy of Management Studies (Lucknow) therefore, aims to assess the willingness to pay (WTP) for a quality adjusted life year (QALY) gained using self and societal perspectives in India.

The study was undertaken in six states of India, Haryana, Uttar Pradesh, Gujarat, Odisha, Tamil Nadu and Meghalaya, selected based on three criteria i.e., income, health status and geographic location of the state. The CET for India was worked out to be between 0.8 to 1.2 per QALY gained. The final report is awaited.

Cost Effectiveness of Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) and its impact on Financial Risk Protection in India

Project Summary: "Jan Aushadhi" is the novel project launched by GoI in 2008 for the noble cause – Quality Medicines at Affordable Prices for All. The campaign was undertaken through sale of generic medicines through exclusive outlets namely "Pradhan Mantri Janaushadhi Kendra" (PMJAK) in various districts of the country. Pharmaceuticals & Medical Devices Bureau of India (PMBI) is the implementing agency of Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP). However, this novel project had not reached anywhere near the desired objectives till 2012. This multi-institutional collaborative study thus aims to assess: (i) The coverage of PMBJP in India; (ii) The impact of PMBJP on the out-of-pocket expenditure (OOPE), catastrophic health expenditure (CHE) and impoverishment rate (IR) attributed to medicines; (iii) The cost (from payer's/government's perspective) of implementing PMBJP in India; (iv) The incremental cost of per unit reduction in the indicators of financial risk protection (OOPE, CHE, IR) because of implementing PMBJP as compared to baseline in India; and (v) The incremental cost per quality adjusted life year gained as a result of using branded medicines as compared to generic drugs (biosimilars in case of cancers) in the treatment regimens of the selected diseases.

Health Technology

Health technology encompasses the utilization of a wide range of tools and resources, including devices, sensors, procedures, systems, software, and computing platforms, all developed with the goal of enhancing healthcare systems, addressing health issues, and ultimately elevating overall quality of life. This domain also encompasses digital health, which entails the convergence of health and digital technology to enhance health delivery and outcomes. Within PHFI, a broad spectrum of research projects is dedicated to exploring and leveraging these innovative health technologies, detailed below for a comprehensive understanding.

Application of Artificial Intelligence with cervical images in assessing suitability for treatment of screen positive women in 'Screen and Treat' Visual Screening Program for cervical cancer in South India - A Pilot Study

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by the American Society of Clinical Oncology (ASCO).

Project Summary: The Indian burden of cervical cancer is enormous with more than 60,000 deaths in 2018. One of the key interventions in the WHO's global strategy for elimination of cervical cancer is to aim at treatment and care of 90% of women identified with cervical disease. Screening with visual inspection of cervix with acetic acid application (VIA) followed by immediate ablative treatment by nurses as 'screen and treat' approach is the currently recommended option for resource limited health care systems. VIA is a subjective test requiring rigorous training and supervision. It has a moderate specificity resulting in overtreatment. This has major implications on the financial aspects and resources available. The emerging computer assisted visual evaluation technology where Artificial Intelligence (AI) can be applied for triaging VIA positive women to minimize unnecessary treatments becomes

important. This study proposes developing an AI system which can guide the nurses to determine treatment eligibility for VIA positive women. The study objectives are to develop an AI system based on images of the cervix to identify the type of transformation zone and categorize VIA +ve areas for the eligibility and suitability for ablative treatment based on the size, margins and intensity of acetowhite areas on the ectocervix, and to understand the efficacy of AI in guiding the nurses to decide on treatment eligibility in 'screen and treat' cervical screening programs. The study will be an exploratory intervention study.

Design research to explore models of Virtucare that best meet the needs of people with disability

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by Nossal Institute Limited.

Project Summary: Virtucare aims to create a virtual healthcare model. The specific objectives are to: (i) Facilitate meetings on policy and programming for virtual health interventions for rehabilitation in Melbourne/India; (ii) Design research to explore models of VirtuCare that best meet the needs of people with disability (DPOs) and how these can be scaled up; (iii) Undertake research among people DPOs to explore possible virtual healthcare initiatives, and determine barriers and enablers during COVID-19 and beyond; and (iv) Research virtual health usage for disability services during the pandemic and explore possibilities and models for iterations of virtual healthcare.

A Cluster Randomized Trial of mHealth integrated model of hypertension, diabetes and antenatal care in primary care setting in India and Nepal

Principal Investigator: Dorairaj Prabhakaran

This project was funded by Newton Fund: Department of Biotechnology, GoI and is now completed.

Project Summary: The project developed and evaluated the effectiveness of mHealth intervention, an Electronic Decision Support System (EDSS) provided to frontline health workers (ANMs, staff nurses and Medical Officers) at the primary healthcare level in sub-centers and Primary Health Centers (PHCs) of Telangana to enhance antenatal care (ANC) by improving adherence to national ANC guidelines, and improve the screening, referral and management of hypertension, diabetes, and anemia in pregnancy in primary healthcare settings. A robust formative research was undertaken in health facilities spread across five districts of Telangana (Radovich E et al 2022) which resulted in the co-creation and co-designing of a unique mHealth intervention (EDSS) by engaging national and international subject experts, health officials at the district and state level, and the targeted users (the healthcare providers), which was then tested. However, due to COVID-19 related disruptions and administrative delays the trial could not be conducted.

COMPREHENSIV

Principal Investigator: Suresh Munuswamy

Project Summary COMPREHENSIV is an initiative by the Hi Rapid Lab (HRL) Private Limited. HRL is a startup company formed by a team of PHFI faculty members and students with due approvals to further develop and commercialise innovative concepts that were invented and patented by the team at PHFI. The focus of HRL is research-led design, development and commercial service deployment of intelligent, innovative primary health, mobility and social care services including areas of socioeconomic improvement and livelihood generation (https://hirapidlab.com/).

The vision of COMPREHENSIV, a modular at-home android smartphone-based AI platform, is to provide at-home universal primary health care to every person in India, through a trained and empowered local Community Health Care Personnel (CHCP). It can screen and manage in real time about 150 conditions. 5 USPs of COMPREHENSIV are: (i) icon-based UI; (ii) image enhanced data sourcing; (iii) GPS plus metadata tagging; (iv) real-time customized intervention generation; and (v) appropriate revisit date generation.

Howrah **Asansol** **Lalgadh, Nepal**

Birat Nagar, Nepal **Asansol, Bengal** **Samastipur, Bihar**

Figure: Rolling Out COMPREHENSIV in different locations

Before and After images:

Image Taken -11/2021

Image Taken -06/2023

Image Taken -11/2021

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Infectious Diseases

Infectious diseases, also known as contagious, transmissible, or communicable diseases, are caused by pathogenic microorganisms and have the potential to spread from one organism to another. Despite extensive research in the prevention and management of these diseases, shifts in climate and ecosystems lead to the emergence of new variants of these microorganisms, posing an ongoing threat. The COVID-19 pandemic serves as a stark reminder of the ever-present danger of infectious diseases. Research in this field encompasses crucial areas such as drug discovery, drug delivery, and preparedness for responding to outbreaks of infectious diseases. The research projects at PHFI focused on infectious diseases are outlined below.

Assessment of the Covid-Free Village Program CFVP for COVID-19 risk reduction

Principal Investigator: Saurav Basu

The project was funded by Bharatiya Jain Sanghatana (BJS) and is now completed.

Project Summary: This retrospective impact evaluation study was conducted to evaluate the effect of a large-scale rural community-based intervention, the Covid-Free Village Program (CFVP) on COVID-19 resilience and control in a rural population in India. Principles of village empowerment, volunteerism, community mobilization informed the intervention with techno-managerial support by a grassroot NGO. The study provided technical support for conducting surveys in the intervention and control sites, and analysis of the quantitative and qualitative data collected.

No significant change was observed in the overall COVID-19 vaccination coverage due to the implementation of the CFVP in Pune. Furthermore, the number of COVID-19 deaths in both the sampled populations were very low. However, participants in Pune compared to Satara had a significantly higher combined COVID-19 awareness index by 0.43 points (95% CI 0.29-0.58). Furthermore, the adherence to COVID appropriate behaviors including hand washing was 23% (95% CI 3%-45%), and masking was 17% (0-38%) higher in Pune compared to Satara. The probability of observing COVID-19 related stigma or discrimination in their locality was 68% lower (CI=0.133-0.191) in Pune compared to Satara.

A research on COVID-19 pandemic lessons, public health leadership and post pandemic challenges

Principal Investigator: K Srinath Reddy

This is an ongoing project and is funded by CIMS Hospital, Ahmedabad.

Project Summary: The study has three-fold objectives: (i) To understand the challenges faced by leaders while managing the public health and hospital services in COVID-19 pandemic crisis and other situations; (ii) To identify the existing gaps, and competencies required for effective leadership within complex healthcare systems, especially in crisis situations; and (iii) To estimate the epidemiological and clinical trends of Long COVID over time, examine its sequelae among patients who have received hospital inpatient/outpatient care for their prior COVID-19 episode.

WHF COVID-19 and Cardiovascular Diseases Extension Study and WHF Long-Term Follow-Up COVID Study

Principal Investigator: Dorairaj Prabhakaran

This is an ongoing project and is funded by the World Heart Federation (WHF).

Project Summary: The World Heart Federation (WHF) COVID-19 and cardiovascular (CVD) study aims to describe the cardiovascular risk factors, manifestations, and outcomes in patients hospitalized with COVID-19. The WHF Extension study is a cohort study involving consecutive adults with COVID-19 from hospitals in low-, middle-, and high-income countries. The specific objectives of this study are: (i) To describe the temporal trends and variations in clinical characteristics of COVID-19 across ethnicity; (ii) To identify the association of clinical characteristics of COVID-19 and antimicrobial resistance with outcomes; and (iii) To assess the impact of COVID-19 vaccination on clinical outcomes and mortality.

Impact of Severe Acute Respiratory Syndrome (SARS) Coronavirus-2 (CoV-2) infection and mitigation strategy during pregnancy on growth and development in early childhood in India

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by UKRI GCRF.

Project Summary: The study aims to conduct longitudinal follow-up of babies born to COVID-19 positive antenatal mothers, and mothers themselves. The specific objectives of the study are: (i) To generate evidence on the effect of COVID-19 exposure during pregnancy on maternal and child health outcomes in India (secondary design); (ii) To document nutritional status and other health outcomes of babies born to COVID-19 positive antenatal mothers; (iii) To compare the health outcomes amongst antenatal mothers with COVID and subsequent vaccination; and (iv) To compare the risk factors for adverse outcomes amongst babies born to mothers with and without history of COVID during the antenatal period.

Significant increase in the rate of C-section delivery and the preterm birth rate in COVID infected women has been observed so far in the study.

Ending COVID-19 Variants of Concern through cohort studies: END-VOC

Principal Investigator: Sailesh Mohan

This is an ongoing project and is funded by the European Health and Digital Executive Agency (HaDEA).

Project Summary: The project aims to explain the global circulation of the current and emerging SARS-CoV-2 Variants of Concern (VOCs) and their characteristics, including transmissibility, pathogenicity and propensity to cause re-infection, to support best control strategies and the development of diagnostics; evaluate the impact of VOCs on the effectiveness of different vaccines and vaccination strategies, and assess the implications of VOCs on the choice of optimal treatment options. Under the END-VOC project, PHFI will contribute to elucidating the transmission, virulence, and pathogenicity of the VOCs by supporting the generation and analysis of SARS-CoV-2 VOCs. The specific objectives of the project are: (i) To conduct a retrospective cohort study in the UDAY study cohorts (Sonipat, Haryana and Visakhapatnam, Andhra Pradesh) consisting of individuals with a history of confirmed COVID-19 infection (exposed) matched with individuals without any history of COVID-19 infection (unexposed) and compare the differences in terms of disease outcome (chronic conditions, comorbidities, mental health), quality of life and health care costs and utilization between the exposed and unexposed groups; (ii) To assess differences in the disease outcome (non-communicable disease, comorbidity, long COVID illness, mental health), quality of life, health care costs, and utilization according to the severity and circulating variants of the COVID-19 illness among the exposed in the UDAY cohort (post COVID-19 disease burden differences); and (iii) To conduct a community-based Influenza-like Illness (ILI) surveillance by following-up households from the UDAY study area for two years to measure the incidence of ILI, Influenza, and COVID-19.

Robust estimation of TB mortality in India and assessment of under-reporting of TB deaths in the Vital Registration System and Nikshay database

Principal Investigator: Rakhi Dandona

This is an ongoing project and is funded by JSI Research and Training Institute and USAID.

Project Summary: The project aims to: (i) Generate a systematic understanding of tuberculosis (TB) death rate at the population-level in a country representative sample; (ii) Utilize these findings to estimate the under-reporting of TB deaths in Nikshay; and (iii) arrive at a detailed understanding of factors influencing the coverage and quality of TB deaths reporting in India by undertaking process assessment of reporting of deaths of TB patients in the Nikshay database.

Role of Yoga Therapy against TB in PLHIV infection

Principal Investigator: Arohi Sandeepkumar Chauhan

This project was funded by the Department of Science & Technology (DST), Ministry of Science and Technology, GoI and is now completed.

Project Summary: Tuberculosis (TB) is the commonest opportunistic infection (OI) among people living with Human Immunodeficiency Virus (PLHIV) infection. Both HIV and TB have potentiating effects on each other and PLHIV have eight times greater risk of acquiring TB compared to HIV negative people. Yoga therapy has beneficial effects on the lungs and immune system and it has the potential to prevent the progression of HIV. Hence, an intervention was planned amongst PLHIV on Isoniazid Prophylactic Therapy (IPT) to assess the following among PLHIV practicing yoga compared to those not practicing yoga: (i) Incidence of TB: (ii) Effect of yoga therapy on lung function; (iii) Proportion of TB; (iv) Improvement in CD4 T-cell count; (v) OIs other than TB; and (vi) Knowledge and practice related to STIs, HIV/AIDS, communicable diseases and practice of T&CM.

2.3% PLHIVs were found to have developed TB after a one year follow up out of which 2.5% were in intervention group (i.e. those who received yoga care intervention) and 9.25% were in control group (p=0.02). A significant association was found between those not practicing yoga therapy and occurrence of TB (OR=5.00, CI=1.7-14.2). PLHIV practicing yoga therapy were 1.77 (CI: 1.22-2.57) times more likely to have an increase in CD4 count and 1.78 (CI: 1.23-2.59) times more likely to have a decrease in HIV-1 viral load compared to those not practicing yoga therapy after 18 months of practicing yoga therapy.

Indo-European Consortium for Next Generation Influenza Vaccine Innovation

Principal Investigator: Sailesh Mohan

This is an ongoing project and is funded by National Institute of Immunology Society - European Commission (EU) & Department of Science & Technology (DST), Ministry of Science and Technology, GoI.

Project Summary: 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 influenza outbreaks. Under INCENTIVE, PHFI will 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 identify potential downstream constraints that might affect the vaccine uptake by health systems.

Specific objectives of the study are: (i) To assess the awareness about influenza in the selected rural and urban areas of Sonipat and Visakhapatnam districts; (ii) To understand the population's perception with regard to the influenza vaccine and its attributes using a discrete choice experiment (DCE); (iii) To develop an influenza surveillance system and conduct influenza surveillance in the community and sentinel sites to measure the influenza incidence, morbidity, mortality and their seasonal variation; and (iv) To conduct a health system and needs assessment in rural and urban health facilities for identifying existing gaps (infrastructure, human resource and their training) in implementation of influenza vaccination and community mobilization.

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

Principal Investigator: Jyoti Sharma

This is an ongoing project and is funded by the Ministry of Ayush, GoI.

Project Summary: The knowledge and practices from Ayurveda and Yoga that might be effectively utilized in the prophylaxis and adjuvant therapy of COVID-19 are 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 with standing instructions issued by health authorities. Thus, the overall aim of this project is to describe the output and outcome indicators as measurable information to determine the extent to which the guidelines produce the health outcomes as expected. The objective includes documentation and analysis of Ayurveda interventions utilized by Ayurveda practitioners in compliance with the National Clinical Management Protocol (NCMP) on Ayurveda and Yoga for COVID-19 related outcomes for prophylaxis against COVID-19, and management of asymptomatic, mild and moderate COVID-19 cases.

Explaining the differential severity of COVID-19 in India and the UK

Principal Investigator: Giridhar Rathnaiah Babu

This is an ongoing project and is funded by the Newton Fund: Department of Biotechnology, GoI.

Project Summary: Limited data suggest a greater severity of COVID-19 (COVID hospitalization/mortality and Long COVID) in Indians living in the UK than in Indians living in India. Understanding the reasons for such higher risk for Indians outside the country will inform measures to improve COVID outcomes for Indians globally. Objectives of the study are to: (i) Determine whether differences in the rate of COVID-19 mortality, and prevalence of long-term symptoms of COVID-19, between Indian populations compared to the Indians in the UK, are explained by differences in demographic composition (age, sex) and NCDs (diabetes, hypertension, obesity); and (ii) Determine whether severity of COVID-19 (hospitalized vs not hospitalized) in the Indian population is associated with cross-immunity acquired from exposure to other coronaviruses (MERS, SARS, common cold coronaviruses), malaria, or BCG vaccination.

This project will comprise two work packages: The first is an epidemiological study comparing the population prevalence of severe COVID-19 and long-term symptoms and its mortality in India and the UK. Using anonymized longitudinal electronic health record data for 400,000 people of Indian ethnicity in the UK, the prevalence will be quantified while adjusted for age, sex, and co-morbidities. A parallel analysis will be conducted in India using COVID-19 surveillance and chronic disease registry data from people in the extended

cohorts of two established studies in the states of Karnataka and Telangana. The second work package will use detailed biomarker and phenotyping data available in a 10,000 person subset of the two Indian cohorts (MAASTHI in urban Bengaluru and APCAPS in rural Telangana) to conduct an in-depth mechanistic study to elucidate hypothesized relationships between COVID-19 severity and long-term symptoms, and socioeconomic factors (cross-immunity from greater exposure to infections and lower rates of obesity and cardiometabolic comorbidities due to undernutrition).

Surveillance for Enteric Fever in India (SEFI) Tertiary care Surveillance (Tier 3) – Ahmedabad Site

Principal Investigator: Veena Iyer

This is an ongoing project and is funded by the Wellcome Trust.

Project Summary: The Surveillance for Enteric Fever in India (SEFI), which began in 2017, aimed to generate information regarding prevalence of typhoid and antimicrobial resistance (AMR) among *Salmonella typhi* and *paratyphi* across the geographically heterogeneous zones of India. Tier I (community-based typhoid incidence in children), and Tier II (estimate the adjusted incidence of typhoid in six sites) studies were completed in 2018 and 2019 respectively. Tier III study of seven public hospital laboratory sites began in 2020. This is a laboratory-based surveillance study for *Salmonella typhi* and *Salmonella paratyphi* in Ahmedabad. The objectives of the tier III surveillance are to: (i) Estimate the proportion of blood cultures that are positive for *S. typhi / S. paratyphi* across tertiary care settings; (ii) Describe the antimicrobial resistance patterns in *S. typhi / S. paratyphi isolates;* and (iii) Describe the clinical characteristics of patients hospitalized with culture confirmed enteric fever.

Vaccinated and the unvaccinated cohorts in the IARC India HPV vaccine trial to evaluate the long-term efficacy of a single dose of quadrivalent HPV vaccine

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by the International Agency for Research on Cancer (IARC) – WHO

Project Summary: The present study is a long-term follow-up of the vaccinated cohort (n=800) and age matched unvaccinated cohort (n=300) 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 and 18 types and also any non-vaccine types of HPV infections. 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 results available so far are showing promising evidence and have formed the basis for WHO recommendations of HPV vaccination as two doses in the year 2016 and as a single dose in April 2022.

Cervical Cancer Vaccination Project (CCVP)

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by The International Agency for Research (IARC) on Cancer.

Project Summary: The aim is to evaluate and implement cancer prevention and control strategies by enhancing the implementation of cancer prevention and control programs. 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 initiated a multicentric cluster randomised clinical trial in India in the year 2009 to evaluate the effectiveness of HPV vaccination. The objective of this present study is to follow-up the vaccine recipients to conclusively establish whether the vaccine can prevent persistent vaccine- targeted HPV infection and cervical cancer. Active follow-up of all study participants has been ongoing for the last 13 years. Currently, the third phase of longitudinal follow-up of the HPV vaccinated and unvaccinated study participants is ongoing.

The Centre for the Study of Complex Malaria in India (CSCMI)

Principal Investigator: Sandra Albert

This is an ongoing project and is funded by National Institutes of Health, USA.

Project Summary: Centre for the Study of Complex Malaria in India (CSCMI) is a collaborative initiative of IIPH-S with New York University, USA, National Lutheran Health and Medical Board (NLHMB), University of Manchester, UK and National Institute of Research in Tribal Health, Jabalpur. The CSCMI aim to develop the knowledge, tools, and evidence-based strategies needed to support Indian malaria intervention and control programs, and to build research capacity in India. With the aim to address the imbalance of epidemiological and transmission surveillance data for field sites in the state of Meghalaya, community based epidemiology, entomology and molecular-level studies are being conducted. Some of the major studies conducted by CSCMI in Meghalaya are:

1. Epidemiology Projects: These include cross-sectional, longitudinal, and clinic-based epidemiology studies to describe the burden of symptomatic and asymptomatic malaria, and using genome sequencing to identify *P. falciparum* drug resistance alleles and *P. vivax* recurrences. These studies have been conducted in malaria endemic villages of West Khasi Hills, West Jaintia Hills and South Garo Hills.
2. Entomology projects: These include vector studies including adult and larval surveys to characterize the prevalence and genetic diversity of different *Anopheles* species vectors, *Anopheles* population genomics, host seeking behavior of *Anopheles* mosquitoes and insecticide resistance.

Adult sampling using CDC light trap

Larval Collection from rice fields and fresh water ponds

3. Social and behavioral studies in malaria: These studies were conducted to: (i) Observe how preventive measures such as indoor residual spraying (IRS), long-lasting insecticidal nets (LLIN) are implemented in practice; (ii) Improve understanding on knowledge, attitudes and practices (KAP) within community and health system on malaria and its prevention; and (iii) Undertake social network analysis (SNA) to map the 'network of influence' in a village to identify potential behavior changes that could support a malaria elimination strategy.

Observation of IRS preparation, spraying and wall marking

SNA interview at Rongrigittim village, State Government Health Scheme (SGHS)

SNA interview at Jadigindam village, SGHS

Non-Communicable Diseases & Injuries

Non-communicable diseases (NCDs) is a group of conditions that are not caused by infectious agents and are not transmitted between individuals. They lead to long-term health consequences, necessitating prolonged treatment and care. Predominantly manifesting later in life, the escalating life expectancy and improved quality of life have contributed to an increasing burden of NCDs. This thematic area also includes "Injuries," covering a broad range of harm to the body resulting from accidents, falls, impacts, or other sources of physical trauma. Within this domain, a diverse array of research projects undertaken at PHFI are detailed below for a comprehensive understanding.

Effect of intermittent fasting on weight loss: A short-term Randomized Controlled Trial

Principal Investigator: Dileep Mavalankar

This is an ongoing project and funded by Indian Council for Medical Research (ICMR).

Project Summary: Overweight and obesity are rapidly emerging problems in India. These conditions are leading to an increased risk of diabetes and heart disease which are significant causes of disease burden in India. Hence, reducing weight is an important public health measure for obese people. Traditional approaches like dieting and exercise are not easy to follow and fail frequently. Reducing the number of meals/snacks per day from 4-6 to 1-2 has emerged as a novel way to reduce body weight. This is also called intermittent fasting (IF). The two meals-a-day method of intermittent fasting is very simple as it does not need any special diet, instruments, or training, and it costs nothing; on the contrary, it saves money wasted on snacks. Thus, there are many advantages to this method and hence the simplicity of the method is the real novelty. The study aims to examine the impact of IF on weight-loss parameters in a randomized controlled trial. The project team wants to test a simple way of fasting in which only two meals (10:14) are taken during the day with no food in between the meals. The specific objectives are to study the effect of IF on weight loss in Indian subjects as well as to evaluate its impact on lipid and inflammatory marker parameters, and also to measure compliance with IF and its acceptability.

Centre For Training, Research and Innovation In Tribal Health (CTRITH)

Principal Investigator: Suresh Shapeti

This is an ongoing project and is funded by Institute of Public Health, Bengaluru (IPH) – DBT/Wellcome Trust India Alliance.

Project Summary: Centers for public health research and training embedded within tribal health centers and hospitals are scarce. Such an effort could help address important gaps in our knowledge (and action) on tribal health especially in the context of increasing NCDs among tribal communities (including Diabetes, Hypertension, Stroke and COPD). The aim is to create a high-quality physician-researcher training program that will eventually integrate into medical college training and research initiatives.

