भारतीय जन स्वास्थ्य प्रतिष्ठान

PUBLIC HEALTH FOUNDATION of INDIA

Working Towards A Healthier India

Annual Report

2021-22

Cover Pictures Credit: Poster Making Competition by Government School Students (Class 6-8) under Project SHAHAR on the World Health Day Theme on " Keeping humans and the planet healthy, and creating societies focused on well-being."

Project SHAHAR: "Strengthening Primary Healthcare and Human Resources for Health," is supported by the Infosys Foundation. The project aims to improve the capacity of various functionaries within the urban governance system in Gurgaon, Haryana and Bhubaneswar, Odisha, to deliver quality services that have an impact on urban public health.

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FROM THE PRESIDENT'S PEN

When PHFI was founded in 2006, the guiding principles for its growth were relevance, excellence and scale. The organisation and the Indian Institutes of Public Health (IIPHs) that it would nurture were expected to develop models of public health education, research and practice that would address India's prioritised health needs, while attaining global standards of excellence. Given the paucity of public health professionals in India, there was a need to attain a scale of production that would flood the health system with multi-disciplinary expertise rather than strain to fill it in tiny trickles. To a fair extent, PHFI has followed that path in its evolution, with five institutions established in different regions of the country and a sixth on the anvil.

What we added in the past seven years, to those guiding principles, is resilience. We have weathered two major storms, involving a large sum of our funds being held up due to becoming victim of a bank fraud and ongoing litigation as well constrained access to foreign funds due to FCRA related restrictions. PHFI survived and continued to grow in performance and stature, despite these challenges. The FCRA registration was fully reactivated in November 2021. We look forward to a favourable outcome in the bank matter too.

The importance of public health came to the fore during the Covid-19 pandemic. PHFI and its IIPHs played a strong role in supporting central and state governments, civil society partners, international agencies, development partners, media and the private sector, through policy shaping analyses, training, surveillance, service delivery and health communication. As PHFI regains strength and grows in capacity, it can play an even stronger role in the future to build an efficient, equitable and empathetic health system that can avert, anticipate and attenuate public health emergencies. More important, it will help to create policies, systems, programmes and partnerships which will help us advance steadfast towards our health goals even when there is no public health emergency.

All institutions which advocate a transformational agenda must be able to practice change within themselves. PHFI too is now poised for a change in leadership, with a smooth transition underway in the office of its President. The selection process, elegantly steered by PHFI's Chairman Mr. Ramadorai, was concluded by March 2022. Prof. Sanjay Zodpey will succeed me on November 1. His rich experience and expertise in public health will help propel PHFI further along its growth trajectory.

As part of the change that evolution brings, financial and legal governance of IIPHs is being progressively devolved to state level societies. IIPH- Gandhinagar has now been joined by IIPH-Shillong and IIPH-Hyderabad as autonomous institutes. Other IIPHs too are advancing on that track. Connectivity in education and research will continue to be strong within the PHFI universe. Several new international partnerships too have been cemented over the past year. Numerous awards and recognitions in research, training and skill building make PHFI a respected partner avidly sought by Indian and international institutions.

I have been truly blessed to have worked under the guidance of outstanding Chairpersons and privileged to have been guided by by a stellar ensemble of sagacious Board and General Body members. My life was greatly enriched by my close engagement with highly talented colleagues, while my mind and mood were constantly refreshed by the enthusiastic young learners who came in as students but taught me much through their insights and innovative ideas. I sign off on this Annual Report with a sigh of contentment and a smile of happiness. Thank You, PHFI!

K. Srinath Reddy

President

MESSAGE FROM THE CHAIRMAN

As the Covid 19 virus is contained and the pandemic recedes, individuals, communities and organisations across the world seek to rebuild themselves. Yet, as Covid fades into background, the myriad challenges of public health still remain at the forefront, be it the burden of communicable, or non-communicable diseases.

PHFI which played a critical role in combating the Covid is fully geared to tackle these challenges. Public health, indeed, is the most powerful tool that can transform the individuals, the society and the economy. Recognising this fact, PHFI since its inception has been involved in the entire gamut of public health activities, right from research and academics to capacity building and policy development to communication and implementation.

The country at large has witnessed how PHFI and its network of the Indian Institutes of Public Health continue to play a catalytic role in creating networks that deliver evidence–based information and services to various stakeholders. It achieved another milestone in its long list of accomplishments with the recent operationalisation of the IIPH Hyderabad at its permanent campus, the second after IIPH Gandhinagar.

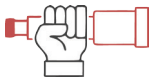
This year will witness a change in leadership as its founding President Prof K Srinath Reddy will soon hand over his responsibilities to Prof Sanjay Zodpey, after an outstanding innings. On behalf of the entire PHFI family, I gratefully acknowledge the immense contributions made by Prof Reddy through his leadership in global public health; his critical role in establishing six Indian Institutes of Public Health; and mentoring a multi-disciplinary team of public health professionals, who are shaping India's public health landscape. Though he hangs up his boots, I am sure he will continue to act as a goodwill ambassador for PHFI and public health, and we will continue to benefit from his rich experience, wisdom and guidance.