The key research questions are: (i) What are the individual, household and socio-environmental drivers of morbidity and mortality related to NCDs in a predominantly tribal society undergoing rapid socio-economic and environmental change in Southern Karnataka?; (ii) How can we strengthen health systems in tribal areas to improve care for neglected tribal health problems using implementation research, participatory methods and other health systems research approaches?; (iii) How can we embed public health training programs for physician/public health researchers within a primary care health center setting in a tribal area?; and (iv) How could such training programs contribute to context-specific public health interventions and mitigate health inequities in tribal areas?

NIHR Global Health Research Centre for Research & Capacity Building in Multiple Long-Term Conditions

Principal Investigator: Dorairaj Prabhakaran

This is an ongoing project and is funded by University of Leicester - National Institute for Health and Care Research (NIHR).

Project Summary: By creating an NIHR center for multiple long-term conditions (MLTC), led jointly by the PHFI and the University of Leicester, UK with several multidisciplinary collaborators and patient groups, the overall aim of this center grant is to address MLTC in India and Nepal. The center specifically aims to: (i) Improve care for people living with MLTC in both countries by co-designing, implementing and evaluating a contextually relevant, patient-centered, equity promoting, simple technology-leveraged innovative health system intervention; and (ii) Strengthen national health research systems by capacity building, creating networks of MLTC researchers and key stakeholders, using 'systems' (individual, institutional and environments) thinking. The three pillars of co-designed health system intervention are: (i) an electronic decision support system; (ii) assisted telemedicine and (iii) patient-facing services. The co-design approach will enable the Center: (i) to strengthen research capacities and ecosystems of the co-applicant institutions; and (ii) undertake extensive community engagement and involvement (CEI), and knowledge exchange (KE) activities. This meaningful engagement with patients, caregivers, healthcare providers, communities, and relevant stakeholders at every stage of research will enhance 'mutual learning' to effectively address MLTC in both countries and beyond.

In the short-term, the center will assess the burden of MLTC, common clusters, determinants, health, and economic impact, using existing and new data. In the medium-term, co-design workshops, in both countries with varied multidisciplinary health system stakeholders including patients and the community will help co-design the health system intervention, its implementation and evaluation.

The long-term objective is to develop a fully functional international center on improving MLTC related health outcomes and research, which is self-sustaining and aligned closely with the national programs and policies in low middle income countries/regions.

Extending an inter-generational cohort to develop a multimorbidity research platform in rural and urbanising India

Principal Investigator: Gowri Krovi Iyer

This project was funded by the National Institute of Nutrition - ICMR and is now completed.

Project Summary: The overall goal of the study was to capitalize on 30 years of investment and extend the inter-generational APCAPS cohort into a platform for understanding the epidemiology of multimorbidity and its corresponding burden and healthcare use, which could ultimately be used to develop and test interventions. To achieve this vision, the specific objectives included: (i) Conducting preliminary analyses of life-course and environmental risk factors of prevalent multimorbidity using existing APCAPS data (N=6,972); (ii) Collecting pilot data on the parental generation of the APCAPS cohort to identify common clusters of multimorbidity and their incidence (N=~2,000); (iii) Conducting qualitative research with community members (with and without multimorbidity) and other stakeholders to establish priorities and design of the proposed research platform; (iv) Exploring the feasibility of establishing a low-cost disease surveillance system and; and (v) Using the study findings to develop a proposal for a multimorbidity research platform.

The study recruited 2000 participants aged above 45 years from 28 villages of APCAPS cohort located in Rangareddy district who participated in the previous follow-ups of APCAPS.

Non-laboratory-based screening for risk assessment of cardiovascular diseases and interventional strategies for identified risk groups - A "NIVARAN"

Principal Investigator: Komal Shah

This is an ongoing project and is funded by The Hans Foundation.

Project Summary: According to WHO, cardiovascular diseases (CVDs) are the leading cause of death globally, i.e., 32% of all global deaths. Laboratory tests required to detect CVDs at an early stage are often expensive and not feasible in resource-scarce settings, whereas non-laboratory-based screening tools have an advantage of being non-invasive, cost-effective, accessible and feasible options for the frontline health workers as well as the community members. According to a study, people from Northeastern India have a salt-sensitive phenotype which reinforces the reason behind high prevalence of hypertension. A study on hemorrhagic stroke published in Lancet, revealed that people residing in the Northeastern state topped the list of deaths by hemorrhagic strokes and it exceeded the national average by a staggering three times.

'NIVARAN' aims to prevent CVDs and reduce the economic burden of hospitalization due to CVD ailments in the tea tribes of Assam, with the help of cost-effective, non-laboratory-based screening tools.

The study aims to screen all the individuals of age 30 years and above from the selected tea estates spread over chosen five districts of Upper Assam, Jorhat, Golaghat, Sivasagar, Tinsukia, Dibrugarh, with the help of non-invasive screening tool and implement interventional strategies in the identified risk groups. Specific objectives are to conduct a baseline survey to assess the burden of common risk factors of CVDs in the identified tea estates, to screen the individuals with the help of non-lab-based risk scores for 10 years CVD risk assessment, and to provide pharmacological/non-pharmacological interventions to the at-risk population.

Non-laboratory-based screening tool for assessment of cardiovascular diseases: Indian non-laboratory heart study (INHAS)

Principal Investigator: Komal Shah

This is an ongoing project and is funded by the Department of Health Research.

Project summary: According to a study published in Lancet journal, an average of 3,736 individuals per lakh population in Gujarat suffered from Ischemic Heart Disease (IHD) between 1990 and 2017. In this period, prevalence of stroke cases surged by 63.1% and in prevalence of IHD cases, Gujarat ranked 10th. 70% of Gujarati population have advanced vascular age as compared to their chronological age due to presence of risk factors. These risk factors can be identified early and managed appropriately through a variety of public health interventions.

The project aims to develop and validate a technology using non-laboratory-based tools for early identification of CVD (10 years' risk prediction) specific to Indian population, which is comparable with standard laboratory-based alternatives such as Framingham risk score (FRS), QRISK3, JBS3, WHO/ISH, INTERHEART Risk Scores (IHRS) and others. The proposed solution is an amalgamation of demographic (age, sex) and anthropometric indicators (height, weight, mid arm/waist circumferences) along with individual specific clinical signs (dyspnea/syncope). These are simple and easy to measure variables. Currently, cardiac care patients need to travel to various secondary and tertiary care centers. So, an accurate, simple and non-laboratory screening tool will be useful for rural and less-advanced geographic regions. The specific objectives of the study are to: (i) Assess the accuracy of global non-laboratory-based screening tools for predicting CVD risk in the Indian population; (ii) Develop a CVD risk score algorithm which is specific to the Indian population and does not require laboratory inputs; and (iii) Validate the developed algorithm against the standard laboratory tests.

An adaptation and evaluation of a psychosocial intervention for self-harm in youth

Principal Investigator: Shilpa Agarwal

This is an ongoing project and is funded by the DBT/Wellcome Trust India Alliance.

Project Summary: Self-harm is the clearest antecedent of later suicide. 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. 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. The overall goal is to adapt and evaluate an evidence-based psychosocial intervention for self-harm in youth that can be delivered by counselors. The project is divided into two distinct phases. The specific goal of the first phase is to adapt an intervention by: (i) Identifying specific components to address individual, peer and family targets for symptomatic recovery in youth who self-harm; (ii) Describing domains of psychopathology and targets to address in Indian youth with self-harm; and (iii) Integrating additional contextual information within the intervention framework to improve its acceptability and effectiveness. The specific goal of the second phase is to evaluate acceptability of the intervention.

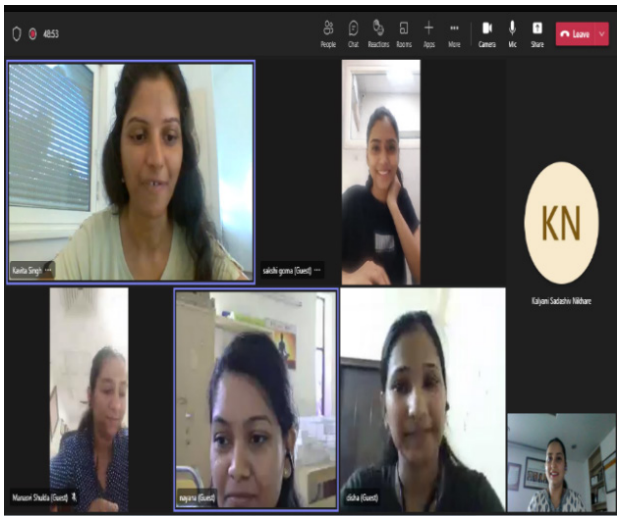
In the first phase, a strategic stepwise approach was used to develop ATMAN treatment with three key elements- problem solving, emotion regulation and social network strengthening skills. The delivery schedule of the treatment emphasizes on the engagement elements and allows for involvement of other stakeholders such as family members when acceptable to the clients.

Developing and testing Collaborative Quality ImProvement initiative (C-QIP) for prevention of cardiovascular disease in India

Principal Investigator: Kavita Singh

This is an ongoing project and is funded by the National Institutes of Health (NIH).

Project Summary: This study aims to develop, implement, and evaluate a Collaborative Quality ImProvement (C-QIP) intervention and its effect on processes of care measures and clinical outcomes among individuals with existing cardiovascular disease (CVD) in India. C-QIP study evaluates the effect of a collaborative care model for improving CVD care using skilled non-physician health workers, text-messages, clinical decision support tools, patient education, and audit and feedback reports compared to usual care at four hospitals in India over two years. The study will provide insights on feasibility (screening, recruitment, randomization, and follow-up rates), fidelity (adherence to study protocol), adoption, and acceptability of C-QIP intervention from patient and health-care providers' perspective.



Variation in Innate Immune Activation and Cardiovascular Disease Risk as Drivers of Immune Pathology In COVID-19 Outcome in South Asians in UK and INDIA (CARDINNATE STUDY)

Principal Investigator: Kavita Singh

This is an ongoing project and is funded by the Department of Biotechnology, (DBT) - Medical Research Council (MRC).

Project Summary: The CARDINNATE study has four aims. Aim#1: To use existing datasets of hospitalized COVID-19 patients to assess the differences in pre-existing health conditions, disease severity and the pattern of in-hospital complications between South Asians (SAs) admitted with COVID-19 in the UK versus India. Aim#2: To determine whether there are inherent differences in microbially-induced proinflammatory and antiviral immune responses between COVID-19 naïve SAs in the UK versus India, and their association with CVD/diabetes and autoantibodies to interferon. Aim#3: To perform extensive prospective systemic immunophenotyping, and analysis of endothelial, complement activation, and cardiac function in SAs admitted with severe COVID-19 in UK and India to identify and cross-compare key immune and CVD signatures associated with clinical outcome. Aim#4: To determine the inter-relationship between immune responses, pre-existing CVD and functional outcome in SAs who have recovered from COVID-19 in the UK versus India to specifically determine whether the most distinctive markers identified in acute infection in Aim 3 revert to baseline.

National Multi Sectoral Action Plan for Prevention and Control of Non-Communicable Diseases (MSAP NCD) 2022-2026 in SRI LANKA

Principal Investigator: Preeti Kumar

The project was funded by the WHO Sri Lanka and is now completed.

Project Summary: The study aimed to develop a methodology for estimating annual costs for 2022-2026 for implementing the Multi Sectoral Action Plan for Prevention and Control of Non-Communicable Diseases (MSAP NCD) 2022-2026. The costs were presented by key strategic areas. One health tool was used for estimating the costs of MSAP NCD 2022-2026. Primary and secondary data was collected to estimate the costs.

The study found that the total cost of implementing and scaling-up both clinical and policy interventions from the period from 2022 to 2027 would be LKR 661.35 billion. The biggest chunk of the costs could be attributed to strategic area 3 “health system strengthening for early detection and management of NCDs and their risk factors”. Strategic area 1 “advocacy, partnership and leadership” accounts for the second highest costs followed by strategic area 2 “health promotion and risk reduction”. These costs will be accompanied by significant health gains. That would add to a total of 29934 lives saved and 36276 healthy life years gained from clinical interventions, and 55781 lives saved, and 115059 healthy life years gained from policy interventions during the study period.

Promoting uptake of low sodium iodized salt by rural and urban households in India: The PLURAL study

Principal Investigator: Sailesh Mohan

The project was funded by Resolve to Save Lives (RTSL) and is now completed.

Project Summary: Hypertension is the leading risk factor for cardiovascular disease (CVD), which in turn is the leading cause of death and disability globally and in India. Analysis of national-level data suggests that the prevalence of hypertension in adults is around 25% with a huge rural and urban variation. One of the most important preventable risk factors for hypertension is high dietary salt intake. Hence, strategies to reduce salt intake at the household and community level are required in India. One of the strategies that has been put forward is to replace the conventional salt with low sodium salt, which among other studies has shown similar reduction in blood pressure in hypertensive patients. This study aimed to understand the sale, use, health benefits and uptake of low sodium iodized salt (LSIS), design an intervention based on the formative research and subsequently implement and evaluate the impact of the intervention on the uptake of LSIS, at the household and retailer/supplier level in the last six months of the survey.

Results in urban Sonipat (Haryana) indicated that LSIS uptake declined in intervention areas after initial purchase due to people's perception that it tastes bland in comparison to conventional salt. It was seen that health personnel's advice and instruction are highly valued in rural Sonipat, and as a result, adoption is high. Taste is a deciding factor in urban Sonipat but not in rural Sonipat. Education imparted by health professionals is highly valued in both urban and rural Visakhapatnam (Andhra Pradesh) intervention areas, and retailers are very engaged at the point of sale, which resulted in high LSIS adoption. LSIS taste is not a decisive force in Visakhapatnam. In control areas in both cities, LSIS adoption is hindered by lack of availability and high costs.

Thalassemia and Sickle cell disease control in Odisha

Principal Investigator: Srinivas Nallala

This project was funded by Christian Medical College and is now completed.

Project Summary: This study aimed to: (i) Map the existing programs, institutions and infrastructure (including diagnostics) for prevention, control and treatment of thalassemia and sickle cell disease; (ii) Review the existing data and literature in this domain to get a rough estimate of the problem; and (iii) Assess community's understanding/awareness, perceptions, needs and demands.

A situational analysis with mapping of all existing programs, institutions and infrastructure (including diagnostics), community awareness for prevention, control and treatment of thalassemia and sickle cell disease was done in the state of Odisha. The outcome of the study helped the state in planning evidence-based interventions such as facilitating increased access to screening and treatment services, strengthening the supply chain management and capacity building of the health staff.

Effectiveness of SHG for breast and tobacco-related cancer prevention in Meghalaya - A quasi-experimental study

Principal Investigator: Sandra Albert

This is an ongoing project and is funded by NCDIR-Indian Council of Medical Research.

Project Summary: Northeast India is known as the 'cancer hotspot' and East Khasi Hills district of Meghalaya reports one of the highest burdens of cancers in the region. Unique sociocultural factors such as integration of tobacco in the culture along with poor access to healthcare are some of the factors responsible for poor outcome indicators for cancers in the state. A situational analysis conducted on healthcare access showed a delay in uptake of cancer treatment along with widespread stigma associated with the disease. The traditional cancer awareness strategies do not seem to be working, therefore an exploratory bottoms-up approach using community members (self-help group women) has been proposed. The cancer awareness material (intervention) will be prepared by the community, for the community to address the burden of cancer in the community. Barriers and facilitating factors in developing and implementing the intervention will also be documented for a potential scale-up in the state. The intervention's effectiveness in improving awareness about cancer and its prevention, and in reinforcing health promotion will be assessed. The study will be done in Meghalaya, targeting the top cancers viz, breast, cervix and tobacco-related cancers (mouth, esophagus, lungs).

Epidemiological risk profile of gallbladder cancer in North, East and North-East India

Principal Investigator: Eliza Dutta

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Project Summary: Gallbladder cancer (CaGB) is one of the most lethal forms of malignancy of gastro-intestinal tract with an overall survival <5 years. Population-based registry data from Assam (Kamrup district) report an age-standardized incidence of 16.2 per 100,000 females, only next to rates reported from Chile and Korea. Incidence of CaGB in the North and Northeastern states is ~7 times higher than the incidence in the southern states. The project aims to: (i) Conduct a systematic review and meta-analysis to identify risk factors associated with CaGB in high incidence areas in India; (ii) Determine associations between environmental, and genetic risk factors, and CaGB across regions; and (iii) Explore gene-environment interaction of selected SNPs and their expression across study groups.

The study is being done under the aegis of the Centre for the Study of Complex Malaria in India (CSCMI) at IIPH-S. The study team is collaborating with Assam Medical College, Dibrugarh; Dr Bhuvneshwar Borooah Cancer Institute, Guwahati; Jorhat Medical College and Hospital, Jorhat; and Post Graduate Institute of Medical Education and Research, Chandigarh.


Open access Protocol

BMJ Open Risk factors associated with gall bladder cancer in high incidence areas in India: a systematic review protocol

Eliza K Dutta , Melissa Glenda Lewis, Sandra Albert

Exploring the determinants, dynamics and differentials of smoked and smokeless tobacco cessation in Low- And Middle-Income Countries: A comparative analysis of GTSS

Principal Investigator: Monika Arora

This is an ongoing project and is funded by the National Foundation for the Centers for Disease Control and Prevention, Inc. (CDC Foundation).

Project Summary: Global Tobacco Surveillance System (GTSS) is a comprehensive initiative by the Centre for Disease Control and Prevention, the WHO, and the Canadian Public Health Association to build country-specific capacity for designing, implementing, and evaluating control initiatives and monitoring key articles of the WHO's FCTC and components of the WHO MPOWER technical package. Global Adult Tobacco Survey (GATS) provides a nationally representative survey that monitors tobacco use among adults 15 years and older in different countries. The overall aim of this study is to understand the cessation practices, particularly in LMICs, among various types of tobacco users. The specific objectives include: (i) Understanding the differential cessation practices and their determinants among smokers and/or smokeless tobacco users residing in LMICs; (ii) Assessing the determinants of cessation and their differentials between smoked, smokeless and dual users of tobacco; and (iii) Understanding the patterns in the use of Electronic Nicotine Delivery System (ENDS) in LMICs.

This study is a secondary data analysis of two rounds of data collected in the GATS to understand the determinants of the differential cessation practices, including the use of cessation services in India, Bangladesh, Vietnam, and the Philippines. The impact of socio-demographic characteristics, tobacco consumption patterns, and exposure to tobacco control policies (health warnings on print and electronic media; health warnings on tobacco packs, exposure to secondhand smoke in public places) on quit attempts, use of various cessation services and successful tobacco cessation are being investigated.

A study to assess the compliance of the Electronic Nicotine Delivery Systems ban in India

Principal Investigator: Monika Arora

This project was funded by the WHO Country Office for India and is now completed.

Project Summary: The study aimed to assess online sales and promotion of e-cigarettes on the Internet, and social networking sites (SNS) to identify violations of the current restrictive policies by the e-cigarette industry, SNS platforms and influencers. A survey with youth (18-24 years), along with a desk review was conducted to identify influencers promoting and e-stores selling e-cigarettes in India. Further, a content analysis of the identified influencers and online stores was conducted, along with an analysis of the policies banning online e-cigarette sales and advertisements.

Instagram was identified as the most popular social networking platform for promoting e-cigarettes where influencers' posts positively portrayed e-cigarettes. In addition, national and international stores selling e-cigarettes in India were identified. Findings highlighted the issue of cross-border marketing, and showed a violation of the restrictive policies by the influencers and e-stores.

Development of multisectoral strategy and action plan for prevention and control of non-communicable diseases (NCDs) (MSAP II) in Bhutan

Principal Investigator: Monika Arora

This project was funded by the WHO and is now completed.

Project Summary: The Royal Government of Bhutan implemented a multisectoral plan for the prevention and control of non-communicable diseases (NCDs) (2016-2020). With the expiry of the plan, a second plan was developed aligning to the 2025 NCD targets and SDG commitments of the country. The objectives were to: (i) Conduct stocktaking of the overall performance and implementation of the first multisectoral action plan (MSAP I) for prevention and control of NCDs (2016-2020); (ii) Conduct desk reviews of the existing evaluations, assessments, program and fiscal disbursement reports, standard documents, and existing strategic plans; (iii) Conduct key informant interviews to assess the performance of multiple sectors and assess the accountability of the current plan; and (iv) Contextualize international best practices to the local context, addressing bottlenecks and proposing solutions and recommendations to draft the second MSAP (MSAP II).

One Health

In an ever-interconnected world, the health of people, animals, and the environment are inextricably linked. This holistic perspective forms the foundation of the One Health approach, a unified strategy aimed at optimizing the well-being of all living beings. By recognizing the intricate web of interactions between humans, animals, and our shared environment, One Health addresses not only immediate health concerns, but also the underlying root causes, fostering sustainable, long-term solutions. This approach transcends boundaries, mobilizing diverse sectors, disciplines, and communities to collaborate in the pursuit of a healthier world. By integrating expertise from public health, veterinary, environmental, and other pertinent sectors, One Health has proven instrumental in combating global health threats, including the recent COVID-19 pandemic. The following section delves deeper into some of the critical projects being undertaken at PHFI using the One Health approach.

Epidemiology of soil transmitted helminth infections in Meghalaya

Principal Investigator: Rajiv Sarkar

This project was funded by Indian Council for Medical Research (ICMR) and was completed

Project Summary: Soil transmitted helminths (STH) are an understudied, but important public health problem worldwide. Recent evidence, although limited, indicates that there are certain STH species that have zoonotic potential however, this has not been fully explored. Meghalaya, a predominantly agrarian state in Northeast India with a high animal-to-human ratio, provides an ideal setting for such studies. The study has the specific objectives to: (i) Ascertain the prevalence, intensity and species distribution of STH infection in humans; (ii) Explore the role of animals and environment as a reservoir for STH infection; and (iii) Identify the drivers of STH transmission.

In collaboration with the Christian Medical College, Vellore, a community-based cross-sectional study in nine villages of three districts in Meghalaya (Eastern West Khasi hills, East

Jaintia Hills and the Ri Bhoi) found that the overall STH prevalence was 5.4% (95% CI 3.1-8.6) with Ascaris being the commonest species identified. The STH prevalence was highest in under-five children. Majority of infected individuals had moderate-intensity infections as per the WHO criteria.

Co-creating One Health workforce through health system strengthening in Western India- One Health System Strengthening in India (COHERD/OHSSIN)

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by Charite Universitatsmedizin Berlin.

Project Summary: The surge in emerging and re-emerging diseases, especially zoonoses, over the first decades of the 21st Century, has highlighted the need for health system strengthening in general and the implementation of One Health in particular. Findings from one of the previous studies, *Research to explore Intersectoral Collaborations for One Health Approach (RICOHA) in India,* highlighted a lack of collaboration among the health workforce due to low awareness and knowledge of One Health and lack thereof community participation. Therefore, training the health workforce in the One Health approach is essential for overcoming implementation barriers.

The prime objectives of this project are, to investigate, document and prioritize the emerging threats and risks at the human-animal interface, and to research possibilities for strengthening the capacity of the existing clinical and community health workforce for early detection of emerging threats and risks in Western India. In a series of stakeholder workshops, the emerging threats and risks at the One Health nexus will be identified and prioritized in three Western Indian states, i.e., Gujarat, Rajasthan, and Maharashtra. Comparative research will investigate similarities and differences between the One Health threats of the states and develop policy recommendations for prevention and control. Training courses will equip the clinical and community health workforce with the necessary knowledge and tools to contribute to One Health implementation and consequent health system strengthening.

Zoonotic and Vector-Borne Diseases Research and Training Centre

Principal Investigator: Melari S Nongrum

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Project Summary: India, and especially the Northeastern region (NER), is endemic for zoonotic and vector-borne diseases (ZVBDs) due to its unique cultural practices, predominantly non-vegetarian food habits, including consumption of bush-meat, and mixed-farming practices, which result in close contact of humans with livestock and other domestic animals, with little awareness of disease risks. The interaction of humans or livestock with wildlife exposes people and their domestic animals to sylvatic disease cycles and the risk of wildlife pathogen spill-over, which may go undetected due to the paucity of infectious diseases surveillance in the NER. This initiative by three institutes from NER: IIPH-S, Indian Council for Agricultural Research and Nazareth Hospital, aims to bring together public health researchers, social scientists, laboratory microbiologists, clinicians, and disease modelers to address gaps in understanding threats posed by ZVBDs and Transboundary

Animal Diseases (TADs) in Northeast India. This consortium will strengthen public-health research and training capacity by achieving the following objectives: (i) Establish and foster a ZVDB training and research center to coordinate and strengthen research and training capacity for clinicians and public health personnel, while promoting postgraduate training; (ii) Characterize and evaluate risk factor patterns that facilitate transmission of regional ZVBDs by implementing population-based, clinical and epidemiological studies to identify the hidden burden of undiagnosed infections; and (iii) Monitor and forecast disease trends to enhance early cross-species detection of ZVBD outbreaks and TAD threats through syndromic surveillance, genetic identification of pathogens and simulation modeling of transmission dynamics.