I also acknowledge the tireless efforts, dedication and commitment of the entire team at PHFI, who have helped it attain a lot in a short span of just over a decade and a half.

In accordance with national priorities, PHFI is ready to scale up, march forward with enthusiasm and take on known and unknown challenges that lie ahead with a steadfast resolve.

Thank you.

S. Ramadorai



VISION

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

MISSION

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

VALUES

Transparency

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

Impact

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

Informed

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

Excellence

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

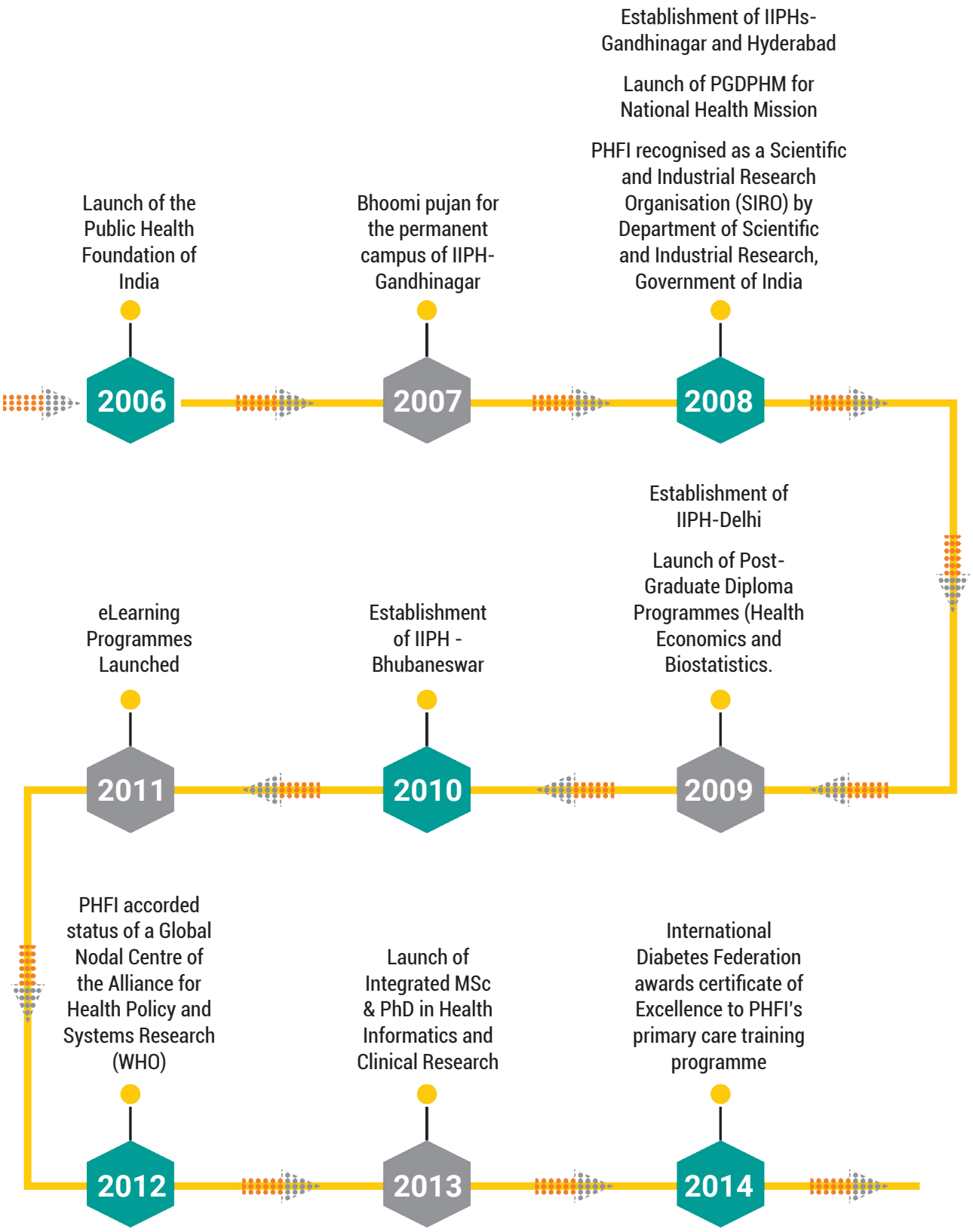
Independence

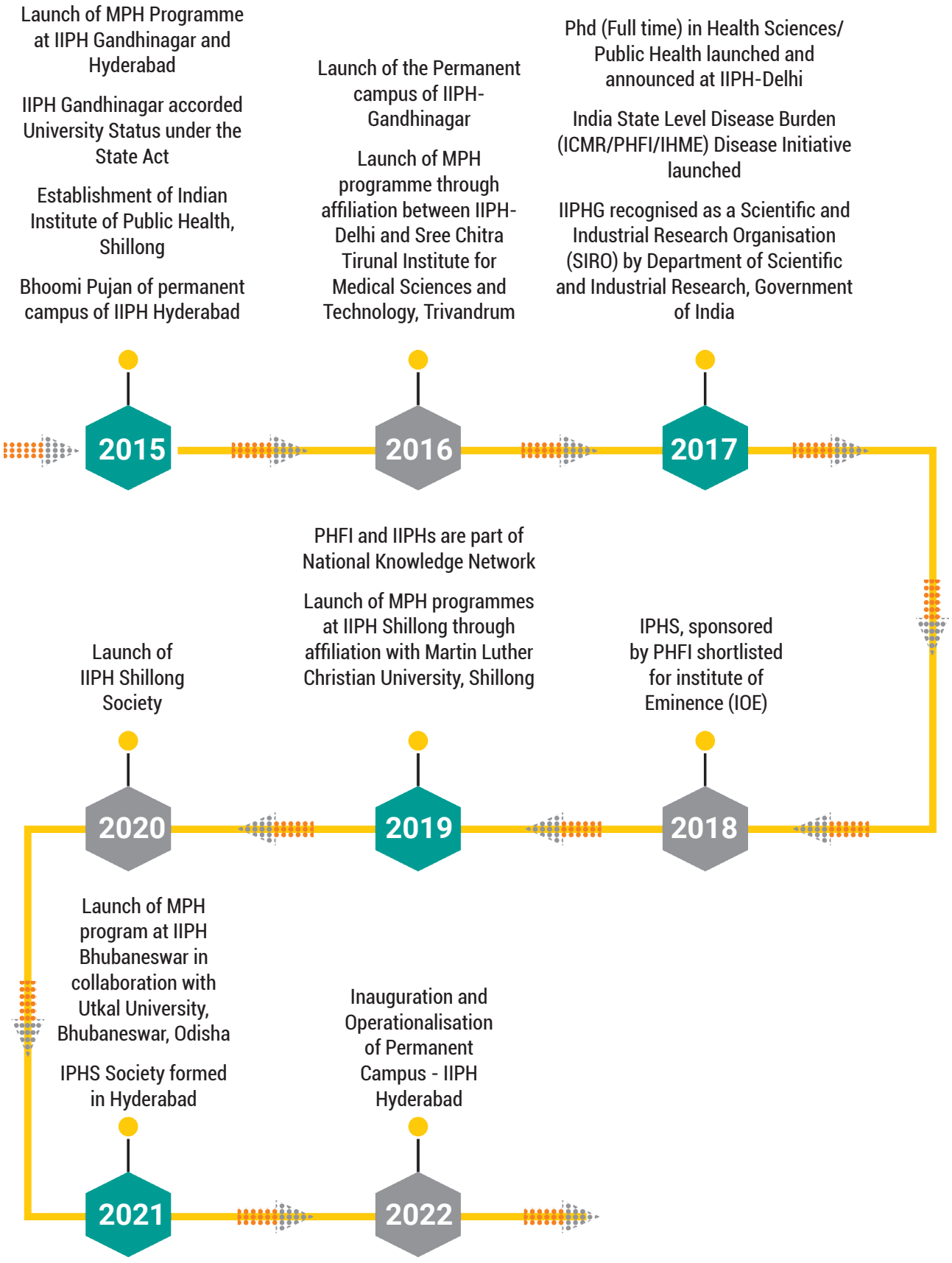
- Independent view and voice, based on research integrity & excellence
- Support academic and research freedom, contributing to public health goals and interests

Inclusiveness

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

OUR JOURNEY SO FAR




Launch of MPH Programme at IIPH Gandhinagar and Hyderabad
IIPH Gandhinagar accorded University Status under the State Act
Establishment of Indian Institute of Public Health, Shillong
Bhoomi Pujan of permanent campus of IIPH Hyderabad
2015