To develop One-Health research capacity in the NE region, a trans-disciplinary team of young professionals will be trained, not only on ZVBDs, but also on research methodology and public health through long-term (doctoral/postdoctoral research, fellowships through clinical research and training programme) as well as short-term (short courses and workshops on scientific writing and proposal development, epidemiology, biostatistics and laboratory methods) trainings.

Public Health Nutrition

The overarching goal of research in public health nutrition is to tackle both undernutrition and overnutrition, striving to uphold optimal nutritional status within populations and communities. This endeavor seeks to not only prevent nutrition-related illnesses but also actively engage with government policies and programs aimed at resolving such nutritional challenges. With the overarching objective of enhancing the overall nutritional well-being of a population, research in this domain also centers on health services, program development, and policy advocacy. Below, we outline various research projects at PHFI that fall within this critical domain.

Effect of meal supplementation during the antenatal period on the birth weight- A systematic review

Principal Investigator: Giridhar Rathnaiah Babu

This project was funded by ICMR and is now completed.

Project Summary: This systematic review addresses one of the research priorities listed by the Health Technology Assessment India initiative of the DHR. This review the issue of improvement of Maternal and Child survival by focusing on meal supplementation programs by systematically reviewing existing research on interventions aiming to improve weight in pregnant women and their children. Specifically, the systematic review synthesized the evidence from both intervention trials and prospective cohort studies. The study objective was to summarize the evidence on the effectiveness of the meal supplementation intervention in improving maternal weight during pregnancy and hemoglobin status in pregnant women, and overall nutrition status in children. This systematic review provided evidence that meal supplementation during the antenatal period is associated with a significant reduction in the odds of low-birth weight. However, further research is needed to evaluate the long-term effects and the real-world impact of these interventions.

Project Tushti 2.0

Principal Investigator: Somen Saha

This is an ongoing project and is funded by JSI R and T India Foundation.

Project Summary: Project Tushti 2.0 is a three-years project started in 2023. The project will engage and support the state government in strengthening the ICDS program in Gujarat for better nutritional outcomes. The project will focus on three pillars: (i) Strengthen the ICDS program through capacity building; (ii) Research, prototype development, and implementation research; and (iii) Special initiatives for Devbhoomi Dwarka. Project Tushti 2.0 will collaborate with the Commissioner of Women and Child Development Gujarat, SHSRC, State Nutrition Cell (SNC), and State Institute of Health and Family Welfare (SIHFW) to further strengthen nutritional efforts in Gujarat. The specific study objectives are to: (i) Promote positive nutrition practices in the communities through a multipronged Capacity Building and Behavior Change Communication approach; (ii) Strengthen the capacity of frontline workers; (iii) Collaborate with the Department of Women and Child Development in implementing high impact interventions to improve the nutritional status of beneficiaries; and (iv) Strengthen the ecosystem using innovative approaches: Saksham Anganwadi Centres, Gram Sanjeevani Samitis, Poshan Sabha, amongst others.

Characterizing, RevIving, Supporting, Monitoring and MAnaging Sustainable Food Systems to address malnutrition in indigenous tribal communities of India: CARISMMA sustainable food systems study

Principal Investigator: Upasona Ghosh

This is an ongoing project and is funded by the George Institute for Global Health.

Project Summary: The project was launched in April 2023. A multisectoral team of experts in community nutrition, nutritional biochemistry, food systems, anthropology, ethnobotany, sustainable development, food policy, agricultural extension agro-economy will work together to develop, standardize and validate tools for assessment of food systems of indigenous tribal communities in Odisha including production, processing, retailing and consumption of foods and their contribution to nutritional and health outcomes in the respective communities. Another set of tools on innovative methods for assessing nutritional status and the effect of the food environment on nutritional well-being will be developed and standardized. Two research approaches will be followed:

(i) Development of region-specific cohorts (3-4) of indigenous tribal communities, characterization of their food system and nutritional profile and longitudinal follow-up to assess the changes in their food environment in the context of nutrition transition, climate change and its influence on the nutritional status of the specific population groups.

(ii) A cluster randomised trial will be conducted to assess the effectiveness of an indigenous food system in one tribal community whose traditional ecological knowledge has already been studied, documented and analyzed by the research group in previous projects. Evidence supported, data driven food system restoration and rejuvenation intervention

will be developed. It will be an amalgamation of the tribal community's knowledge about their indigenous food systems and the research inputs. It will be evaluated for its potential to address malnutrition and overall development of the community.

Optimisation of supplementary nutrition provisions of the ICDS of India

Principal Investigator:Sandra Albert

This is an ongoing project and is funded by the WHO.

Project Summary: Improving the nutritional and health status of children under 6 years is a key objective of the ICDS scheme which is operationalized through its Supplementary Nutrition Program (SNP). Thus, there is a need to meet the energy and protein requirement of the SNP by optimizing its cost (with cost currently constrained at Rs 8/day per child), but also to optimize many more nutrients, even though these are not in the SNP rules. The specific aim and objectives of the study are: (i) To determine the nutrient adequacy of ICDS-SNP provisions [Hot Cooked Meal (HCM) and Take Home Ration (THR)] in different states in India; (ii) To develop state-specific raw food, as well as recipe suggestions for HCM in the SNP, which would meet the energy and protein recommendations provided by the GoI, based on locally available foods and recipes; (iii) To develop state-specific THR suggestions for children 6-36m, pregnant and lactating women, based on locally acceptable foods to meet the current SNP guidelines for energy and protein requirements; (iv) To develop an easy-to-use web interface for SNP provision planners to perform linear programming to develop food/recipe combinations that would meet the requirements for the HCM and THR; and (v) To perform a comparative cost analysis and nutrient analysis between the current SNP provisions and the suggested raw foods and recipes.

For the satellite center (IIPH-S), the specific objective is to quantify the current nutrient provisions of SNP and compute the nutrient gap (specifically for the regulated energy and protein rule, but also for forward looking recommendations that include as many nutrients as possible) in current ICDS SNP provisions (HCM and THR) in Northeast Region with data on current provisions collected through primary data sources by conducting interviews among government officials responsible for ICDS-SNP provision in the state, Anganwadi workers, and Anganwadi beneficiaries. The team from IIPH-S is collaborating with St John's Medical Research Institute, Bengaluru.

Social Determinants of Health and Disability

Non-medical determinants like socioeconomic status, employment, wealth distribution, empowerment, and social support play a pivotal role in either enhancing or diminishing the health of individuals and communities. These social factors hold particular significance for individuals with disabilities. Research within this domain seeks to investigate these social determinants that exert an influence on human health, with the goal of addressing them to enhance overall health outcomes. At PHFI, several research endeavors are being undertaken to glean insights into this critical aspect of public health.

Equity, social determinants, and health outcomes

Principal Investigator: Shreelata Rao Seshadri

This is an ongoing project and is funded by Bill & Melinda Gates Foundation (BMGF).

Project Summary: Reproductive health has seen considerable expansion and greater policy focus since the 1990s. In this project, 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- are further investigated.

Attention is paid to gender and its intersections with other types of socioeconomic power and inequality, as well as health system contributors to questions of equity in clinical antenatal assessments and of disrespect and abuse in obstetric care. The project is aligned with the NHM, specifically its focus on maternal and reproductive health. Of particular relevance are the following aspects: (i) Despite a concerted and lengthy focus on maternal health, the evidence base can be weak on questions related to relationship between antepartum risks and health outcomes for mothers and their newborn children; (ii) Digital health interventions that support frontline workers-instead of replacing them-become sources of empowerment; and (iii) Disrespect and abuse of women delivering in institutions take different forms and are associated with different sets of factors.

Using large-scale data to address gender health inequities in India

Principal Investigator: Rakhi Dandona

This is an ongoing project and is funded by Bill & Melinda Gates Foundation, Seattle.

Project Summary: The national health programs in India lack gender-specificity. This project will harness the power of data to address gender disparities in population health across India. The gender-specific data across the life-course for the leading diseases and health conditions and their risk factors will be generated from the Global Burden of Disease Study for India and its states. Three national health programs covering adolescence to old age will be contextualized within the generated age-gender burden and risk factor estimates to explore where gender-specificity is needed within the programs for prevention and treatment, and how to achieve it.

Measure of girls' and women's health and well-being and exemplar case studies

Principal Investigator: Shreelata Rao Seshadri

This is an ongoing project and is funded by the United Nations Population Fund (UNFPA).

Project Summary: The project will: (i) Undertake a comprehensive assessment of the measures of women's "well-being"; (ii) Translate new conceptual thinking into a proposed list of national measures and indicators; (iii) Assess national performance rankings across a wide number of countries; (iv) Identify "exemplar" countries that show a high level of performance

on women's health and well-being indicators; and (v) Partner with these countries to assess policy conditions and programming that have promise to accelerate women's health and well-being in other countries. Improving girls and women's health and well-being is a high priority across development sectors, both local and global. While many dimensions of physical and mental health have well established metrics for tracking and measurement, "well-being" is not consistently or universally defined. Using the WHO definition of health as the basis, Amartya Sen's Capabilities Approach was applied to develop a conceptual framework that provides a nuanced way to define and understand the barriers and contributions to girls' and women's well-being over the life-course. The larger context of norms, practices and laws were also considered within which girls' and women's well-being are constructed.

Disability Data Initiative

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This project was funded by Fordham University and is now completed.

Project Summary: The objectives of the study were to: (i) Identify relevant surveys and censuses on disability data in India / South Asia; (ii) Analyze selected survey questionnaires and micro-datasets; (iii) Disseminate results of the 2021 and 2022 Disability Data Reports; and (iv) Identify stakeholders for dissemination.

The project has yielded significant findings on disability data and related issues. These include discussions on integrating functional difficulty into disability classification, ethical considerations in data collection and dissemination, the impact of family size on rehabilitation, government ministries' roles, gender vulnerabilities, and the ongoing Disability Data Initiative.

Advancing Research & Policy on Gender and Health from a Global South Perspective

Principal Investigator: Shreelata Rao Seshadri

This is an ongoing project and is funded by United Nations University.

Project Summary: The project involved the development of three case studies in the South Asia region: (i) The Gender Guidance Clinics of Tamil Nadu, India; (ii) The Gender in Medical Education project initiated in Maharashtra, India and later in Karnataka and other states; and (iii) The Reproductive Health Rights Act of Nepal. The case studies have been developed as part of the 'Promising Practices in Integrating Gender into Government Health Programs' project. This project is a collaborative global initiative between the United Nations University International Institute for Global Health (UNU-IIGH), the Ramalingaswami Centre on Equity and Social Determinants of Health, and the School of Public Health at the University of Western Cape in South Africa.

Women and Child Health

Given that women form the cornerstone of families and communities, prioritizing women's health is of paramount importance in public health research. Women's health especially encompasses their well-being during pregnancy, childbirth, and the postpartum period. Additionally, safeguarding the health of newborns, who are susceptible to diseases and require adequate nutrition, is a crucial focal point in public health research. Research within this domain is geared towards preventing illnesses among mothers, newborns, and children, ultimately working towards enhancing their overall health and well-being. The research projects at PHFI falling within this thematic area are detailed below, offering valuable insights into this important facet of public health.

Improving nutrition outcomes among adolescents and SAM children through BCC & Digital interventions

Principal Investigator - Samaresh Sengupta

This is an ongoing project and is funded by the UNICEF.

Project Summary: Uttar Pradesh has shown significant improvement in health and nutrition indicators in the last five years. However, wasting among children, which is an acute form of malnutrition (represented as weight-for-height/length) remains a cause of concern for the state (NFHS 5: 17.3%; NFHS 4: 17.9%). Around 18.5% of under-five suffers from acute malnutrition or wasting. To address this gap, PHFI in the year 2022 demonstrated delivery approaches which accelerated recovery of Severe Acute Malnutrition (SAM) children through tele-counseling as well as formulated capacity building intervention to strengthen counseling skills of Anganwadi Worker (AWW) on SAM management. Gains were realized through tele-counseling system where tele-counselors through centralized calling system systematically engaged mothers of SAM children and pregnant women to build their knowledge, efficacy and skills to improve diet and increase coverage of ANC tests. To address the AWW's capacity gap, PHFI promoted Poshan Tashtari- a participatory diet assessment tool which is helping AWWs to assess the diet of children and identify dietary and feeding gaps with ease, and promote nutrition BCC intervention in community settings. The new project will: (i) scale-up the capacity building intervention from 300 AWWs to 2000 AWWs in project districts; and (ii) will provide technical assistance to district ICDS team in establishing and operating mobile phone counseling (MPC) system in three districts—Balrampur, Shrawasti and Sonbhadra.

UKRI GCRF - Action Against Stunting Hub

Principal Investigator: Deepak Saxena

This is an ongoing project and is funded by UKRI GCRF.

Project Summary: The project aims to understand the effect of key behaviors, environmental factors including WASH practices, and child feeding practices on stunting in Gujarat. The primary objective of the study is to understand and document how caregiving practices

and environmental hygiene of the domestic environment influence growth outcomes. The secondary objectives are: (i) To determine the existing practices related to breastfeeding, complementary feeding and WASH and their impact on stunting outcomes; and (ii) To determine the existing effect of home and food environment and rearing of domestic animals in the houses of children on stunting outcomes. 1246 pairs of mother and child have been recruited from one rural and one tribal blocks of Sabarkantha district. The overall stunting has been found to be 42.5% among the population.

Advanced Collaboration for Early Childhood Development and Empowerment (ACECD) Phase III

Principal Investigator: Rajan Shukla

This is an ongoing project and is funded by UNICEF Hyderabad Office.

Project Summary: ACECD in collaboration with pioneering institutes and experts has been working since past three years towards: (i) Devising integrated early childhood development (ECD) intervention guidelines and ECD parent support package; (ii) MCP-card based decision support for frontline workers (FLWs); (iii) Guidance for primary care physicians, paediatricians, nurses and Rashtriya Bal Swashthya Karyakaram (RBSK) mobile teams; (iv) Training of FLWs in cascading manner in both the pilot districts on ECD and monitoring in select mandals; and (v) Involving the Panchayat Raj members in creating a child friendly village with the help of Anganwadi centers.

Every Newborn Health Assessment & Neonatal Care Evaluation Study (ENHANCE) 2020

Principal Investigator: Rakhi Dandona

This project was funded by Oxford Policy Management and is now completed.

Project Summary: Every Newborn Health Assessment & Neonatal Care Evaluation 2020 (ENHANCE) was a large-scale study in the Indian state of Bihar to assess the trends and determinants in newborn health over time. This study explored 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.

A significant increase of 13% was documented in Neonatal Mortality Rate (NMR) between 2016 and 2020-21, which was estimated at 27.9 (95% CI 26.0-29.8). NMR was nearly two times higher in the private facility and home births as compared with the public facility births. Birth asphyxia (35.8%) continued to account for the majority of neonatal deaths. An increase was seen in preterm births as the cause of death between 2016 and 2020-21. The antenatal care coverage and quality continued to lag behind. Significantly higher utilization of the private sector was documented for deliveries in 2020-21 as compared with 2016. Poor utilization of SNCUs was documented for newborns who were sick at birth.

Nutritional, Psychosocial and Environmental Determinants of Neurodevelopment and Child Mental Health (COINCIDE): An integrated assessment approach using a developmental framework perspective

Principal Investigator: Giridhar Rathnaiah Babu

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Project Summary: The study aims to evaluate the independent, cumulative and interaction effects of nutritional, psychosocial and environmental determinants of neurodevelopment and child mental health in diverse settings of North and south India covering urban and rural locations, and to identify the processes by which these determinants are influenced by socioeconomic disparities. The study is being led by IIPH Bengaluru in close collaboration with four other institutes in India – Ashoka University, Haryana; St. Johns Research Institute, Bengaluru; Institute of Public Health, Bengaluru; and Sangath, Delhi.

Assessing the Transgenerational Association of Maternal Glucose and Childhood Obesity, and the Role of Behavioral, and Environmental influencing factors (TAGORE)

Principal Investigator: Giridhar Rathnaiah Babu

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Project Summary: The study aims to understand the association of alterations in maternal glucose metabolism with childhood obesity. It will further assess the contribution of shared neighborhood, familial, and behavioral factors. The study objectives are to: (i) Estimate the association between maternal glucose intolerance and obesity in children at age 9, and to understand biological pathways by assessing the relative role of insulin secretion vs resistance; hepatic vs visceral fat; and lean mass vs adiposity in children; (ii) Estimate the contribution of behavioral and environmental factors in the development of childhood obesity and glucose intolerance; (iii) Identify phenotypic clusters of childhood obesity and explore their correlates; and (iv) Integrate the contribution of behavioral and environmental factors in the development of childhood obesity into a theoretical framework for context-specific interventions.

A Randomised Controlled Trial to compare two different doses of maternal B12 supplementation in improving infant B12 deficiency and neurodevelopment

The project was funded by the Medical Research Council and Department of Biotechnology and is now completed.

Principal Investigtor : Manu Raj Mathur

Project Summary: Deficiency of B12 in newborns is problematic given the role Vitamin B12 plays in neuronal health (brain and nerve cells health) and in the development of fetal and infant brain. Supplementation with Iron and folate have been part of a worldwide strategy targeting anemia and neural tube defects for many years. High prevalence of B12 deficiency in mothers in the antenatal period and in their infants has been documented. Multiple case

series document the neurological consequences of severe deficiency and their reversal with B12. Trials on the subject are limited and those available have either used an ineffective dose or for a short duration.

(Stakeholder Meeting: Research and programmatic priorities for improving maternal, child health and development outcome)

This research study compared 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 improving neurodevelopment. The investigators undertook a multicentric trial in India and Nepal as these are countries where high incidence of deficiency is reported.

Gestational diabetes in Uganda and India: Design and Evaluation of Educational Films for improving Screening and Self-management (GUIDES)

Principal Investigator: Giridhar Rathnaiah Babu

This project was funded by the Department of Biotechnology (DBT)-Newton Fund: Department of Biotechnology, Government of India - DBT-DFIDESRC-MRC and is now completed.

Project Summary: Whether an educational/behavioral intervention delivered through a package of culturally tailored films for pregnant women, their family members, and health providers can improve timely detection, glycemic control and clinical outcomes of women with GDM. The trial is registered at Clinical Trials Registry India (CTRI) (CTRI/2020/02/023605), and study details are available at https://guidesresearch.org/.

Field data collection team member collecting data on history of covid 19, vaccine, long term symptoms if any, history of comorbidities etc. Project code number: LN0998

Preparation Of the National INAP Roadmap 2021-2030

Principal Investigator: Rakhi Dandona

This project was funded by the UNICEF and is now completed.

Project Summary: The India Newborn Action Plan (INAP) is India's committed response to the Global Every Newborn Action Plan (ENAP) 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 provided 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 and SBR targets.

The INAP review has highlighted the progress made by India and its levers to address neonatal mortality, and has indicated the remaining areas to address further reductions in neonatal mortality to meet the SDG goal by 2030.

Active Bleeding Control

Principal Investigator: Shailaja Tetali

This project was funded by the University of Pennsylvania Institute for the Advanced Study of India (UPIASI) and is now completed.

Project Summary: The study had following specific objectives: (i) Conduct needs assessments to support the Active Bleeding Control (ABC) ABC program; (ii) Develop data collection tools and collect data to evaluate the program's impact; (iii) Implement a ""Stop the Bleed"" program in Hyderabad high schools and assess the current knowledge, skills, and willingness of high school students and teachers to participate in bleeding control training; (iv) Reduce trauma-related deaths by equipping individuals with life-saving skills; and (v) Teach students effective communication skills to share their knowledge within their households and communities and build a network of trained individuals to enhance community preparedness.

The study identified significant improvements in bleeding control knowledge among Hyderabad high school students after implementing the "Stop the Bleed" training program. A vast majority of teachers (92%) displayed a willingness to participate in the training and the community response was overwhelmingly positive, with 95% support for the initiative.

Knowledge, Attitudes and Practices of ECD (Parenting and Play Practices of 0-6 Year Old Children) in Telangana

Principal Investigator: Rajan Shukla

This project was funded by The Agha Khan Foundation (AKF) and is now completed.

Project Summary: There is limited evidence on the current state of parental practices and the quality of home learning environment in India, particularly related to promoting early childhood development. The KAP study and qualitative research in the Kumuram Bheem Asifabad and Hyderabad districts of Telangana aimed to get an in-depth understanding of the existing knowledge, attitudes and practices around caregiving, play and discipline, and how communities define child development in their cultural context. Study findings highlighted the need to create awareness about initiating play and stimulation activities from an earlier age as it has a cascading and accelerating impact on the child's development. AWWs and ASHAs need to be trained in ECD and early stimulation for motivating and empowering caregivers. ECD interventions need to be implemented with the involvement of caregivers and the community to prevent delays and improve health outcomes.

Capacity Building Initiatives

In line with our pivotal mission, we have been resolutely committed to enhancing the capabilities of diverse stakeholders crucial to the advancement of public health in the nation. Central to this endeavor is a multifaceted array of training initiatives, focusing not only on the physicians but also a wide spectrum of healthcare professionals, researchers, and other vital contributors to the public health landscape. While IIPHs play a central role in conducting comprehensive academic programs, we also run workshops and short-term e-courses, crafted to offer timely capacity-building opportunities and to foster a culture of continuous learning. These workshops and e-courses serve as dynamic platforms, addressing the evolving needs and challenges faced by stakeholders across the public health spectrum. By facilitating knowledge dissemination, skill refinement, and the exchange of best practices, we empower individuals and teams to navigate the public health ecosystem with precision and confidence. This section provides an account of these capacity-building efforts.

Sahyog- Capacity Building Support to NACO (GFATM)

Principal Investigator: Preeti Kumar

This is an ongoing project and is funded by the National AIDS Control Organization (NACO) - Hindustan Latex Family Planning Promotion Trust (HLFPPT).

Project Summary: Sahyog is a consortium led by Hindustan Latex Family Planning Promotion Trust (HLFPPT), with PHFI and FH-India as Sub-Sub Recipients (SSRs). It is a Sub Recipient for the NACO Grant under the Global Fund for the period 2021-24. It has the mandate to enable comprehensive, integrated, and cross-disciplinary capacity building of the National AIDS Control Program (NACP) workforce in HIV/AIDS program management across diverse cadres. The National Strategic Plan (NSP) sets the tone, strategies and priorities for future course of the NACP, which in turn underscores the need for a comprehensive capacity building initiative for the NACP workforce at national (NACO), state (SACS, TSUs, PLHIV Networks), district (DAPCUs, PLHIV Networks) and sub-district (TIs) levels. 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. Under the project Sahyog, a total of 49 batches of training sessions have been conducted to date, providing training to 1067 staff members across diverse cadres of NACP in 22 states, using a cascade training model. The high participation rates and notable improvement in test scores demonstrates the effectiveness of this program in upskilling and reinforcing the knowledge of the participants.

Operational Research Capacity Building (ORCB)

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by the Seva Foundation.

Project Summary: This project is being carried out in the state of Telangana, Maharashtra, West Bengal, and Madhya Pradesh in India, and four hospitals in Nepal. The major activities under the project include:

- Participating in formulation of the action plan for Operational Research Capacity Building (ORCB) activities in the year 2022, including project activities and timelines, and implementing the same.
- Building research capacity, particularly operational research capacity, within Seva partner programs to enable Guides to share these skills with the partner hospitals.
- Supporting the current research teams through Guide partner group meetings until completion of scientific report writing.
- Participating and supporting in the review of the data, encompassing demographics of patients, health staff, and cataract and other surgeries data, data on spectacles etc., accumulated over the past two years in the Seva repository.

Capacity building on hospital preparedness during public health emergencies

Course Director: Anurag Saxena

This is an ongoing project and is funded by the Ministry of Health and Family Welfare (MoHFW).

Course Summary: This training program is designed to facilitate hospital preparedness during both pre-disaster and disaster periods, enhancing the capacity of health facilities to have the requisite surge capacities and disaster management plans in place. The preparedness will not only ensure continuity of business in times of disaster but also aid in overall disaster response. In July 2023, a seven-day training for hospital managers was conducted in Gandhinagar, Gujarat by the experts from IIPH-G and health practitioners, equipping 36 participants with disaster management knowledge and skills. As an outcome of the training, several hospital officials have taken proactive measures to improve their hospital's preparedness for managing the disasters.

Training of health professionals and hospital administrators in management of disasters

Course Director: Preeti Himanshu Negandhi

This is an ongoing project and is funded by the Public Health Foundation of India (Self Sustainable) - Ministry of Health & Family Welfare (MoHFW), GoI initiative.

Course Summary: The training activity aims to equip the healthcare workforce with information for effective disaster management. The participants are imparted knowledge on a range of concepts relevant in the field of disaster management. These include definitions of disaster, hazard, risk, and vulnerability, types of disasters, disaster management cycle, on-site triage, hospital preparedness for disasters, triage in hospitals, logistics and information management during disasters, fire safety protocols, development of disaster management plans, post-disaster recovery and business continuity strategies, etc. The training is conducted across IIPHs in multiple cohorts.

Capacity building and Documentation to support SAM prevention and cure interventions in Odisha

Course Director: Srinivas Nallala

This is an ongoing project and is funded by the UNICEF.

Course Summary: Strengthening knowledge of severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) management among frontline health workers and key stakeholders, like caregivers, is crucial to sustain the efforts towards alleviating SAM. To address these lacunae, the team at IIPH-B conducts various Public Health Nutrition (PHN) courses, providing platforms for knowledge exchange to empower students in critical decision-making roles. In this direction, IIPH-B in collaboration with UNICEF has developed a Master of Public Health Course with PHN specialization, to be rolled out during the project period.

Further, there is insufficient evidence to understand health system and community level implementation challenges and post-COVID coverage barriers for strategies aimed at addressing undernutrition among children. To address this concern, a participatory scoring system is being used to investigate the challenges in rural and tribal areas of Odisha as part of the project.

Training of health and nutrition managers of JEEViKA Program in Bihar

Principal Investigator: Preeti Himanshu Negandhi

This project was funded by Project Concern International and is now completed.

Project Summary: The objective of this initiative was to develop and deliver a short-term training course for Health and Nutrition Managers of the Bihar Rural Livelihood Promotion Society (BRLPS) program, locally known as JEEViKA. The training program was

customized to address the specific needs of the participants and provided a comprehensive understanding of nutrition related aspects, maternal and child health, disease surveillance, and epidemiology. It also included content on leadership, project management, social behavior change communication and an overview of national health programs. A total of 58 participants from Project Concern International (PCI) Bihar underwent training in three batches over six-day workshops held at IIPH-D from June to August 2023.

RHIS training for mid-level officials of SEA Region

Principal Investigator: Preeti Himanshu Negandhi

This project was funded by the WHO and is now completed.

Project Summary: This program focused on training mid-level officials from the Southeast Asia (SEA) region in Routine Health Information Systems (RHIS). The training aimed to strengthen their capacities in key aspects of RHIS, utilizing standardized curriculum. It covered fundamental concepts and practices of RHIS, including various types of health data, their management, analyses and use in informed decision-making. A total of 38 participants were trained through online sessions conducted twice a week over a span of six weeks, from 21 October-2 December 2022.

Strengthening of Routine Health Information Systems (RHIS)

Principal Investigator: Preeti Himanshu Negandhi

This is a completed project and funded by the World Health Organization (WHO)

Project Summary: As part of a workshop series, training on Routine Health Information Systems (RHIS) was organized in India for Health Information System officials from the Ministries of Health in the SEARO countries. The training aimed to enhance their capabilities in key aspects of RHIS. Training was conducted using a standardized curriculum and covered fundamental concepts and practices. 7 participants were trained in online sessions spanning five days, from 12-16 December 2022.

Health Care Leadership Enhancement Program

Principal Investigator: Jallavi Panchamia

This is an ongoing project and is funded by the National Health Mission through the SHSRC.

Project Summary: The objectives of the Health Care Leadership Enhancement Program are multifold. These include identifying existing gaps and essential competencies required for effective leadership within a complex healthcare system. It seeks to enhance the leadership capacities of public health officers and hospital managers through constant mentoring and training initiatives. Further, it aims to address the specific challenges faced by potential leaders through need-based contact sessions during the training period. The program is structured on the Ahmedabad-Gandhinagar LEADS framework, and is currently being implemented in Ahmedabad, Gujarat.

Training of Trainers (ToT) under IDSP

Principal Investigator: Preeti Himanshu Negandhi

The project was funded by the National Centre for Disease Control and is now completed.

Project Summary: The objective of the Training of Trainers (ToT) was to equip (District Surveillance Officers and epidemiologists) with a comprehensive understanding of different aspects of disease surveillance, including types of surveillance, outbreak investigation, the Integrated Disease Surveillance Project (IDSP), International Health Regulations (IHR), and related topics. A total of 24 participants were trained in the five-day workshop held in Delhi from 30 January-3 February 2023.

Centre for Multiple Long-Term Conditions (MLTC)

Principal Investigator: Dorairaj Prabhakaran

This is an ongoing project and is funded by the National Institute for Health and Care Research (NIHR), UK.

Project Summary: National Institute for Health and Care Research (NIHR) Centre for Multiple Long-Term Conditions (MLTC), led jointly by PHFI and University of Leicester, UK with several multidisciplinary collaborators and patient groups, aims to: (i) Improve care for people living with MLTC in both countries by co-designing, implementing and evaluating a contextually relevant, patient-centered, equity promoting, simple technology leveraged innovative health system intervention; and (ii) Strengthen national health research systems by capacity building, creating networks of MLTC researchers and key stakeholders, using 'systems' (individual, institutional and environments) thinking. Various stakeholders like non-physician health workers, physicians, patients along with caregivers and researchers will be the focus of the capacity building initiatives. Since its launch in December 2022, PhD scholars have been selected through a competitive process who will be funded by the Center. The process to select post-doctoral fellows is underway.

Public Health Research Training Program (PHRTP) fellowship

Principal Investigator: Suresh Shapeti

This is an ongoing project and is funded by DBT/Wellcome Trust India Alliance.

Fellowship Summary: The aim of the fellowship program is to facilitate the emergence of early-career public health researchers who are technically competent, culturally sensitive in their approach and rooted in the principles of restorative justice. The fellows will embed their work in the work packages of the Centre for Training, Research and Innovation in Tribal Health (CTRITH). They will also assist in the activities of the CTRITH.

Sponsorship of PhD candidate

Principal Investigator: Giridhar Rathnaiah Babu

This is an ongoing project and is funded by the Institute of Public Health (IPH), Bengaluru.

Project Summary: This opportunity, funded under the Team Science Grant study "Nutritional, psychosocial and environmental determinants of neurodevelopment and child mental health (COINCIDE)", aims to support one PhD candidate. The grant period extends from April 2022 to September 2026. The selected candidate is responsible for a range of tasks, including PhD related academic activities and COINCIDE project activities. Eunice Lobo has been selected for the PhD program. Her study aims to understand the effect of responsive caregiving on child outcomes in an understudied and vulnerable population in urban poor settings.

eCourse on Tobacco Control

Course Director: Monika Arora

This is an ongoing course and is conducted under the PHFI-self-sustainable model.

Course Summary: The course aims to rapidly enhance the public health capabilities of participants, equipping them with comprehensive knowledge and understanding of tobacco control strategies. It is designed to develop their skills and proficiency in designing and implementing tobacco control programs. The 12-week course focuses on the multifaceted impact of tobacco use on health, economics, society and the environment. It provides insights into tobacco control research and best practices, and equips the candidates with tobacco cessation skills, which they can integrate into their professional practice. Since its launch in 2011, more than 300 students have been trained through this course. These participants come from varied backgrounds including BDS, MDS, MSc (Public Health), allied fields such as Physiotherapy and others.

ePost Graduate Program in Health Promotion

Course Director: Monika Arora

This is an ongoing course and is conducted under the PHFI-self-sustainable model.

Course Summary: Launched in 2011, the ePost Graduate Program in Health Promotion is designed to enhance the participants' capabilities by building their skills and proficiency in designing, implementing and evaluating health promotion interventions and programs. Over the years, approximately 250 students have enrolled in the course. These students come from diverse backgrounds including BDS, MDS, MSc (Public Health), related fields such as Physiotherapy and others.

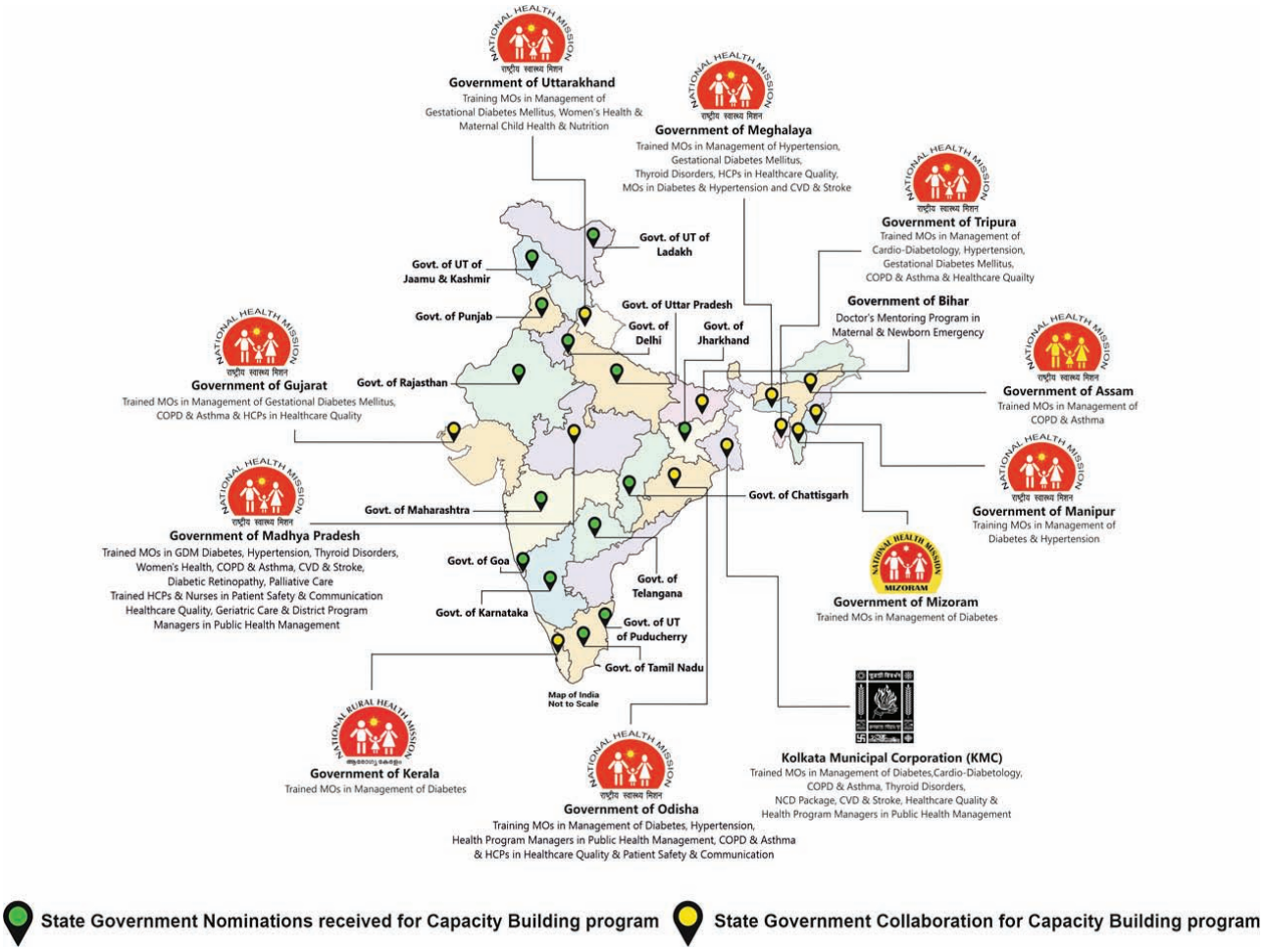
Training Division Programs

The Training Division at PHFI has been spearheading the capacity building of healthcare professionals in clinical and public health domains in India and abroad for over a decade. At present, we are implementing 27 certificate programs and training workshops with the aim of enhancing the skills, knowledge, and core competencies of healthcare professionals. Our training programs are conducted at 616 centers across 134 cities in 28 states and various Union Territories (UTs). To date, we have trained more than 40,000 healthcare professionals in both the public and private sectors, with a program completion rate exceeding 90%. The Training Division is also working with 13 state governments that have adopted these initiatives for training their medical officers.

TRAINING DIVISION: CAPACITY BUILDING INITIATIVES	
For Doctors	**For Healthcare / Other Professionals**
Diabetes Management	Healthcare Quality
Diabetic Retinopathy	Cybersecurity in Healthcare
Gestational Diabetes	Applications of Artificial Intelligence in Healthcare
Cardio – Diabetes	Patient Safety and Communication
Common Mental Disorders	Public health management
Thyroid Disorders	Disaster Management
Women's Health	Healthcare Technology
COPD and Asthma	Public health management
Palliative Care	Maternal and child health nutrition
Geriatric Care	MDP on Health program management
Obesity Prevention and Management	MDP on Monitoring and Evaluation of Healthcare Programs
Diabetic Foot Management	Barefoot Counselling
Anti -Microbial Stewardship	Workplace Safety
Occupational Safety & Health	Covid-19
Medical Ethics and Medico-legal Issues	
Comprehensive Immunization	
Mentoring Program in Maternal, Newborn and Paediatric emergencies for Medical Officers and Specialists at District Hospitals in Bihar	
Capacity building initiative for non-healthcare professionals- Nutrition & Mental well-being of school children in Tribal India: "A Training Program for EMRS Principals & Teachers"	

Government Collaborations

The Training Division collaborates with several state governments on a range of capacity-building initiatives.



MoU/Approval Letters

A number of MoUs were established and approvals received between August 2022 and August 2023 for conducting various courses:

(i) Sanction letter received from NHM, Government of Manipur for the training of medical officers in the Certificate Course in Evidence Based Diabetes Management (CCEBDM).

(ii) MoU established with the National Education Society for Tribal Students (NESTS), Ministry of Tribal Affairs, GoI, to provide training to principals and teachers from Eklavya Model Residential Schools (EMRS) in nutrition and the mental well-being of students in tribal areas. Approvals have been granted for conducting regional-level training sessions in Bhubaneswar Udaipur, and Agartala.

MoU signing with National Education Society for Tribal Students (NESTS), Ministry of Tribal Affairs, GoI for Training of Teachers & Principals of EMRS Schools in Nutrition and Mental Well-being of students in tribal India

(iii) Approvals received from the Directorate of Health Services (DHS), Government of Madhya Pradesh, for conducting training in Patient Safety & Communication for staff nurses in Gwalior, and for the medical officers in Bhopal.

(iv) Approval received from the DHS, Government of Madhya Pradesh, for conducting three batches of training in Medico-legal issues for Medical Officers in charge – Medico legal in Bhopal.

(v) MoU established with USV Private Limited to support the eighth cycle of CCEBDM.

(vi) MoUs established and approvals obtained for the three-year program funded by the BMGF, which includes on-site clinical mentoring of general duty medical officers and specialists in maternal and newborn emergencies at district hospitals in Bihar.

ACTIVITIES CONDUCTED SINCE 2022

1. **Certificate Course in Evidence Based Diabetes Management (CCEBDM):** CCEBDM is a nationwide capacity-building program, conducted in collaboration with Dr. Mohan's Diabetes Education Academy (DMDEA), designed to provide training in evidence-based diabetes management. It aims to enhance the knowledge, skills, and core competencies of Primary Care Physicians (PCPs). In the seventh cycle of CCEBDM, which concluded in December 2022, 2324 doctors at 103 centers across the country were successfully trained. The eighth cycle of the course was officially launched in February 2023, again in collaboration with DMDEA and a panel of 15 national experts. Starting from July, more than 1670 PCPs from across the country have participated in the sessions, guided by 104 faculty members. The course has received educational support from USV. Private Ltd.

2. **Certificate Course in Gestational Diabetes Mellitus (CCGDM) Cycle VIII:** CCGDM is a collaborative certificate program developed and delivered by PHFI, with academic partner DMDEA, Chennai. In the eighth cycle of CCGDM, 140 PCPs from 16 states and 1 UT were successfully trained. This training initiative spanned 66 cities and was conducted across 7 regional centers throughout the country.

3. **Certificate Course in Antimicrobial Stewardship (CCAMS):** PHFI and the Delhi Society for Promotion of Rational Use of Drugs (DSPRUD), an NGO with a 25-year track record in promoting the rational use of drugs, have partnered to deliver this unique five-module certification program.

   The inaugural batch of this program was launched in December 2020, and since then, it has successfully trained 342 PCPs across seven different batches. Notably, the seventh batch received recognition from the 'Delhi Medical Council' and was awarded 5 Continuing Medical Education (CME) credit hours.

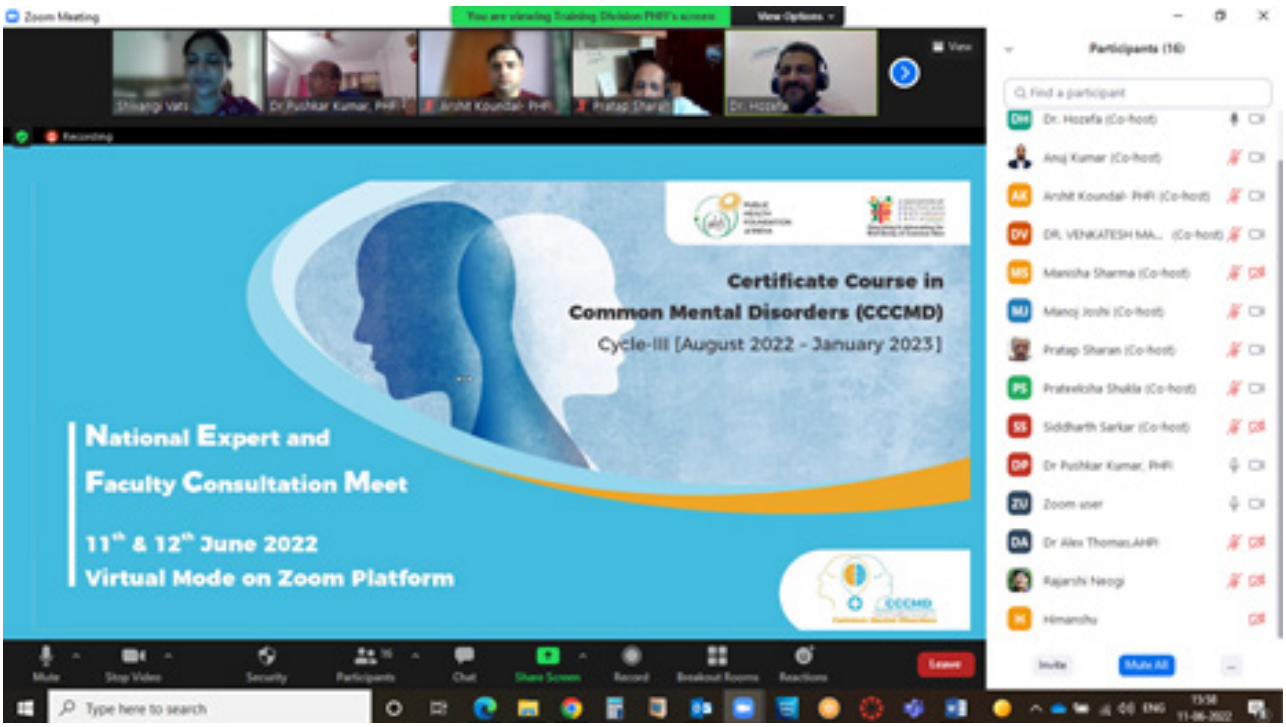
Convocation Ceremony of CCEBDM 2021-22 Batch at Nagpur center

4. **Certificate Course in Common Mental Disorders (CCCMD):** CCCMD has been conceptualized, developed and implemented by PHFI in collaboration with the Association of Healthcare Providers (India) (AHPI) for training the PCPs in the field of common mental disorders. The third cycle of the program concluded in March 2023, with 119 physicians successfully completing the course at five centers located in Bengaluru, Delhi, Kolkata, Mumbai, and Chennai.

5. **Mentoring Program in Maternal, Newborn and Paediatric Emergency for Medical Officers and Specialists at District Hospitals in Bihar:** PHFI has undertaken a 3-year program funded by the BMGF. The program focuses on on-site clinical mentoring for general duty medical officers and specialists in maternal, newborn, and pediatric emergencies at district hospitals in Bihar. This initiative aims to involve medical colleges in the state in conducting mentoring visits to district hospitals. It includes development of curriculum and assessment tool, coordination of mentoring visits by medical college faculty, and providing feedback to both the districts and the state.

6. **Certificate Course in Obesity Prevention and Management (CCOPM):** CCOPM is an online course developed by PHFI and Chellaram Diabetes Institute (CDI), Pune. This course is designed to enhance the knowledge and skills of PCPs, and empower them to play a pivotal role in assisting patients in achieving sustainable weight loss. It's worth noting that this course has received endorsement from the World Obesity Federation. To date, 132 doctors have successfully completed this course.

7. **Certificate Course in Diabetic Foot management (CCDFM):** This is another collaborative initiative with CDI in Pune. The course has gained endorsement from the Leicester Diabetes Centre, UK. The course was launched in December 2020, and as of now, 63 doctors have been trained.



National Expert cum Faculty Consultation Meet of CCCMD conducted from 11-12 June 2022.

8. **E -Learning Certificate Course in Evidence Based Management of Diabetic Retinopathy (CCDR):** This is a four-module online certification program that has been designed, implemented, and delivered by PHFI in collaboration with academic partners, DMDEA and Aravind Eye Care System. Additionally, it receives technical support from Robert Bosch Engineering & Business Solutions Private Limited (RBEI). To date, this program has successfully trained 85 participants across three batches.

9. **Certificate Course in Integrated Geriatric Care (CCIGC):** This program has been developed, implemented, and delivered by PHFI in collaboration with six eminent experts in the field of Geriatric Medicine. The primary aim of this course is to enrich the skills of PCPs in geriatric care and foster connections among specialists. It aligns with the GoI's National Programme for Health Care of the Elderly (NPHCE), which seeks to enhance the capacity of medical professionals to provide healthcare to the elderly population. This program has successfully trained 423 PCPs through eight batches.

10. **Certificate Course in Palliative Care (CCPC):** CCPC is a comprehensive online certification program. It has been developed, implemented, and delivered by PHFI in collaboration with its academic partner, Trivandrum Institute of Palliative Sciences (TIPS), a WHO Collaborating Centre for Training and Policy on Access to Pain Relief, Pallium India. This program has successfully trained 138 doctors across three batches.

11. **Certificate Course in Barefoot Counselling:** This is a concise training program collaboratively developed and implemented in partnership with MIND India. Its primary objective is to enhance the availability of trained personnel who can offer basic psychological first aid at the community level. Remarkably, during the past year, a total of 80 participants from various grassroots-level organizations received training in Guwahati through this program.

12. **Certificate Course in Healthcare Technology (CCHT):** CCHT is a collaborative endeavor involving PHFI, AHPI the Association of Healthcare Providers (India) (AHPI), the Indian Institute of Science (IISc) in Bengaluru, and the Indian Institute of Space Science & Technology (IIST) in Thiruvananthapuram. This program is offered online, providing learners with flexible access to a Learning Management System (LMS) featuring recorded sessions conducted by renowned faculty members. Launched in July 2021, the program has successfully trained 54 participants to date.

13. **Nutrition & Mental well-being of school children in Tribal India: A Training Program for EMRS Principals & Teachers:** In collaboration with NESTS, PHFI has created a distinctive training program for principals and teachers focused on the nutrition and mental well-being of school children in tribal regions of India. Three separate batches of this unique training program were effectively carried out in Bhubaneswar Udaipur, and Agartala in 2023. A total of 170 participants, including principals and teachers from tribal schools in various districts of Odisha, Rajasthan, the six Northeast states, and West Bengal, participated in the four-day training.

Smt Renuka Singh Saruta, Honorable Minister of State, Tribal Affairs-GoI felicitated during the inaugural session of first batch of "A Training Program for EMRS Principals & Teachers" in SCSTRI, Bhubaneswar- January 2023

Participants performing mirror work activity for mental health in Tribal health training

14. Training initiatives for Government of Madhya Pradesh: PHFI has been partnering with the NHM, and DHS, Government of Madhya Pradesh (MP) for the past five years. During this period, PHFI has conducted more than 20 training programs, benefiting over 1200 Medical Officers, staff nurses, and other healthcare professionals nominated by the state. In the previous year, following activities were carried out for the Government of MP:

- Successful completion of two batches of Training Workshop on Patient Safety & Communication for Nursing Personnel held at SIHMC, Gwalior in December 2022, attended by 57 staff nurses.
- Successful completion of three batches of Training Workshop on Patient Safety & Communication for Medical Officers held in Bhopal in April 2023. A total of 81 Medical Officers successfully completed the workshop.
- Launch of the Certificate Course in Medical Ethics and Medico-legal Issues by PHFI. Two batches of the three day training workshop were held in Bhopal in May 2023, with a total of 44 Medical Officers In-charge of Medicolegal matters attending the workshop.

Dr Pragya Tiwari, JD- Training, DHS Government of MP and Dr Ashish Arora (Faculty) on Inaugural session of Medical Ethics & Medico Legal Issues in May 2023

15. Training initiatives for NHM, Odisha:

- ICMR / Regional Medical Research Centre, Bhubaneswar (RMRCBB), undertook a project titled "Catalysing Multimorbidity Research in Low- and Middle-Income Countries through a 'Community of Practice' Approach." PHFI provided support as the academic partner in collaboration with Kalinga Institute of Medical Sciences (KIMS) and the State Institute of Health and Family Welfare (SIHFW) in Bhubaneswar, India. This capacity-building program focused on developing curriculum and training materials on multimorbidity for Community Health Officers working with the state government.

- PHFI, in collaboration with SIHFW, Government of Odisha successfully completed two batches of Certificate Course in Patient Safety & Communication (CCPSC) for Medical Officers, Staff Nurses & Lab Technicians. This three-day training program was conducted in a workshop format at SIHFW, Bhubaneswar, and a total of 53 participants were trained during these sessions.

Dr Amarendranath Mohanty, Director-SIHFW during the inaugural session of Patient Safety training, Bhubaneswar- Batch 6 in July 2023

Group discussion by participants during group activity in Patient Safety training, Bhubaneswar

16. Induction Training for newly appointed Medical Officers in States/UTs

In an endeavor to strengthen the healthcare systems, PHFI in partnership with the HRH-HPIP Division at the NHSRC, has developed an Induction Training model for the newly appointed Medical Officers working in various states and UTs. The pilot batch was organized in January, 2023 at NHSRC, New Delhi. A total of 30 Medical officers nominated by NHM, Government of Uttarakhand successfully completed the training.

Pilot Batch of Medical Officers Induction Training Program conducted at NHSRC in Jan 2023

Technical Assistance and Health Communication

Since its inception, PHFI has played an instrumental role in offering technical support to government and non-government organizations dedicated to enhancing the health landscape in the country. Our expertise has been pivotal in guiding the planning, implementation, and assessment of numerous activities undertaken by these stakeholders, operating at both state and national levels.

In addition to technical assistance, we have diligently worked towards fostering a culture of open communication. This commitment is evident through the establishment of information dashboards, providing accessible and transparent insights. Furthermore, our contributions extend to the publication of specialized journals, thereby amplifying the dissemination of critical knowledge in specific areas of public health.

This section provides a glimpse into our efforts in technical assistance and health communication. It highlights how PHFI continues to be a driving force behind the success of various health initiatives, emphasizing the value we place on collaborations, knowledge exchange, and collective progress in the pursuit of a healthier nation.

Technical assistance in vulnerability assessments in slums of Mumbai, Nashik and Aurangabad

Principal Investigator: Preeti Himanshu Negandhi

This project was funded by the UNICEF and is now completed.

Project Summary: The project's primary objective was to provide technical assistance to the field teams for vulnerability assessment, with the support of UNICEF Maharashtra. The assistance included designing the assessment, piloting the data collection tools, obtaining ethics clearance, as well as training the investigators to collect data in the three municipal corporations of Mumbai, Nashik and Aurangabad in the state of Maharashtra, and monitoring of field activities.

Technical support for vulnerability assessment in urban slums of Mumbai, Nashik and Aurangabad municipal corporations

Principal Investigator: Preeti Himanshu Negandhi

This is an ongoing project and is funded by the UNICEF.

Project summary: This project is a continuation of the previous phase of the project with UNICEF and involves data analysis.

Setting up Technical Support Unit (TSU) in Gujarat, Rajasthan, Uttar Pradesh, Uttarakhand and Jharkhand for providing technical assistance to State AIDS Control Society for the implementation of national HIV/AIDS control program

Principal Investigator: Preeti Kumar

This project was funded by the National AIDS Control Organization (NACO) and is now completed.

Project Summary: In September 2018, PHFI was selected as the management agency for managing the Technical Support Units (TSUs) in five states: Gujarat, Jharkhand, Rajasthan, Uttarakhand, and Uttar Pradesh. TSUs help provide critical strategic, technical and operational support as state health system capacities are varied across the states. The objective of the project was to provide technical and managerial support to State AIDS Control Societies (SACSs) to enable smooth implementation of the program, and achieve the programmatic goal of elimination of HIV by 2030. The team was involved in:

- Strengthening quality of the program and services through capacity building, monitoring, and implementing Supportive Supervision visits to all healthcare providers associated with the program within the respective states.
- Strengthening delivery of Sexually Transmitted Infections (STI) services.
- Strengthening newer initiatives such as community-based screening for HIV, ensuring linkages and reducing dropouts and loss to follow-up.
- Ensuring access to essential commodities such as condoms and needles/syringes, STI Kits, HIV testing kits to High Risk Groups (HRGs).
- Providing support for strategic planning through performance analysis of Targeted Interventions (TIs) to identify gaps.
- Ensuring regular reporting through Monthly Indicator of TI Reporting (MITR) and other means.

Technical support and advice for RCH-SBCC strategy development and implementation

Principal Investigator: Shreelata Rao Seshadri

This project was funded by the World Bank Group and is now completed.

Project Summary: The objective of this consultancy was to provide technical assistance to the World Bank Task Team for the implementation of a social and behavior change communication (SBCC) strategy focused on adolescent reproductive and child health within the Tamil Nadu Health System Reform Program. This involved a comprehensive desk and field-based review to determine what is working and what is not in the current adolescent SBCC strategy, particularly in the context of the RKSK program. As part of this task, field visits were conducted to develop a case study of the functioning of the RKSK in the Vellore district. The consultancy team also conducted a review of global, national and state-level best practices in conceptualizing/implementing SBCC strategies, focusing on 'what works' in multiple contexts. The resulting report provides options for the way forward when updating SBCC strategic directions.

Technical assistance for Anaemia Mukt Mahila initiative

Principal Investigator: K Srinath Reddy

This project was funded by Deloitte Touche Tohmatsu India LLP and is now completed.

Project Summary: The Anaemia Mukt Mahilayen (AMM) initiative, implemented by Deloitte Touche Tohmatsu India LLP (DTTILLP) in Gurugram, Haryana, had a dual focus to enhance knowledge about anemia among women and their families, and to drive behavior change in areas of nutrition, sanitation, and the consumption of Iron Folic Acid (IFA) supplements. The initiative was planned in collaboration with Community health workers (ASHAs) under the NHM. PHFI provided technical assistance in: (i) Preparation of project report in collaboration with DTTILLP team; (ii) Development of a proposal for a larger study, drawing insights from the report and experience gained from the pilot intervention conducted in the three study villages with the objective to assess its effectiveness, scalability, replicability, sustainability and its cost-effectiveness; and (iii) Enabling collaborative dissemination of the report to stakeholders in both state and central government.

The report provided a comprehensive description of the AMM intervention, its processes, monitoring indicators, and data collected. The follow-up of the participants showed that among beneficiaries who attended a minimum of two camps, more than half (55%) showed improvement in their anemia status from baseline to endline. The most substantial improvement in anemia status was observed among women of reproductive age (15-49 years) and children aged 12-14 years, both registering a commendable improvement of 59%.

Technical support to the Ministry of Health and Family Welfare for Pradhan Mantri Ayushman Bharat Health Infrastructure Mission, Pandemic Preparedness Program and Global Funds for AIDS, Tuberculosis and Malaria

Principal Investigator: Preeti Kumar

This is an ongoing project and is funded by Ministry of Health & Family Welfare (MoHFW), Government of India and World Bank

Project Summary: PHFI has been selected by the MoHFW to provide technical services as an Independent Verification Agency (IVA) for “India’s Enhanced Health Service Delivery Program (EHSDP)” and "Transforming India’s Public Health Systems for Pandemic Preparedness Program” (PHSPP) under World Bank support. The project duration is for a period of five years with effect from 17 July 2023. Disbursement Linked Indicators (DLIs) are selected targets to measure progress in outputs and outcome of the program and are predefined and agreed on by the Bank and the GoI. Under this project, PHFI’s role is to carry out independent verification of achievement of each DLI reported by MoHFW for disbursement claim under the program using the verification protocol to corroborate the stated facts in the DLI Claim Letter issued by MoHFW as the starting point for the verification according to a schedule agreed upon with MoHFW and the World Bank and thereby confirming whether the target has been met or not.

Climate, Health and AIr pollution Research in India (CHAIR-India): Addressing gaps in achieving the Sustainable Development Goals

Principal Investigator: Poornima Prabhakaran

This project was funded by the Swedish Research Council and is now completed.

Project Summary: Climate, Health and Air pollution Research in India (CHAIR-India) was a collaborative initiative between the PHFI, Centre for Chronic Disease Control (CCDC), and several international organizations such as Karolinska Institutet, Harvard T.H. Chan School of Public Health, and others. The project aimed to develop a nation-wide exposure model for 2008-2020 for daily ambient PM2.5 and ambient temperature and assess the associations between these exposures and health conditions like cardiometabolic outcomes and lung function outcomes. Creation of a public website with environmental data on a

1x1km grid that can be used by planners, policy makers, and the general public was also envisioned. Engagement with key stakeholders using a dedicated communications strategy to increase the efficiency of the project, disseminate results beyond the scientific community, and facilitate translation of project deliverables into policy action was another important component.

Urban climate-health risk management in India (CHARISMA)

Principal Investigator: Poornima Prabhakaran

This project was funded by the Flemish Government and is now completed at PHFI.

Project Summary: The CHARISMA project aimed to support India in drawing up climate health adaptation plans for the management of health problems caused by climate change with a focus on urban areas. In this project, a climate-health information platform was to be developed through co-creation with local stakeholders at state and city-level including disease surveillance officers, epidemiologists, urban planners and public health officials besides the state meteorological services. Using information on current disease trends from surveillance data, heat spots, socio-demographic data and urban growth scenarios and simulations for future heat waves, the platform will offer the ability to download and visualize data and maps at city-level on urban climate conditions, including heat vulnerability and vector-borne diseases. The project focused on two demonstration Cities (Climate and Health Data Analysis/Projections)-Lucknow and Guwahati and 48 Pilot Cities across India (Climate Data Analysis/Projections). Preliminary version of the climate-health platform has been successfully developed.

Community Eye Health Journal - South Asia Region Edition 2023-2025

Principal Investigator: Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by the Tijssen Foundation.

Project Summary: Mandate of the project is to publish the Community Eye Health Journal (CEHJ) South Asia edition for the year 2023-2025. The South Asia Edition is a PubMed-indexed quarterly publication aimed at ensuring that up-to-date and relevant information reaches eye care workers at all levels in countries with the highest burden of eye disease and blindness. It seeks to refresh skills learnt previously, share good practices and motivate people to reach beyond the eye clinics and into communities – thereby improving the eye care and health outcomes of people throughout the developing world. Unlike typical journals, the articles included in this journal aim to educate practitioners and eye care workers. The journal disseminates valuable research, studies, and findings related to various aspects of eye care, public health in eye care, etc. The peer-reviewed articles are written by experts in the field and combine clinical issues with public health approaches which include research, planning and management, appropriate technology, training, planning and advocacy. The journal is available online at https://www.cehjsouthasia.org/.

Achievements

As we reflect upon the past year, we are delighted to present a compilation of our accomplishments that resonate with our commitment to advancing knowledge, empowering healthcare workforce and promoting innovation to enhance the health and well-being of everyone. This achievements section serves as a testament to the relentless dedication of our researchers, faculty members, and students who have collectively driven us forward on this journey of making a difference. Each award, accolade, and recognition presented to our members is not just a proof of their individual competence, but also a reflection of the collective commitment of our institution to fostering a culture of excellence.

The following section comprises achievements across various categories, organized alphabetically by the last name of the achievers.

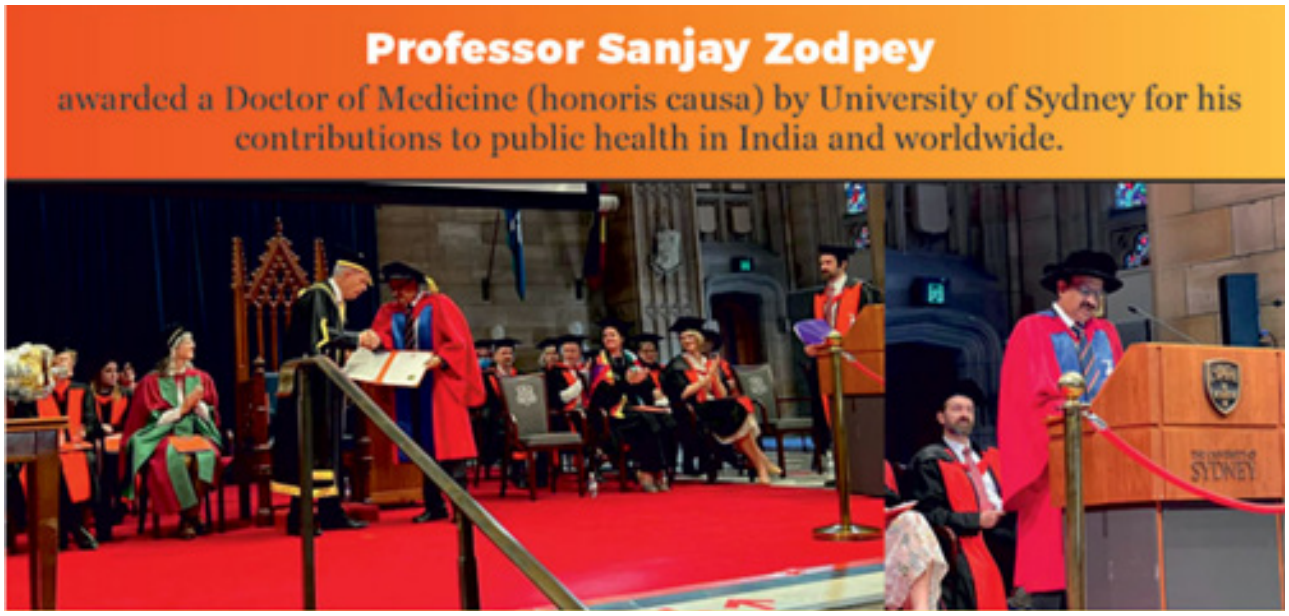
Awards

- Prof Monika Arora awarded Society for Adolescent Health and Medicine (SAHM) 2023 International Chapter Award for Northern Hemisphere
- Dr Arohi Chauhan awarded the Venus International Young Researcher award
- Prof Lalit Dandona awarded the 6th G Parthasarathi Oration by Sree Chitra Tirunal Institute for Medical Sciences and Technology Trivandrum, India
- Prof Lalit Dandona awarded the 15th Prof PN Mari Bhat Memorial Lecture, Indian Institute of Population Sciences, Mumbai, India in March 2023
- Ms Rubina Mulchandani received first prize in the 'Talk your thesis' competition held at the India Science Festival, a flagship science communication event by FAST-India
- Dr Anamika Pandey received the GBD Emerging Researcher Award
- Dr Surabhi Pandey won the “Distinguished Modeler Medal (Junior) 2021 Award”, instituted by the Indian Society for Mathematical Modelling and Computer Simulation (ISMMACS), headquartered at IIT Kanpur in 2022
- Prof Dorairaj Prabhakaran received the 2023 World Hypertension League Claude Lenfant Excellence Award in Population Hypertension Control Through Educational Activities and Guideline Implementation
- Dr Deepak Saxena awarded Fellow in Indian Association of Preventive & Social Medicine (FIAPSM)
- Dr Shailaja Tetali received Award of excellence in Road Safety projects from the Indian Development Foundation
- Dr Sandul Yasobant received the Excellence Award in Medico Social Field at SWASTHYACON2023
- Prof Sanjay Zodpey conferred Prof Abhaya Indrayan Award for Excellence in Epidemiology and Biostatistics 2023 by Epidemiology Foundation of India (EFI)

Honorary Degrees

- Prof Dorairaj Prabhakaran conferred Doctor of Science (Honoris Causa) by the University of Glasgow in July 2022

- Prof Sanjay Zodpey awarded Doctor of Medicine (Honoris Causa) by the University of Sydney in 2023



Fellowships

Dr Arohi Chauhan

- DST Fellowship for women with break in career
- India Health System Collaborative Fellowship
- Health System Transforming Platform Fellowship
- DHR Fellowship for Human Resource Development

Dr Surabhi Pandey

- Visiting Fellowship awarded by Vaccine Impact Modelling Consortium based at Imperial College London for a month-long visit to the London School of Hygiene and Tropical Medicine (LSHTM), London

Dr Nikhil SV

- DBT/Wellcome Trust India Alliance Early Career Clinical and Public Health Research Fellowship

Professional Memberships

Prof Monika Arora

- Founding Governing Board Member – Healthy India Alliance (India NCD Alliance)
- President: NCD Alliance, Geneva (2023-2025)
- President Elect: NCD Alliance, Geneva (2021-2023)
- Center for Global Health (CGH) International Scholar, University of Pennsylvania, Philadelphia, US, 2023 – 2026.
- Past Chairperson: South East Asia Regional NCD Alliance (February 2020 – March 2023)
- Member of the "International Pediatric Association's Program area committee on NCDs and Mental Health" for the term 2023-2025
- Co-chair of Global Research Network of Society for Research on Nicotine and Tobacco, 2020-2023
- Adjunct Professor of Public Health at Isfahan University of Medical Sciences, Isfahan, Iran since January 15, 2021
- Adjunct Faculty - Department of Community Medicine, Kasturba Medical College (KMC), MAHE, Manipal, India, since May 2019.

Prof Sandra Albert

- Commissioner on the Lancet Citizens Commission
- Member, Early Childhood Development Committee of the Government of Meghalaya
- Member, Committee for state mental health policy, Government of Meghalaya

Dr Priya Balasubramanium

- Member, Editorial Board – Oxford Open Journal on Digital Health
- Member Editorial Board- Oxford Open Infrastructure and Health
- Chair, Coordinating Committee on Private Sector in Health TWG, Health System Global
- Member, WHO committee to support informed decision-making on engaging with the private sector for NCDs
- Member, Research Committee, IDAIR WHO Digital Health Competency Framework
- Member, Health Advisory UN Global Compact Forum

Dr Sirshendu Chaudhuri

- Member, Editorial Board- PLOS Global Public Health

Prof Lalit Dandona

- Member, International Advisory Board (2021 onward)- The Lancet
- Member, Editorial Board (2007 onward)- BMC Medicine
- Member, Editorial Board (2010 onward)- Population Health Metrics
- Editorial Advisor (2020 onward)- BMC Public Health
- Editorial Advisor (2020 onward)- BMC Ophthalmology
- Member, Editorial Board (2019 onward)- Indian Journal of Gastroenterology
- Member, Global Burden of Disease Scientific Council
- Member, WHO Verbal Autopsy Working Group, Geneva, Switzerland
- Member, WHO Reference Group on Health Statistics
- Member, GBD Emerging Researcher Award Nominations Committee, Institute for Health Metrics and Evaluation, University of Washington
- Co-chair, Technical Advisory Group for Mortality in India Established Through Verbal Autopsy (MINErVA), All India Institute of Medical Sciences

Prof Rakhi Dandona

- Member, Editorial Board- Lancet Public Health
- Member, Editorial Board- Lancet Psychiatry
- Member, Editorial Board- Injury Prevention
- Vice-Chair, International Stillbirth Alliance
- Board Member, International Stillbirth Alliance
- Member, Project Steering Committee for estimation and prevention of stillbirth. ICMR
- Steering Committee member, Innovation Equity Forum: Mapping global opportunities in women's health R&D, co-hosted by the US National Institutes of Health and the BMGF

- Member, the MQ/The Lancet Psychiatry Standing Commission on the COVID-19 Pandemic and Mental Health
- Member, Child Health Accountability Tracking Technical Advisory Group to WHO and UNICEF
- Member, Funding Panel for the MQ Mental Health Research Postdoctoral Scholarship
- Member, Research Advisory Group, Community Empowerment Lab
- Steering Committee member, International COVID-19 suicide prevention research collaboration
- Member, Oversight Group for the ICMR Projection, Policy and Program Unit. ICMR, GoI
- Member, Committee of Experts for improvements in the vital registration system and medically certified cause of death. GoI
- Member, Cocoon Global Steering Committee. Mater Research Institute, University of Queensland
- Member, Technical Advisory Group, National Data Quality Forum, an initiative by ICMR-NIMS and Population Council
- Chair, Global Burden of Disease India Injury Expert Group

Prof Preeti Kumar

- Member, NITI Aayog Expert Committee for review and approval of emerging technology pilots in Healthcare
- Member, Joint Secretariat Council for the Medical Excellence India – Medical Excellence Japan Initiative

Dr Aashna Mehta

- Member, Quadripartite (Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), WHO and the World Organisation for Animal Health (WOAH)) Technical Group on the Economics of Antimicrobial Resistance (QTG-EA)

Dr Vijay Kumar Mishra

- Chair, Royal Statistical Society (UK) Indian Local Group
- Advisor Commentator, 16th Next-Generation Global Workshop on “International Conference on Migration and Quality of Life: Harnessing the Potential for Social Prosperity”, Kyoto, Japan.

Dr Raj Panda

- Expert member, Tobacco group at the World Heart Federation

Prof Dorairaj Prabhakaran

- Member, Scientific Advisory Board of the ICMR
- Chairman, Scientific Advisory Committee of ICMR-NIOH, Ahmedabad

- Member, School of Health and Wellbeing's International Scientific Advisory Board, University of Glasgow
- International Editor, Hypertension
- Elected to the Board of the World Heart Federation
- Chair, Science Committee of the World Heart Federation (till December 2022)
- Member, Executive Council and Chair of the South and West Asia Regional Advisory Group, International Society of Hypertension (ISH)

Dr Rajiv Sarkar

- Associate Editor, Epidemiology and Infection
- Editorial Board Member, Journal of Public Health Policy
- Academic Editor, PLOS Global Public Health
- Member, Proposal Screening Committee for Investigator Initiated Research Proposals for Small Extramural Grants of ICMR
- Member, ICMR Project Steering Committee for Secondary Data Analysis for Prevention of Stillbirths

Dr Deepak Saxena

- ICMR Chairperson for Development Research-Diagnostics (Non-Communicable Diseases / Reproductive Child Health)
- ICMR Chair for Sickle cell anemia

Dr Suresh Shapeti

- Member, State level coordination committee for Iodine Deficiency Diseases
- Member, Anaemia Mukta Poustika Karnataka state level committee

Dr Jyoti Sharma

- Member, Core team developing WBTi (World breastfeeding Trends Initiative) India 6th Assessment report.
- Member, State Nutrition Technical Committee of Government of Madhya Pradesh

Dr Shailaja Tetali

- Conference Committee Member, Australasian Injury Prevention Network

Dr Sandul Yasobant

- Editor-in-Chief- Dialogues in Health
- Editor- Science Talks
- Associate Editor-in-Chief- International Journal of General Medicine
- Associate Editor- CABI One Health

- Steering Committee Member (Asia, Pacific & Oceania), Alliance against Health risks in Wildlife Trade
- Global Assessor, Royal Society of Tropical Medicine and Hygiene
- Mentor, The ECHO Network, SAGE (One Health)
- Collaborations and partnerships Lead, Translating Evidence to Action, Health Systems Global
- Lancet Fellow, Lancet Citizen's Commission
- Technical Facilitator, Global Learning Collaborative for Health Systems Resilience (GLC4HSR)

Appreciation


STATE INSTITUTE OF HEALTH AND FAMILY WELFARE
PUNJAB

Certificate of Appreciation

This Certificate is presented to

Dr. Gursimrat Kaur, Project officer

on Doctor's Day (1st July,2022) in recognition for his outstanding

Performance & Dedication towards DNB Programme

PRINCIPAL
SIHFW, PUNJAB

Dr Gursimrat Kaur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- Deciphering the COVID-19 cytokine storm: Systematic review and meta-analysis

Ms Rubina Mulchandani

Ms Rubina Mulchandani featured in an episode of a podcast for emerging research scholars called 'Halftime Scholars' in 2022.

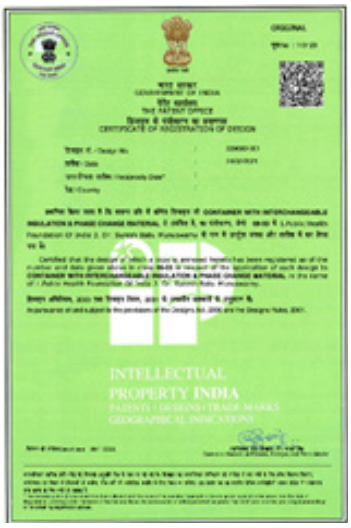
(https://open.spotify.com/episode/5OfH8deETLR1SoiVYR356A?si=cSdZx3tvSIClioTpuUmhw)

Patents

Dr Suresh Munuswamy

7 design patents received

- Handheld device with probe attachment
- Handheld probe
- Container lid with phase change material
- Container with interchangeable insulation and phase change material
- Insulated container
- Vial holder
- Phase change material case lid



Dr Deepak Saxena and Dr Sandul Yasobant

- An innovative "One Health Risk & Disease (OHRAD) Prioritisation" assessment tool received a copyright registration number.
- “Water Sanitation & Hygiene Quick Check (WASH Q-Check)”, a rapid assessment tool, received a copyright registration number.

Team Achievements

PHFI’s flagship training program in diabetes, Certificate Course in Evidence based Diabetes Management (CCEBDM), won the prestigious Silver Award under the category “Medical Skilling Initiative of the year” at the 8th India Health and Wellness (IHW) Summit and Awards. The summit was hosted by IHW Council on 19 January 2023 in Mumbai.

IIPH-G

IIPH-G rated as a 3-star institution in the category of ‘University’ by the Indian Centre for Academic Rankings and Excellence (ICARE) per the Gujarat State Institutional Ratings Framework (GSIRF).

As Per IIRF Ranking-2023, IIPH-G is the **Top Public Health University;** 1st in the State rank and 2nd in the West Zone.

Publications

In steadfast continuity, PHFI has been unwavering in its commitment to catalyze positive changes in public health throughout the past year. Our publications stand as a testament to the remarkable journey we've undertaken. Looking back, we take immense pride in sharing that since 2007, we have authored and published over 4,500 articles in more than 900 international and 180 national journals, boasting an impressive average impact factor of 17.37. Among these, a remarkable total of 911 articles found their place in journals with an impact factor exceeding 10.

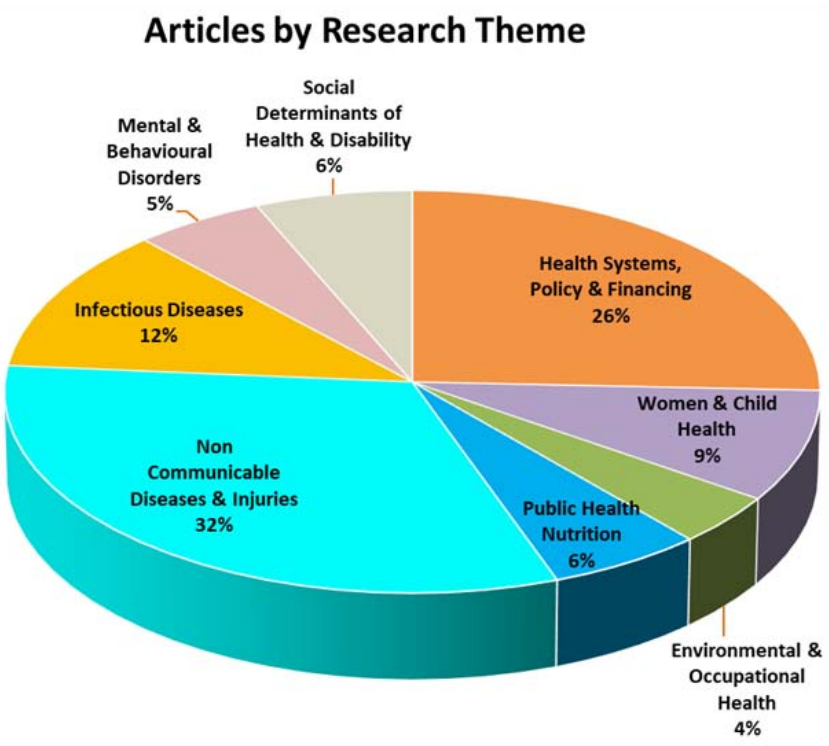
Year wise distribution of articles published in International and National Journals

No. of publications				Avg. Impact Factor	Range of Impact Factor				
Year	Total	International	National		0-1	1-3	3-5	5-10	10>
2007	24	18	6	49.91	3	6	2	1	12
2008	42	28	14	13.93	10	16	6	4	6
2009	84	51	33	15.01	23	22	13	14	12
2010	129	88	41	13.31	23	38	29	25	14
2011	272	207	65	17.90	58	58	63	41	52
2012	310	236	74	16.90	80	81	65	33	51
2013	365	306	59	17.71	64	70	96	57	78
2014	395	334	61	14.39	73	72	117	66	69
2015	331	271	60	13.69	61	82	93	39	56
2016	386	330	56	21.87	51	72	119	56	88
2017	310	269	41	31.47	33	58	78	52	90
2018	344	296	48	21.47	49	64	93	57	81
2019	306	258	48	16.21	39	59	84	56	69
2020	347	257	90	14.38	60	80	84	47	76
2021	334	279	55	15.65	47	76	89	45	77
2022	339	293	46	10.94	53	88	104	41	54
2023*	186	167	19	12.06	25	40	54	40	26
Total	**4504**	**3688**	**816**	**17.37**	**748**	**982**	**1189**	**674**	**911**

* Numbers till August 2023

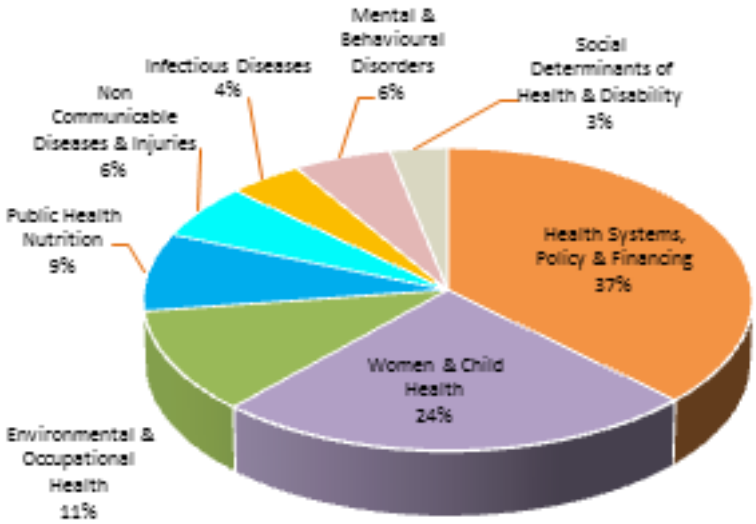
Thematic Distribution of Published Articles

2007 - August 2023

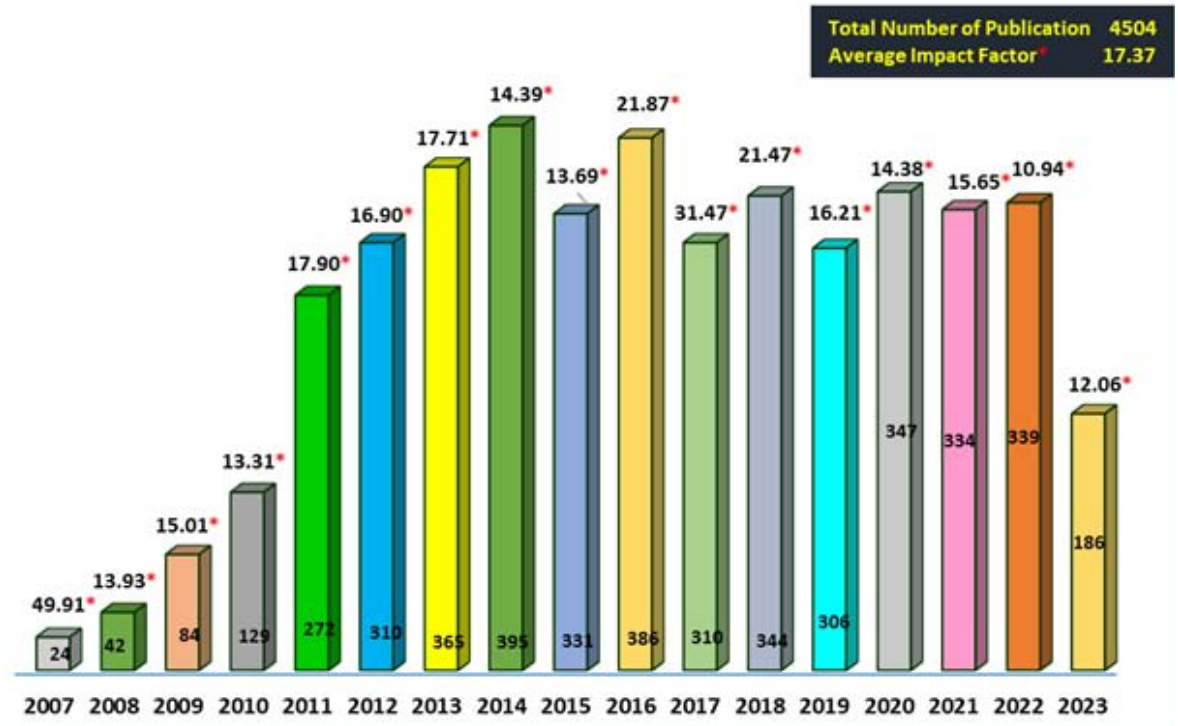


From 2022 to 2023

Articles by Research Theme



Articles in Journals



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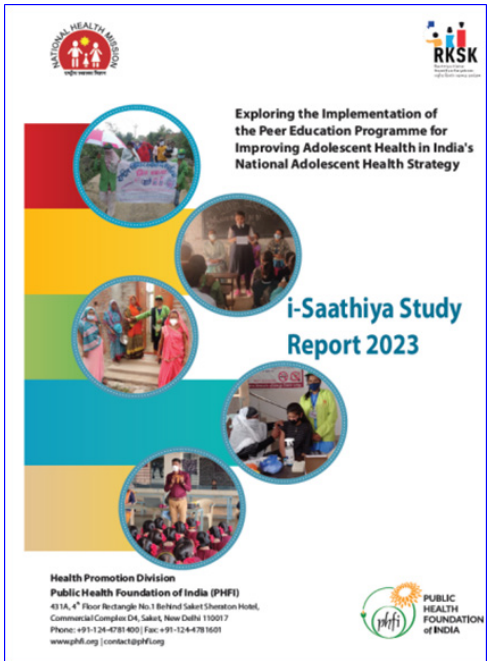

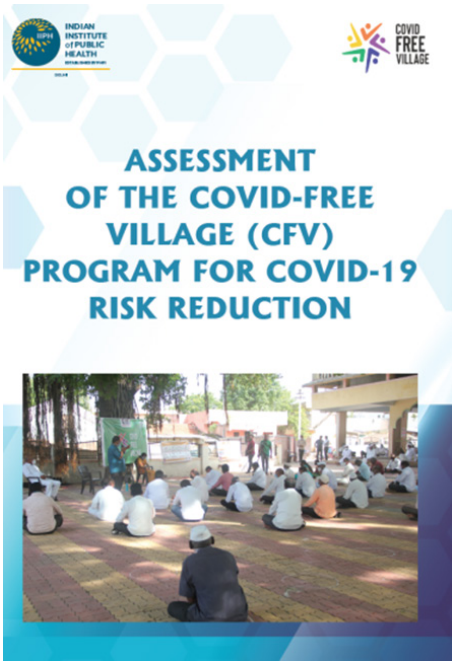

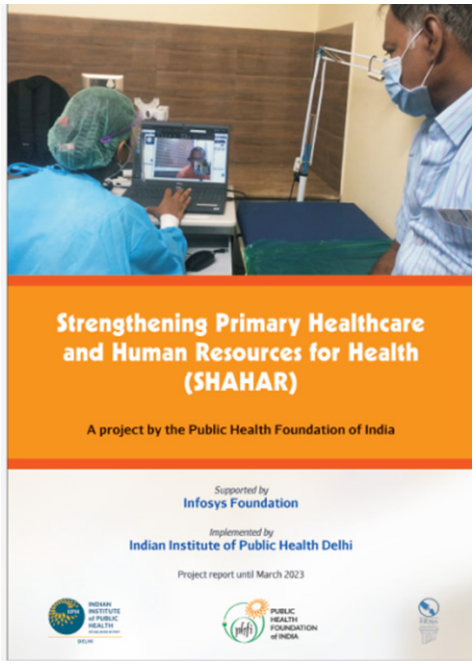

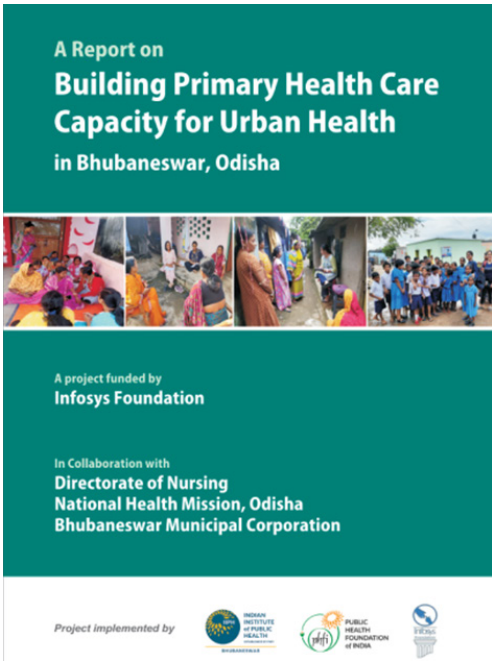

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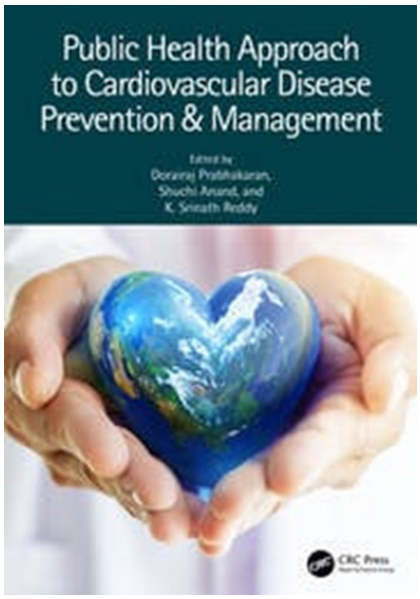

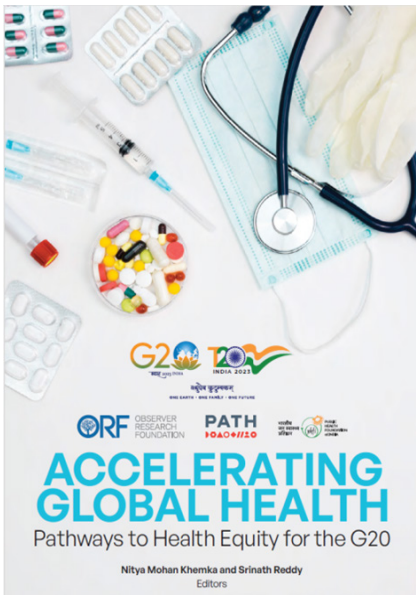

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2023

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Balasubramaniam Priya, editor Urban Transformations in the Global South – A window of opportunity for Urban Health? Global Health Hub; 2023; Berlin, Germany: 12th-13th June.

Balasubramaniam Priya, Bhattacharya Sanghita, Gautham M., editors. Antibiotic Stewardship in Community Providers in Asia and Africa: Designing and Evaluating Complex One Health Interventions, Designing and Evaluating Complex One Health Interventions An International Workshop; 2023; London, United Kingdom: 21st - 24th March.

Balasubramaniam Priya, Bloom G., editors. Digital Health - Role of AI and Analytics, Digital Transformation for Universal Health Coverage. SANGAM 2023 Conference (Summit of Academia Networking with Government, Allied Health & Medical Professionals; 2023; Mumbai, India: 02nd-3th June.

Balasubramaniam Priya, Rai A., editors. Digital Health and Equity, The role of digital design to improve health equity in last mile populations by increasing healthcare access, addressing unmet needs and personalizing care for patients. IKURE Ground Zero, Unconference; 2023; Sunderbans, West Bengal: 23rd - 25th February 2023.

Bloom G., **Balasubramaniam Priya,** editors. Private Sector and Commercial Determinants of Health: Rules of Engagement. World Health Summit Regional Meeting; 2023; Washington DC, United States of America: 13th April.

Dandona Lalit, editor What is the Ideal Framework for Knowledge Generation and its Utilization? 6th G Parthasarathi Oration, Sree Chitra Tirunal Institute for Medical Sciences and Technology; 2023; Thiruvananthapuram, India: 06th May.

Dandona Lalit, editor Estimation of Subnational Demographic and Disease Burden Trends in India: Opportunities, Challenges, and Capacity Building. 15th Prof PN Mari Bhat Memorial Lecture, Indian Institute of Population Sciences; 2023; Mumbai, India: 02nd March.

Dandona Lalit, editor Population health measurement and key lessons from GBD India. Keynote address. 8th International Course on Public Health Approaches to NCDs jointly organised by PGIMER Chandigarh, AIIMS New Delhi, and World NCD Federation; 2023; Chandigarh, India: 05th March.

Dandona Rakhi, editor Extrapolation of administrative data on deaths by suicide among Indian women at the population level: implications for action. IASP/IASR Research Webinar; 2023; Online: 15th June.

Dandona Rakhi, editor Utilisation of verbal autopsy data for the TB care program management. National Consultative Workshop on Implementing Differentiated TB Care in India; 2023; Chennai, Tamil Nadu: 24th May.

Dandona Rakhi, editor Gender-based violence – mitigation and way forward. Workshop on multi-dimensional approach to development of girl child. Organized by the Women and Child Development Corporation, Asian Development Research Institute, and CARE India; 2023; Patna, Bihar: 23rd January.

Dandona Rakhi, Kumar G. Anil, editors. Invisibility of Neonatal Deaths in the Civil Registration System: Evidence from India. International Maternal Newborn Health Conference; 2023; Cape Town, South Africa: 8th - 11th May.

Dandona Rakhi, Kumar G. Anil, editors. Improving Documentation of Stillbirths in Community Surveys to Facilitate Stillbirth Prevention. International Maternal Newborn Health Conference; 2023; Cape Town, South Africa: 8th - 11th May.

Dandona Rakhi, Kumar G. Anil, editors. Toolkits to Reduce Stigma and Strengthen Bereavement Care Post-stillbirth in Developing Countries. International Maternal Newborn Health Conference; 2023; Cape Town, South Africa: 8th - 11th May.

Mishra Rajna, Kumar Preeti , Selvaraj Sakthivel, Hussain Suhaib, Bharali Ipchita, Mao Wenhui, editors. Sustaining Effective Coverage in the Context of Transition from External Donor Assistance for Family Planning Program. Diversity in Health Economics. International Health Economics Association's 15th World Congress 2023; Cap Town, South Africa: 08th - 12th July.

Shukla Rajan , Chary Janani , Marina Devi N. G., Singh Samiksha , Nirupama A. Y., Kumar Yashaswini, Kumar, Kona Chandralekha , Nagapurkar Srinath , Gafurjiwala Seema , Adil Iftekhar , Kongari Kiran , Rajkumar B. , editors. Implementation of Integrated Capacity Building for Community-based ECD Interventions in Telangana. 1st National Neurodevelopmental Differences Conference 2023, Understanding Early Diagnosis & Intervention in Children with Developmental Differences through ICF Framework; 2023; Bengaluru, India: 14th May.

Walia Gagandeep Kaur, editor Health Impacts of Air Pollution: Estimates from India. International Conference and Pre-Congress of "UIAF World Anthropology Congress" titled, Rescripting the Anthroposcene: Health, Happiness and Hope; 2023; Delhi, India: 13-15th July 2023.

Walia Gagandeep Kaur, editor Using genes to examine causal relationships among cardiometabolic traits. Indian Science Congress; 2023; Nagpur, India: 3rd - 07th January.

2022

Balasubramaniam Priya, editor New Post-Covid Opportunities and challenges for private sector contribution for Universal Health Coverage. 7th Global Symposium on Health Systems Research (HSR2022); 2022; Bogota,Columbia: 31st - 04th November.

Balasubramaniam Priya, editor The Emerging Troika: A New Agenda for Global Health Governance, Innovation and Access in Post-Pandemic Healthcare. Kigali Global Dialogues; 2022; Online: 10th - 12th August.

Balasubramaniam Priya, Bhattacharya Sanghita, Rai Anagha, Gautam M., editors. Stakeholder engagement and co-design of an antibiotic stewardship intervention for pluralistic community settings in India. Global Challenges Research Fund workshop paper; 2022; Kampala, Uganda: 22nd March.

Dandona Rakhi, editor Barriers and facilitators for strengthening MCCD: lessons from Bihar and UP. Mortality in India established through verbal autopsy (MINerVA); 2022; Online: 14th March.

Dandona Rakhi, editor Inter-Sectoral Approaches to Suicide Prevention. Joint 9th National Bioethics Conference and 5th Global Mental Health Summit; 2022; Pune, India: 11th December.

Dandona Rakhi, editor Using the Global Burden of Disease Study to address injury decision-making to save lives: hits and misses experience from India in use of big data. Safety 2022 – 14th World conference on injury prevention and safety promotion; 2022; Adelaide, Australia: 27th - 30th November.

Dandona Rakhi, editor Coverage of birth & death registration: implications for interpretation of the CRVS data and to improve the coverage. Webinar organized by the National Data Quality Forum; 2022; Online: 1st November.

Dandona Rakhi, editor Has traditional academic medicine has its day? International Health Lecture 2022 by Prof Victor J Dzau co-hosted by the Academy of Medical Sciences and the Lancet; 2022; London, United Kingdom: 30th September.

Dandona Rakhi, editor Availability, adequacy and quality of data on stillbirths: priorities for action. International Stillbirth Alliance Annual Conference; 2022; Salt Lake City, United States of America: 15th - 17th September.

Dandona Rakhi, editor How mortality shapes health care: innovations in data science and machine learning. Research Innovation and Incubation Showcase (RIISE); 2022; Delhi, India: 08th April.

Mishra Rajna, Kumar Preeti, Selvaraj Sakthivel, editors. Augmenting Community Response to COVID-19 Challenges: Lessons from Andhra Pradesh, India. 4th International Conference, Between the Worlds: Narratives and Notions of Pandemics Bulgarian Academy of Sciences; 2022; Sofia, Bulgaria: 07th-08th June.

Mishra Vijay Kumar, editor Financial burden by chronic disease and its associated factors among aged (60+) living in India: An Evidence from 75th - National Sample Survey (NSS). The Alzheimer's Association International Conference (AICC) - 2022; 2022 16th - 29th July; Amsterdam, Netherlands and Online.

Prakash Rajalakshmi Ram, editor Publication Ethics. RUWSEC Public Health Ethics WriteShop; 2022 07th - 09th April; Chennai, India.

Sarkar Rajiv, Lyngdoh P., Kessler A., Mawkhlieng B., Sullivan S. A., Wilson M. L., Carlton J. M., **Albert Sandra,** editors. Epidemiology of malaria in Meghalaya: implications for transmission interruption in endemic settings. ASTMH 71st Annual Meeting; 2022 30th October – 03rd November; Seattle, USA.

Walia Gagandeep Kaur, editor Epigenetics and Cardiometabolic Disorders. 48th Annual Conference of Association of Clinical Biochemists in India; 2022; New Delhi, India: 23rd - 26th November.

Walia Gagandeep Kaur, editor How genetic variants can help in providing causal evidence: Mendelian Randomization. Indian Anthropological Congress 2022 held by Department of Anthropology; 2022; Hyderabad, India: 21st - 23rd February.

Orations and Key Notes Address

Orations

Prabhakaran, Dorairaj

- Pharmacia Cardiology Oration at the Indian College of Cardiology Conference, November 2022
- Dr. M. Viswanathan oration at Trichi for the Tamil Nadu APICON 2022.
- C. Ramachandran Memorial Oration at the Nutrition Foundation of India on their Foundation Day.

Grand Rounds

- Prabhakaran, Dorairaj: The dynamics, determinants and dimensions of CVD worldwide. Grand round at Emory University.

Keynote Addresses

Dandona, Lalit

- Population health measurement and key lessons from GBD India. Keynote address at the 8th International Course on Public Health Approaches to NCDs jointly organised by PGIMER Chandigarh, AIIMS New Delhi, and World NCD Federation, Chandigarh, India.

Dandona, Rakhi

- Using the Global Burden of Disease Study to address injury decision-making to save lives: hits and misses experience from India in use of big data. Safety 2022 – 14th World conference on injury prevention and safety promotion, Adelaide, Australia.
- Availability, adequacy and quality of data on stillbirths: priorities for action. International Stillbirth Alliance Annual Conference, Salt Lake City, Utah, USA.

Prabhakaran, Dorairaj

- Epidemiological Patient Considerations in India. Keynote address at American College of Cardiology.
- Use of Technology to Improve Antihypertensive Adherence: Useful Tool or Just a Distraction? (PRO). Debate at American College of Cardiology.
- Keynote address in the session “The WHF Digital Roadmap: signposting future directions in digital health”, European Society of Cardiology.

FINANCIAL REPORT

Annual Audited Accounts – 2022-2023

Public Health Foundation of India
Balance Sheet as at 31st March, 2023

(Amount in ₹)

	Notes	As at March 31, 2023	As at March 31, 2022
Sources of funds			
Corpus fund	1	80,87,55,509	80,87,55,509
Designated fund	2	25,74,79,933	21,64,05,670
Project funds held in trust	3	65,41,85,782	64,67,70,593
Capital assets fund	4	64,67,30,046	65,17,82,037
Loans	5	15,65,00,000	16,40,00,000
		2,52,36,51,270	**2,48,77,13,809**
Application of funds			
Fixed assets			
Gross block	6	1,02,71,65,683	1,06,58,17,188
Less : Accumulated depreciation and amortisation		(39,98,95,681)	(41,43,22,904)
Net block		**62,72,70,002**	**65,14,94,284**
Capital work in progress		1,94,60,044	2,87,753
		64,67,30,046	**65,17,82,037**
Current assets			
Cash and bank balances	7	1,78,48,13,395	1,74,09,27,988
Loans and advances	8	25,24,33,430	20,40,60,761
Other current assets	9	13,94,93,266	12,74,66,453
		2,17,67,40,091	**2,07,24,55,202**
Less: Current liabilities and provisions			
Current liabilities	10	21,76,87,420	13,26,06,549
Provisions	11	8,21,31,446	10,39,16,881
		29,98,18,866	**23,65,23,430**
Net current assets		1,87,69,21,224	1,83,59,31,772
		2,52,36,51,270	**2,48,77,13,809**
Summary of significant accounting policies	21		

The accompanying notes form an integral part of the financial statements.

As per our report of even date attached.

For **Thakur, Vaidyanath Aiyar & Co.**
Chartered Accountants
FRN: 000038N

K.N.Gupta
Partner
Membership No.: 009169

Place: New Delhi
Date : 22 SEP 2023

For and on behalf of
Public Health Foundation of India

Prof. Sanjay Zodpey
President

Place: New Delhi
Date :

Prabir Mukherjee
Director Finance

Place: New Delhi
Date :

PUBLIC HEALTH FOUNDATION OF INDIA
RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2023

PARTICULARS		31st March, 2023 (Rupees)	31st March, 2022 (Rupees)
A. Opening Balance			
Cash in Hand		1,430	23,989
Bank Balance in Saving Account		17,75,80,154	7,04,03,720
Bank Balance in Current Account		79,42,944	69,26,271
Total (A)		**18,55,24,528**	**7,73,53,980**
B. Receipts			
Grants/ donations received		72,47,02,312	86,58,23,729
Fixed Deposit matured during the year		10,21,10,317	75,45,653
Fee from activities		5,78,52,097	4,28,02,126
Other receipts		84,11,952	1,11,62,367
Interest received on fixed deposits		47,53,678	1,41,81,922
Interest received on designated fund, FCRA Bank accounts		54,60,559	46,60,158
Interest received on sub grant to NGOs		-	-
Corpus Fund		-	-
Total (B)		**90,32,90,915**	**94,61,75,955**
C. Payments			
Grants Utilised for :			
Salaries & Allowance		33,09,49,999	41,15,54,188
Statutory Dues		11,71,76,524	12,61,04,435
Legal and professional charges		8,12,87,099	6,59,89,887
Travel and conveyance		5,04,50,496	2,88,53,835
Rent		4,31,91,144	3,73,37,282
Repairs and maintenance		2,28,04,266	2,55,90,968
Fixed Assets		1,28,08,939	2,12,26,544
Captial Expenditure		1,14,27,328	99,08,080
Subgrant		99,71,513	77,28,700
Project Survey Cost		92,55,271	-
Conferences and meeting expenses		89,72,405	46,56,634
Insurance		84,84,072	5,36,835
Electricity and water charges		79,13,963	1,53,55,551
Loan Repayment		75,00,000	-
Miscellaneous expenses		70,88,630	3,31,81,787
Printing & Stationery		61,66,122	90,10,236
Books & Periodicals		54,16,967	-
Communication expenses		49,41,918	30,65,039
Consumables		28,02,788	-
Security & Advances		22,27,375	-
Affiliation Charges		17,20,000	-
Rates and taxes		15,85,303	2,35,37,015
Scholarship/Fellowship		15,68,643	67,09,085
Software Renewal Fee		13,88,699	-
Bank Charges		1,95,594	-
Forex Gain/Loss		133	96,720
Investment		-	75,62,586
Total (C)		**75,72,95,191**	**83,80,05,407**
D. Closing Balance			
Cash in Hand		1,430	1,430
Bank Balance in Saving Account		32,72,37,922	17,75,80,154
Bank Balance in Current Account		42,80,900	79,42,944
Total (D=A+B-C)		**33,15,20,252**	**18,55,24,528**
Significant Accounting Policies and Notes to Accounts	19		
* Regrouping of the expenses has been done whereever necessary			

This is the Receipts & Payments account referred to in my report of even date

For **Thakur, Vaidyanath Aiyar & Co.**
Chartered Accountants
FRN: 000038N

K.N.Gupta
Partner
Membership No.: 009169
Date: 22 SEP 2023

The schedules referred to above form an integral part of this Receipts and Payments Account

For and on behalf of
Public Health Foundation of India

Prof. Sanjay Zodpey
President

Prabir Mukherjee
Director Finance

Date:

Public Health Foundation of India
Income and Expenditure Account for the year ended 31st March, 2023

(Amount in ₹)

	Notes	For the year ended March 31, 2023	For the year ended March 31, 2022
Income			
Program Income	12	63,26,68,472	56,36,59,780
Donations		1,55,50,000	9,95,65,000
Interest income	13	1,78,66,007	2,24,08,635
Fee from activities		4,76,94,863	5,22,51,824
Other income	14	23,57,138	22,19,710
Total Income		**71,61,36,480**	**74,01,04,949**
Expenditure			
Program Expenditure (Refer Note 18 & 23)	15	63,26,68,471	56,36,59,779
Personnel expenses	16	6,30,63,300	11,43,83,726
Other expenses	17	3,82,43,638	8,63,60,128
Total Expenses		**73,39,75,409**	**76,44,03,632**
Surplus/(Deficit)		**(1,78,38,929)**	**(2,42,98,683)**
Provisions/Liabilities of Earlier Years Writtten Back	14	2,29,37,026	5,42,67,984
Amount Receivables of Earlier Years Written-off	17	(1,07,24,896)	(2,38,25,997)
Surplus/(Deficit) transferred to Designated fund		**(56,26,799)**	**61,43,303**
Summary of significant accounting policies	21		

The accompanying notes form an integral part of the financial statements.

As per our report of even date attached.

For **Thakur, Vaidyanath Aiyar & Co.**
Chartered Accountants
FRN: 000038N

K.N.Gupta
Partner
Membership No.: 009169

Place: New Delhi
Date : 22 SEP 2023

For and on behalf of
Public Health Foundation of India

Prof. Sanjay Zodpey
President

Place: New Delhi
Date :

Prabir Mukherjee
Director Finance

Place: New Delhi
Date :

Public Health Foundation of India
Notes to the financial statements for the year ended March 31, 2023

(Amount in ₹)

	As at March 31, 2023	As at March 31, 2022
Note 1 : Corpus fund		
Balance at the beginning of the year	80,87,55,509	80,87,55,509
Add : Fund received during the year	-	-
Balance at the end of the year	**80,87,55,509**	**80,87,55,509**
Note 2 : Designated fund *		
Balance at the beginning of the year	21,64,05,670	25,58,58,839
Add : Funds received during the year	8,15,02,801	2,28,82,519
Less : Deficit transferred from income and expenditure account	(56,26,799)	61,43,303
Less : Transferred to capital asset fund (Refer Note-6)	(2,02,41,515)	(1,27,80,758)
Add : Interest income Allocated (Refer Note 13)	2,69,365	2,69,365
Less: Utilisation	(1,49,86,656)	(2,09,68,247)
Add: Adjustments (Bad debts written off)	1,57,067	(3,49,99,351)
Balance at the end of the year	**25,74,79,933**	**21,64,05,670**
Includes General Fund		
Note 3 : Project funds held in trust		
Balance at the beginning of the year	64,67,70,593	51,72,44,739
Add : Grants received / receivable	62,53,56,417	71,67,23,415
Less : Opening Grant receivable	(5,09,992)	(3,09,98,373)
Add : Closing Grants receivable	1,32,00,343	5,09,992
Add : Interest income Allocated (Refer Note 13)	44,87,277	26,58,130
Add: Grant receivable written off	6,14,450	6,95,793
Less: Excess liabilities written back	(81,85,430)	(1,65,09,867)
Less : Program Expenditure - Revenue	(61,18,13,928)	(52,88,59,613)
Less : Program Expenditure - Capital - Transferred to capital asset fund (Refer Note-6)	(85,14,646)	(1,38,31,920)
Less : Grants refunded	(72,19,302)	(8,61,703)
Balance at the end of the year	**65,41,85,782**	**64,67,70,593**
Note 4 : Capital assets fund		
Balance at the beginning of the year	65,17,82,037	66,03,23,940
Add : Transferred from designated funds	2,02,41,515	1,27,80,758
Add : Transferred from project funds	85,14,646	1,38,31,920
Less : Deletion adjustment for the year	(4,76,756)	-
Less : Depreciation and amortisation for the year	(3,33,31,396)	(3,51,54,581)
Balance at the end of the year	**64,67,30,046**	**65,17,82,037**
Note 5 : Loans		
Unsecured Loan (Interest Free)*- Refer note No.27	15,65,00,000	16,40,00,000
	15,65,00,000	**16,40,00,000**

* The society has taken an interest free unsecured loan which are repayable on demand.

T.V.A. & CO. Chartered Accountants New Delhi

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Public Health Foundation of India New Delhi

Public Health Foundation of India
Notes to the financial statements for the year ended March 31, 2023

Note 6 : Fixed assets

(Amount in `)

Description	Gross block				Accumulated depreciation and amortisation				Net block	
	As at April 1, 2022	Additions during the year	Adjustments / disposals	As at Mar 31, 2023	As at April 1, 2022	Depreciation for the year	Adjustments / disposals	As at Mar 31, 2023	As at Mar 31, 2023	As at 31 March 2022
Tangible fixed assets										
Land and Building (Refer note below)	61,40,72,693			61,40,72,693	4,51,30,782	1,02,16,038		5,53,46,820	55,87,25,873	56,89,41,912
Leasehold improvements	3,56,58,488		74,73,057	2,81,85,431	3,56,58,488		74,73,057	2,81,85,431	-	-
Computers	12,42,22,090	69,55,693	32,60,635	12,79,17,148	11,33,75,868	66,25,906	32,61,902	11,67,39,872	1,11,77,276	1,08,46,222
Plant and machinery	6,93,45,539			6,93,45,539	2,37,88,369	43,91,884		2,81,80,253	4,11,65,286	4,55,57,170
Electric Installation	33,33,461			33,33,461	1,17,424			1,17,424	32,16,037	32,16,037
Office equipment	5,75,44,059	5,77,880	26,74,799	5,54,47,140	5,35,49,382	14,37,240	26,27,790	5,23,58,832	30,88,308	39,94,677
Medical equipment	5,97,77,271	17,99,402	3,32,69,918	2,83,06,755	4,98,61,950	35,18,211	3,29,56,968	2,04,23,193	78,83,562	99,15,321
Furniture and fixtures	1,53,40,736	2,50,895	12,30,087	1,43,61,544	1,42,53,450	6,46,807	11,84,112	1,37,16,145	6,45,399	10,87,285
Vehicles	41,52,825			41,52,825	38,58,434	1,71,173	(47,036)	40,76,643	76,182	2,94,391
Sub Total (a)	**98,34,47,162**	**95,83,870**	**4,79,08,496**	**94,51,22,536**	**33,95,94,147**	**2,70,07,259**	**4,74,56,793**	**31,91,44,613**	**62,59,77,923**	**64,38,53,015**
Intangible fixed assets										
Software	8,23,70,026		3,26,879	8,20,43,147	7,47,28,757	63,24,137	3,01,826	8,07,51,068	12,92,079	76,41,269
Sub Total (b)	**8,23,70,026**	-	**3,26,879**	**8,20,43,147**	**7,47,28,757**	**63,24,137**	**3,01,826**	**8,07,51,068**	**12,92,079**	**76,41,269**
Total current year (c = a + b)	**1,06,58,17,188**	**95,83,870**	**4,82,35,375**	**1,02,71,65,683**	**41,43,22,904**	**3,33,31,396**	**4,77,58,619**	**39,98,95,681**	**62,72,70,002**	**65,14,94,284**
Previous year	94,45,22,391	12,18,72,878	5,78,081	1,06,58,17,188	37,97,46,404	3,51,54,581	5,78,081	41,43,22,904	65,14,94,284	56,47,75,987
Capital Work In Progress (d) (Including capital advances)	**2,87,753**	1,91,72,291	-	**1,94,60,044**	-	-	-	-	**1,94,60,044**	**2,87,753**
Total Fixed Assets (c + d)	**1,06,61,04,941**	**2,87,56,161**	**4,82,35,375**	**1,04,66,25,727**	**41,43,22,904**	**3,33,31,396**	**4,77,58,619**	**39,98,95,681**	**64,67,30,046**	**65,17,82,037**

Bifurcation of fixed assets between funds

Project funds held in trust	19,23,08,954	85,14,646	97,23,328	19,11,00,272	13,22,40,423	1,30,11,113	92,54,119	13,59,97,417	**5,51,02,855**	**6,00,68,531**
Designated Funds	87,37,95,987	2,02,41,515	3,85,12,047	85,55,25,455	28,20,82,481	2,03,20,283	3,85,04,500	26,38,98,264	**59,16,27,191**	**59,17,13,506**
Total Expenditure (Includes CWIP)	1,06,61,04,941	2,87,56,161	4,82,35,375	1,04,66,25,727	41,43,22,904	3,33,31,396	4,77,58,619	39,98,95,681	64,67,30,046	65,17,82,037

Notes:

The Government of Gujarat and PHFI entered a Memorandum of Understanding (MoU) in 2007 to establish IIPH-Gandhinagar (IIPH-G). Under the terms of MoU, IIPH-G was set up as a separate society on February 15, 2008. The IIPH-G has a Governing Council with four secretaries of the government as ex-officio members and four representatives of PHFI as members.

The Government of Gujarat had made free allotment of 50 acres land to PHFI on January 07, 2010 for construction of IIPH-G educational campus. PHFI had commenced the construction of IIPH-G campus during the financial year FY 2011-12, which was completed for phase-I and capitalised in October 2016.

As per the term of MoU executed between PHFI and IPHSH dated 5th September 2021 read with amendment dated 11th March 2022, the usage of assets (moveable/immovable) is for the period of 15 years w.e.f. 1st November, 2021 which may be renewed by PHFI based on the realisation of PHFI's long term goals.

Public Health Foundation of India New Delhi

		As at March 31, 2023	As at March 31, 2022
Note 7 : Cash and bank balances			
(A) Cash and Cash Equivalents			
Cash in hand		1,430	1,430
Balances with Scheduled banks			
- in current accounts		42,80,900	79,42,944
- in savings accounts			
Domestic		11,42,78,619	5,06,25,848
FCRA		21,29,59,303	12,69,54,306
- in deposit accounts with orignal maturity less than 3 months [refer footnote iii below]		-	4,57,500
	A	33,15,20,252	18,59,82,028
(B) Balance with Scheduled banks in deposit account other than above[refer footnote (i) to (iii) below]		1,45,32,93,143	1,55,49,45,960
	B	1,45,32,93,143	1,55,49,45,960
	A+B	1,78,48,13,395	1,74,09,27,988
(i) Fixed deposits - Disputed funds (Refer note 24)		1,08,00,00,000	1,08,00,00,000
(ii) Fixed deposits* - restricted funds (Refer note 24)		37,06,90,412	37,06,90,412
(iii) Fixed deposits - Margin money for Bank Guarantee(Refer note 25(a))		26,02,731	15,97,719

* It includes deposited with the Session Court, Mumbai (CBI Court) amounting to Rs. 25 Crores invested in Fixed Deposits held in the name of Court.

Note 8 : Loans and advances			
(Unsecured and considered good)			
Advances recoverable in cash or in kind or for value to be received		51,26,069	1,62,40,060
Security deposits		45,92,377	66,57,085
Sub-grant advance [Refer note 23 (i)]		81,25,154	6,58,369
TDS recoverable		7,62,54,761	6,56,69,275
GST Recoverable		8,34,798	13,76,597
Tax deducted at source - GST		17,26,764	16,67,545
Tax deposited under protest [Refer note 25(b)(i)]		54,91,262	54,91,262
Prepaid expenses		1,13,38,862	64,15,025
	A	11,34,90,047	10,41,75,218
Grants, fees and other receivable		9,87,36,671	9,98,85,543
Receivable from IPHSH		4,02,06,712	-
	B	13,89,43,383	9,98,85,543
	A+B	25,24,33,430	20,40,60,761
Note 9 : Other current assets			
Interest accrued but not due on fixed deposits (net of TDS) - disputed funds (Refer note 24)		12,50,27,651	12,50,27,651
Interest accrued but not due on fixed deposits		1,44,65,615	24,38,802
		13,94,93,266	12,74,66,453
Note 10 : Current liabilities			
Sundry creditors (Refer note 31)		7,41,59,594	5,68,76,578
Sundry creditors (Sub-Grant)		17,59,035	8,39,072
Employee Related Liabilities		48,88,780	1,03,16,498
Advance received		23,76,400	23,76,400
Fee Received in Advance		1,18,19,299	1,80,76,754
Retention money from Capital Creditors		14,34,066	22,45,631
Payable for capital creditors		47,37,546	42,52,018
Statutory liabilities		1,21,84,403	2,03,25,954
Tax deducted at source received on disputed FDRs (Refer note 24)		1,16,55,391	1,04,95,261
Salary payable*		8,45,58,291	8,44,464
Other Liabilities		81,14,615	59,57,918
		21,76,87,420	13,26,06,548

** Since paid during Q1 of FY 2023-24*

Note 11 : Provisions			
Gratuity [Refer note 29 (A) (ii)]		5,35,24,947	6,62,83,908
Compensated absences		2,86,06,499	3,76,32,973
		8,21,31,446	10,39,16,881

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Public Health Foundation of India New Delhi

Public Health Foundation of India
Notes to the financial statements for the year ended March 31, 2023

	As at March 31, 2023	As at March 31, 2022
Note 12 : Program Income #		
Designated fund	1,49,86,656	2,09,68,247
Project funds held in trust	61,76,81,816	54,26,91,533
# To the extent utilised	-	-
	63,26,68,472	**56,36,59,780**
Note 13 : Interest Income		
Interest income on savings bank accounts	54,60,559	46,53,044
Interest income on sub grant to NGOs	-	69,771
Interest on income tax refund	-	-
Interest income from fixed deposit accounts*	1,71,62,090	2,06,13,315
	2,26,22,649	**2,53,36,130**
Interest income on investments transferred to Project Funds Held in Trust and Designated Fund	(47,56,642)	(29,27,495)
	1,78,66,007	**2,24,08,635**
*Includes interest of Rs. 1,16,55,391 pertaining to fixed deposits held in the name of CBI court		
Note 14 : Other income		
Forex Gain	3,39,049	-
Excess liabilities written back		
- Sundry creditors	1,47,51,596	24,14,674
- Old project balances	81,85,430	5,18,53,310
Miscellaneous Income	20,18,088	22,19,710
	2,52,94,163	**5,64,87,694**
Note 15 : Program expenditure		
Salaries & Allowance	32,40,68,499	29,86,92,858
Legal and professional charges	8,59,47,075	4,94,79,201
Overhead Expense - Indirect Cost	5,33,53,643	4,70,06,683
Consultancy Charges	4,91,41,740	5,66,46,789
Travel and conveyance	4,38,04,894	3,05,94,717
Sub Grant Expense	94,12,325	1,24,41,979
Conferences and meeting expenses	73,68,474	26,37,868
Project Supplies & Equipments	94,55,202	1,46,44,582
Scholarship/Fellowship - Exp.	77,94,168	1,02,77,315
Consumables	28,32,372	39,05,698
Miscellaneous expenses	8,62,197	28,31,791.92
Printing & Stationary	55,15,982	55,61,312
Project Survey Cost	1,00,42,787	1,23,36,254
Honorarium - Guest Faculty	9,60,320	8,52,033
Insurance	28,39,658	17,99,221
Books & Periodicals	25,65,427	10,25,081
Electricity and water charges	5,59,886	2,31,733
Communication expenses	24,84,253	21,66,447
Repairs and maintenance	75,19,281	78,74,842
Rent	61,40,288	26,53,374
	63,26,68,471	**56,36,59,779**
Note 16 : Personnel expenses		
Salaries and allowances	6,60,31,210	12,14,50,854
Contribution to provident and other funds	1,94,13,396	1,84,04,839
	8,54,44,606	**13,98,55,693**
Less: Recovery of general overheads from projects	(2,23,81,306)	(2,54,71,967)
	6,30,63,300	**11,43,83,726**

T.V.A. & CO. New Delhi Chartered Accountants

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Public Health Foundation of India New Delhi

Public Health Foundation of India
Notes to the financial statements for the year ended March 31, 2023

	As at March 31, 2023	As at March 31, 2022
Note 17 : Other expenses		
Society sponsored programme expenses	7,32,23,290	6,40,08,050
Rent	31,11,330	69,52,516
Legal and professional charges (Also, refer note 30)	1,94,12,911	1,22,19,546
Repair and maintenance	38,21,544	41,08,775
Insurance	42,90,086	28,20,585
Communication expenses	6,31,536	13,67,412
Electricity and water charges	21,15,667	21,98,964
Travel and conveyance	4,71,071	2,79,359
Conferences and meeting expenses	89,771	1,82,966
Miscellaneous expenses	3,01,187	2,85,895
	10,74,68,393	**9,44,24,068**
Less: Recovery of general overheads from projects	(3,09,59,475)	(2,15,36,927)
Less: Expenses recoverable from IPHSH	(4,02,06,712)	-
	3,63,02,206	**7,28,87,141**
Rates and taxes [Refer Note No. 20 (d.)]	19,41,432	1,29,18,381
Doubtful grants, fees and other receivables written off	1,07,24,896	2,38,25,997
Foreign Exchange Loss(Net)	-	5,54,606
	4,89,68,534	**11,01,86,125**
Note 18. Prior period items (included in respective heads)		
(a) Prior period income		
- Income from training projects	-	27,61,616
- Recovery from Written-off Debts	-	6,12,509
	-	**33,74,125**
(b) Prior period expenses		
- Program expenditure	2,98,000	10,620
	2,98,000	**10,620**

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Public Health Foundation of India New Delhi

Climate change, air pollution big health risks now: PHFI president Sanjay Zodpey

1 min read 14 Nov 2022, 01:07 PM ISTJoin us

Priyanka Sharma

We need to work with other stakeholders such as business enterprises, regulators and civil society to raise awareness of the threats and develop a shared vision to address these emerging health risks, Zodpey said

Newly appointed president of Public Health Foundation of India Sanjay Zodpey.

New Delhi: Climate change and air pollution are now becoming big health risks and all stakeholders such as business enterprises, regulators and civil society should work together to raise awareness about these emerging threats, says Sanjay Zodpey, newly appointed president of Public Health Foundation of India (PHFI) in an interview to Mint. Highlighting the harmful effects of air pollution, Prof Zodepy said there is evidence to suggest that mothers who have been exposed to air pollution during their pregnancy have had low birth weight children, and preterm deliveries, while children are facing neurological problems. Edited excerpts of the interview:

What are your goals and vision as you take charge as new PHFI president?

PHFI will continue to work for improving the health outcomes in India. We recognize that a transformational change in health of the population needs a collaborative approach and close alignment with the public health priorities of country. We will continue to adopt a broad, integrative approach to public health which is tailored to Indian conditions. I adhere to the philosophy that health care must be addressed not only from the scientific perspective of what works, but also from the social perspective of, who needs it the most.

The long-term vision of the PHFI is to strengthen India's public health institutional and systems capability and provide knowledge to achieve better health outcomes for all. Not only me as President but all the constituents and stakeholders of PHFI are committed to fulfilling this long-term vision. I shall be working closely with the national and state governments to build partnerships to strengthen health systems, capacity building of public health workforce and collaborative research to generate evidence for the policy through our institutional network.

With covid around us for more than two years, when will we consider covid as a past or when will the endemicity come?

The pandemic posed multiple challenges globally over the past couple of years. India is currently reporting the lowest number of cases. This downward trajectory is being witnessed in practically the entire country. We are consistently vaccinating a large number of people. From a public health perspective, we all are carefully observing this change.

Fortunately, we are not seeing any variant that causes excessive hospitalization or deaths.

However, we cannot consider covid a thing of the past. Any infectious disease in any part of the world or country remains a threat to mankind. The unique characteristic of an infectious disease is its ability to spread from one person to another, this spread is driven by population mixing and human behavior predisposing vulnerable populations such as children, the elderly, and people with co-existing diseases at very high risk.

Hence, we should continue to maintain a strict vigil and a high degree of preparedness.

People are exhausted of wearing masks during the pandemic? Do you think people should discontinue this practice or make it a part of their life?

As I said earlier, infectious disease transmission is primarily driven by population mixing and vulnerable persons are at high risk for morbidity and mortality because of covid. As responsible citizen, each one of us should contribute towards making society safe for our children and elderly, which can be ensured through high coverage of vaccination and compliance to public health interventions such as cough etiquette and appropriate mask use. Masks help in preventing spread of respiratory diseases. From a risk management perspective also mask use remains a critical factor if you are vulnerable and consider yourself at risk of disease, you should continue to use masks in closed spaces such as air-conditioned spaces such as offices, malls, hospitals, marriage halls, etc.

What about other communicable and non- communicable diseases? Are we addressing those issues?

The pandemic stretched health systems across the world. There have been several investments in building greater capacity and resilience within the health systems. While health systems were responding to the urgent challenges of covid management and care, there were short-term slow-downs across other disease control programs. This was witnessed all across the world. In all my interactions with senior health staff, there has been a thrust on catch up activities for all public health programs. We have a well-developed public health program structure which is capably handling all communicable and non-communicable diseases. However, climate change and air pollution are now becoming important risk factors. We need to work with other stakeholders such as business enterprises, regulators and civil society to raise awareness of the threats and develop a shared vision to address these emerging threats.

How are air pollution and climate changes affecting human life?

Air pollution poses a significant environmental risk to health. In recent times, there has been a lot of focus on air pollution levels and its health effects in the long run. Fine particulate matter is particularly harmful, as they can penetrate into the bloodstream through the lungs, and enter organs causing damage to cells and tissues. The adverse health outcomes linked with prolonged exposure to air pollution include stroke, heart disease, lung cancer, pneumonia, chronic obstructive pulmonary disease. Children, elderly and pregnant women are at the highest risk of falling sick after exposure to air pollution. There is evidence to suggest that mothers who have been exposed to air pollution during their pregnancy have had low birth weight children, preterm deliveries, etc. Children have been observed to have neurological problems linked to air pollution.

How is PHFI looking to support the government in terms of epidemiological guidance?

We work very closely with the central and state governments. During covid times also, we contributed technically and on the ground through our institutional network. In near future, we are planning to establish a dedicated multidisciplinary team to work on infectious disease epidemiology and the economic consequences of such diseases to highlight the need for pandemic preparedness and health security.

The Indian EXPRESS
JOURNALISM OF COURAGE

Can home-grown medical devices reduce the cost of healthcare services?

There is also the need for a regulatory framework in the approval, licensing and the quality control of these medical devices in order to protect the end consumer, the patient, says Prof Preeti Kumar, Vice President, Public Health Foundation of India and Director, Indian Institute of Public Health, Delhi

Written by Prof Preeti Kumar
May 1, 2023 17:59 IST

India is the 20th largest medical device market in the world, but its contribution to the global market is less than 1.6 per cent. (Pic source: Freepik)

The COVID-19 pandemic highlighted the inadequate availability of essential medical devices in India during a time of intense demand. Medical devices, ranging from ventilators and oxygen purifiers to personal protective equipment (PPE) and N95 masks, were in short supply when the health system in the country and the population it serviced needed them the most. However, medical devices largely remain inaccessible even otherwise, both in terms of availability and affordability. This lack of access stems from issues such as hurdles in their procurement in public and private hospitals, supply issues due to inadequate manufacturing capacity in the country for high-end medical devices and the high cost of importing such medical devices in the country.

While India has a robust pharmaceutical industry which contributes to 20 per cent of the global demand for generic drugs and low-cost vaccines, the medical device market and industry in the country is quite nascent. India is the 20th largest medical device market in the world, but its contribution to the global market is less than 1.6 per cent. This contribution is also largely in the form of low-cost devices such as surgical gloves, urinary catheters and other disposable equipment that are manufactured and exported in large numbers.

DELHI DECLARATION

MANY VITAL ACTION-AREAS HIGHLIGHTED, BUT SILENT ON NON-COMMUNICABLE DISEASES

Setting the global health agenda

K SRINATH REDDY

Cardiologist, epidemiologist, and distinguished professor of public health, PHFI

WHEN INDIA ASSUMED the presidency of G20, the world was emerging from the worst phase of a devastating Covid-19 pandemic, looking to restore global connectivity, and revive economic growth which had stalled or sagged under the crushing pressure of a novel but nasty virus. The global public health community was apprehensive as to whether the pandemic catalysed attention of policymakers to health (via focus on systems, services, financing and research) would dissipate as economic and political priorities crowd the agenda of G20.

While there has been global commitment to prepare countries to prevent and respond to future pandemics better than they did with Covid-19, would that be addressed only at the level of the World Health Organisation (WHO)? A new Pandemic Prevention, Preparation and Response Treaty (PPR) and revision of International Health Regulations (IHR) were under international negotiation at WHO, with completion timelines set for 2024. As that process continues, would the agendas of G7 and G20 keep health aside and be packed with other priorities?

The G20 process quickly dispelled those apprehensions. The rich countries of G7 may only wish to protect themselves from spillover of future pandemics into their territories. However, other members of G20 were also concerned about reducing the international inequities that impeded their response to the Covid-19 pandemic and wished to fix systemic flaws that might undermine the global cooperation needed for future public health emergencies.

India ensured that health was not sidelined at G20. Discussions on health featured not only in meetings convened by the health ministry but also in those convened by scientific academies (S20), civil society (C20), think tanks (T20), and other groups too. Recommendations from all of these meetings streamed into the process of shaping the final declaration. The final declaration, unanimously adopted by heads of G20 nations on September 9, 2023, provided a prominent place for health. That declaration committed to strengthen global health architecture and 'building more resilient, equitable, sustainable and health systems to achieve Universal Health Coverage'. It called for strengthening the primary care and health workforce while improving essential health services and health systems to 'better than pre-pandemic levels.'

The G20 reaffirmed its faith in WHO as the world's premier public health agency, placing it at the core of coordinated global health efforts. Emphasis was laid on infectious diseases, from eradication of polio to ending AIDS, TB, malaria, hepatitis, water borne diseases and other communicable diseases.

The 'One Health' programme is to be promoted through the 'Quadripartite', a coalition of WHO, World Organisation of Animal Health (WOAH), United Nations Environment Programme (UNEP), and Food and Agriculture Organisation (FAO). Anti- microbial resistance (AMR) is to be combated and contained as part of the One Health initiatives at national and global levels. Ongoing efforts on the pandemic PPR and IHR were welcomed.

The imperative of providing equitable access to safe, effective, quality assured and affordable vaccines, therapeutics, diagnostics (VTDs) and other medical countermeasures was inscribed in the declaration. This was recognised to be especially important for low and middle income countries, least developed countries and small island developing states. Development of local capacities for research and development, manufacturing, and last mile delivery were recognised as essential for an efficient response to public health emergencies. Creating a network of networks connecting low and middle income countries (LMICs) and other developing countries was listed as an important area of action. This effort would be led by WHO.

> **If the LMICs in G20 don't demand attention on NCDs that are challenging their health systems, we can't expect already well-prepared rich nations to raise the issue**

Recognising the importance of reconfiguring health systems as part of the response to climate change, the G20 called for the development of climate-resilient and low carbon health systems. Since health systems globally generate 5.3% of greenhouse gases, through healthcare facilities and their supply chains, the need for 'greening' of healthcare becomes an important measure of climate change mitigation. At the same time, healthcare facilities have to become climate resilient as rising temperatures and extreme weather events threaten to impact their safety and functioning. Multi-lateral development banks (MDBs) like the Asian Development Bank and the World Bank have announced their support to these efforts. G20 will also support the work of the WHO led Alliance for Transformative Action on Climate and Health (ATACH) in advancing development of climate responsive health systems.

Potential role of evidence-based Traditional and Complementary Medicine (TCM) was recognised by G20, which acknowledged ongoing global initiatives in this area. The declaration also called for promoting mental health and improving access to mental health services as well as provision of psychosocial support in an inclusive manner. It highlighted the need for strong international counter-narcotics cooperation to curb the growing menace of addictive drugs.

While the declaration highlights many vital areas of action for protecting and promoting global health, it strangely does not refer to non-communicable diseases (NCDs), which are the largest contributors to the global toll of deaths and disability. While the high income countries have configured their health systems to deal with NCDs over several decades, it is the LMICs who are presently confronting the rising burdens of NCDs with underprepared health systems. The Covid-19 pandemic also made it clear that NCD related comorbidities contribute most to severe illness, hospitalisation, and death. That is true also of influenza and other respiratory viruses. If the LMICs represented in G20 do not demand attention to NCDs, which are seriously challenging their health systems, why will the rich countries raise the issue when they are already well-prepared?

Similarly, the Joint Finance and Health Task Force (JFHTF), to which the G20 commits itself, deals only with strengthening the global health architecture for pandemic PPR. There is no commitment to strengthening of health systems overall. The welcome addition of the African Union to the membership of G20 from this year may bring forth such LMIC priorities strongly in future G20 deliberations. For now, we must congratulate India for keeping health in focus at G20 and in achieving consensus on many important areas of global health where international cooperation is vital.

Indians eat low-nutrient food, gorge on dairy: Study

KAVITA BAJELI-DATT @ New Delhi

INDIANS consume more dairy products than healthier fruits and vegetables, according to a study published in the Journal of Human Nutrition and Dietetics. The study raised concern about low nutrient intake and called for a public health campaign to correct the anomaly. It further said that rural and poor women were adversely affected by this gap.

The study titled, 'Dietary Patterns in North and South India: A Comparison with EAT-Lancet Dietary Recommendations', showed that Indians consumed 25 per cent dairy foods, 23 per cent added fats and only 15 per cent whole grains, and four per cent protein vegetarian.

According to the EAT-Lancet guidelines, wholegrain (at 32 per cent) and protein vegetables (at 23 per cent) should form a significant chunk of food intake. Dairy foods should be only five per cent. "The diets of the study participants were mainly plant-based and high in dairy but lacking in nutrient-rich foods such as vegetables and fruits," it said.

The findings are based on a survey of 8,762 adults in Sonipat in Haryana and Vizag in Andhra Pradesh in 2019.

Research finds gender, income indicators in diet

The consumption of various foods was also different among men and women. While women consumed starchy vegetables, which includes potatoes, corn, peas, and lentils, and all vegetables, men took more non-vegetarian protein. Similarly, the difference between poor and rich varied too. The rich ate more vegetables, fruits, and dairy items, the study found. According to EAT-Lancet, wholegrain (32%) and vegetables (23%) should be significant part of food intake

"Vegetables and fruits were consumed in lower quantities, whereas dairy and added fats were consumed in higher quantities than recommended by the EAT-Lancet recommendations," it said.

The study found that when compared by urban and rural residents, the consumption of starchy vegetables, all vegetables, fruits and protein-rich foods was higher in urban areas. However, in rural areas, the consumption of whole grains and dairy products was higher. The consumption of various foods was also different among men and women. While women consumed starchy vegetables, which includes potatoes, corn, peas, and lentils, and all vegetables, men took more non-vegetarian protein.

Similarly, the difference between poor and rich varied too. The rich ate more vegetables, fruits, and dairy items, the study found.

The study also found that whole grains, all vegetables, fruits, dairy, and added fats consumption were higher in Vizag than in Sonipat, while the mean quantity consumed of starchy vegetables and added sugars was higher in Sonipat than in Vizag.

Speaking with this paper, Prof Sailesh Mohan, one of the authors of the study, "Compared to the EAT-Lancet recommendations, the study participants were consuming inadequate amounts of nutrient-rich fruits and vegetables which are very beneficial to health, but consuming more dairy, refined foods (white rice, flours), fats and sugars, which adversely impact health."

"Given the high burden of malnutrition and cardiometabolic diseases in India, this is very disconcerting from a population health perspective," he said. "We need policy actions for making micronutrient-rich foods and healthy sustainable diets available and affordable to all, with a particular focus on the poor and rural populations," said Mohan, who is a Professor in the Public Health Foundation of India and Director, Centre for Chronic Conditions and Injuries.

Workplace wellness projects yield benefits

TIMES NEWS NETWORK

Chennai: Workplace wellness programmes may be a potentially cost-effective way to promote good health through healthy diets, regular exercise, and other behaviors that help keep lifestyle diseases in check, a study has found.

The results of the yet-to-be-published study, INDIA WORKS (integrating diabetes prevention in the workplace) health interventions done at 11 worksites including Air India, Ashok Leyland, Bhilai Steel Plant, Bokaro Steel Plant, HLL Lifecare, Hyundai and TVS Lucas in five states - Kerala, Tamil Nadu, Jharkhand, Chhattisgarh, and Odisha - for around two years showed an average 3mmHg reduction in systolic blood pressure (15% decline from the baseline), and HbA1C levels regression to less than 5.7% in 25% of the participants who had prediabetes or diabetes, scientists announced. The study was conducted for six years from 2016.

An average of 1kg reduction in body weight and nearly 1.8cm reduction in waist circumference was also noticed. "In some cases, people lost more than 15kgs and moved from size XI to M. A large percentage of participants achieved the 7% weight loss goal," said lead investigator Ranjani Harish, who is the senior scientist and head of preventive and digital health research at the Madras Diabetes Research Foundation.

Scientists screened 6,265 employees from these industries in 2020. At least 9 out of 10 people screened were either overweight or obese and risk scores showed that nearly half of them were at a high risk of developing diabetes and a third of them had hypertension.

From this, 2,108, who were either prediabetic or newly diabetic (who were yet to start medications) were selected for the study. They were given interventions including talks that dispelled myths and created awareness. Employees were asked to increase physical activity to at least 150 min/week of moderate-intensity activity such as brisk walking. "We also tweaked canteen menu, reduced number of food portions, created walking paths, break time intervention programs and group exercise sessions," said senior scientist Dr Prabhakaran, distinguished professor at the Public Health Foundation of India. Tests done two years later showed good improvements in health conditions despite lockdowns during Covid. "Improvements were significant among people who attended the classes and intervention sessions compared to those who did not have any interventions," he said.

While scientists are still writing the paper for scientific publications, the results will serve as a working guide for Indian companies to implement healthy recommendations for their employees said senior diabetologist Dr V Mohan, who heads the Madras Diabetes Research Foundation.

"Organized sector employees have the highest burden of chronic disease risk factors such as obesity, diabetes, and hypertension. There is substantial evidence that we can prevent these risk factors or control them if people have acquired these diseases already," he said.

MAPPING THE PROCESS

BASELINE: Screening of 6265 employees showed 90% were overweight or obese | **Nearly half of those screened were at high risk of developing diabetes.** | 1 of 3 had hypertension. | 2108 employees were eligible for the intervention. (They had prediabetes or were newly diagnosed with diabetes)

WHAT INDIA-WORKS DID
Evaluated a worksite-based lifestyle intervention model. | Focused on program effectiveness and success of implementation | Worked with trained peer educators from worksites to deliver the intervention

GOALS OF LIFESTYLE INTERVENTION IN INDIAWORKS
Increase physical activity to at least 150 min/week of moderate-intensity activity such as brisk walking. | Lose at least 7% of baseline body weight if overweight or obese

AFTER INTERVENTION
The population saw an average of 3 mmHg reduction in systolic blood pressure. This is 15% reduction in hypertension. | **An average of 1kg reduction in weight and 1.8 cm in waist circumference.** | HbA1c regressed to <5.7% in 547 participants

14 TIMES NA

Arsenic in water raises risk of gallbladder cancer: Study

2-Year Survey Conducted In Tertiary-Care Hosps In Assam, Bihar

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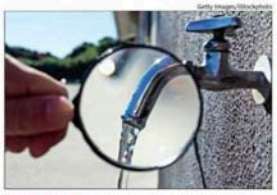


HIDDEN DANGER: The study assessed arsenic exposure of the patients based on their residential history since childhood and the average concentration of groundwater arsenic at district level

New Delhi: A two-year study carried out in large tertiary care hospital settings that treat patients across different parts of Assam and Bihar suggests that chronic arsenic exposure in drinking water even at low-moderate levels may be a potential risk factor for gallbladder cancer (GBC).

In trying to understand GBC risk factors, a rare yet lethal digestive tract cancer, not fully understood so far, scientists from Public Health Foundation of India and Centre for Chronic Disease Control from Delhi, B Borooah Cancer Institute, Guwahati and IIT-Kharagpur collaborated with the London School of Hygiene and Tropical Medicine. They investigated exposure to arsenic in drinking water, with gallbladder cancer risk among participants for residency durations of 15-70 years in two of the arsenic affected states of India where both GBC and arsenic contamination in drinking water are significant public health problems.

In the study areas, researchers observed that participants exposed to arsenic concentrations averaging 1.3-8.9 µg/L in groundwater had a two-times greater risk of GBC, while those exposed to even higher arsenic levels (9.1-48.3 µg/L) experienced a 2.4 times increased risk of gallbladder cancer. Over a third of the study participants were exposed to levels more than WHO guideline limit of 10 µg/L, and 6% were exposed to levels more than or equal to 50 µg/L. More participants in regions with the highest levels of arsenic reported to be consuming tubewell water with sediments and with unsatisfactory colour, odour, and taste than those in regions with the lowest levels of arsenic.

The paper 'Exposure to arsenic through drinking water is possibly linked to an increased risk for gallbladder cancer in known arsenic-contaminated regions in India' has been published in the Cancer Epidemiology, Biomarkers & Prevention journal of the American Association for Cancer Research.

The study assessed arsenic exposure of the study participants based on their residential history since childhood and the average concentration of groundwater arsenic at district-level. "Obtaining long-term residential history since childhood with information on potential sources of drinking water is an important contribution of this study to the existing evidence base. Preliminary insights from this study can also be useful for similar country contexts that experience a high burden of gallbladder cancers and arsenic contamination in drinking water," said the lead author, Krithiga Shridhar, senior research scientist and associate professor, PHFI.

Assam and Bihar are two states in the country that report a high burden of GBC and high arsenic contamination in groundwater used for drinking (next to West Bengal and Punjab). Scientists evaluated if there are any links between the two in these regions.

According to the study, the data offer preliminary insights on a risk factor with a potential preventive strategy for GBC. Based on earlier recent surveys of household water levels it is estimated that 18-30 million people in rural and urban India (Podgorski et al 2020), "including in our study regions, consume arsenic above 10 µg/L and up to 1,500 µg/L in 2020. Thus, these findings may inform Jal Jeevan Mission-2024 fully aligned with Sustainable Development Goals of equitable clean and safe drinking water."

Omicronies & Covid's Other Pals

Surge in infections in various countries from Omicron sub-variants is not of undue concern, given low severity and hospitalisation. Scientists hope it'll stay that way

K Srinath Reddy

Knock! Knock! Who is there? Omicron. Omicron who? Omicron who conned you, with mutations. This could well be the new word game patented by the SARS CoV-2 virus. New sub-variants of Omicron springing up in different parts of the world are demanding attention. What threats do these new arrivals pose?

Will there be local outbreaks, superspreader events or a resurgent global pandemic? Or will Omicron keep up its presence amidst us as a tamed version of SARS CoV-2 which vigorously wags its tail but does not bite?

Even though most people worldwide have stopped paying attention to Covid, scientists continue to track new forms of the SARS CoV-2 virus. Public health agencies watch warily for evidence of increased virulence, which signals a potential threat of a severe pandemic re-emerging. Social media commentators watch with amusement, giving cute names to the new variants, replacing the annoying jumble of letters and numbers we have grown weary of.

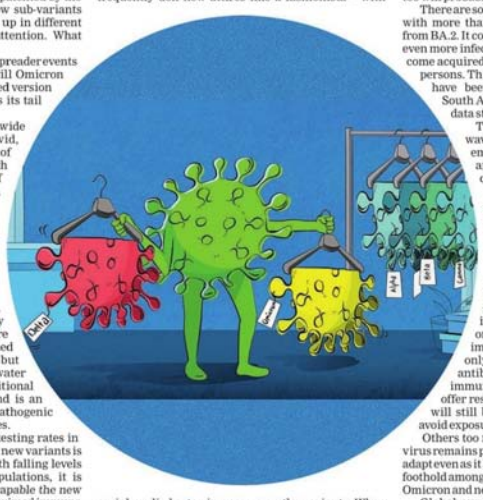
Global health systems have lowered their defence but maintain vigil through microbial surveillance. Genomic profiling established in many countries, mutations in the virus are easy to spot. Genomic testing has declined in volume worldwide in recent months but has still sighted new variants. Waste-water surveillance of sewage provides additional information on emerging variants and is an important tool for early detection of pathogenic microbes spreading across communities.

However, with a decline in overall testing rates in the population, the infective prowess of new variants is difficult to estimate with accuracy. With falling levels of earlier acquired immunity in populations, it is difficult to estimate how much more capable the new variants are in evading our previously primed immune defences.

However, it is easier to surmise if the recent variants are exhibiting greater virulence by observing rates of hospitalisation for severe illness. The small numbers of reported cases in hospitals and the low rates of testing in the population make it difficult to provide precise statistical estimates of the proportion of infected persons developing severe illness.

While uncertainty shrouds all such estimates, the low levels of reported serious illness provide comfort that the new variants are not on a rampage, even if they may be boosting their horsepower of infectivity. This is tacitly acknowledged globally.

Yet, the virus continues to make news. This is mostly because it is fascinating to see the mischievous microbe frequently don new attires like a fashionista – with



social media bestowing names on the variants. When EG.5 made its debut and attracted global attention, Canadian evolutionary biologist T Ryan Gregory named it Eris. Later, when FL.1.5.1 made a cameo appearance, Gregory called it Fornax. As the spotlight turned onto BA 2.86, viral tracker JP Weiland labelled it Pirola. None of these are official names, but make variants more interesting to track without sounding like complicated passwords.

Fact remains they are all Omicron sub-variants ramping up infectivity and immune-evasion capabilities through new mutations but they pose no greater danger than earlier versions of that variant. Indeed, with high levels of hybrid immunity in the global population at present, they're less likely to produce serious illness than Omicron did when it emerged. Risk of Long Covid too will probably be low among the infected.

There are some caveats though. BA 2.86 has emerged with more than 30 mutations, making it distinctive from BA.2. It could be much more immune-evasive and even more infectious. Some experts believe it can overcome acquired immunity even in recently vaccinated persons. This is still speculation as only a few cases have been reported from Denmark, Britain, South Africa, UK, Israel, and Switzerland, with data still too scanty to draw firm conclusions.

This variant can either trigger a new wave or fade away when new variants emerge to outcompete for access to human and animal hosts. Even if it spreads, clinical effects are unlikely to be severe in most persons. EG.5 and other recent sub-variants belong to the XBB lineage and are not as muscular in their mutations as BA 2.86. While they currently outnumber BA 2.86 in cases, they have not caused serious illness.

It must be recognised that these Omicronies – to coin a name for this club of new variants – can still cause serious illness in persons who are immunodeficient, immunocompromised or have lost their previously acquired immunity. That 'loss' cannot be judged only on the basis of absent neutralising antibodies, because other players in the immune system repertoire may be poised to offer resistance. Covid-appropriate behaviours will still be relevant for groups at high risk to avoid exposure to the virus.

Others too must mask up if cases surge. Since the virus remains part of our ecosystem, it is teaching us to adapt even as it keeps changing form to retain its spiked foothold among humans. We must hope it will stay on as Omicron and not yield place to a more virulent variant.

Global experts are debating whether the SARS CoV-2 virus will settle into a predictable seasonal pattern of endemicity. So far, there is no consistent pattern of stable seasonality. Is the virus still calibrating its response to the varied patterns of human resistance? Or is 'seasonality' of microbial surges a bygone pattern in the current era of climate change where seasons are no longer predictable by the calendar? Only Omicron knows.

The writer is a cardiologist, epidemiologist and Distinguished Professor of Public Health, PHFI

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