Launch of the Permanent campus of IIPH-Gandhinagar
Launch of MPH programme through affiliation between IIPH-Delhi and Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum
2016
Phd (Full time) in Health Sciences/ Public Health launched and announced at IIPH-Delhi
India State Level Disease Burden (ICMR/PHFI/IHME) Disease Initiative launched
IIPHG recognised as a Scientific and Industrial Research Organisation (SIRO) by Department of Scientific and Industrial Research, Government of India
2017
PHFI and IIPHs are part of National Knowledge Network
Launch of MPH programmes at IIPH Shillong through affiliation with Martin Luther Christian University, Shillong
2019
IPHS, sponsored by PHFI shortlisted for institute of Eminence (IOE)
2018
Launch of IIPH Shillong Society
2020
Launch of MPH program at IIPH Bhubaneswar in collaboration with Utkal University, Bhubaneswar, Odisha
IPHS Society formed in Hyderabad
2021
Inauguration and Operationalisation of Permanent Campus - IIPH Hyderabad
2022

PHFI EXECUTIVE COMMITTEE

CHAIRPERSON

Mr. S. Ramadorai

Former Vice Chairman, TCS

MEMBERS

Shri. Lav Agarwal

Additional Secretary, Ministry of Health and Family Welfare, Government of India

Prof. Sachin Chaturvedi

Director General, Research and Information System for Developing Countries (RIS)

Prof. K. Srinath Reddy

President, Public Health Foundation of India

Lt. Gen. (Dr.) M. D. Venkatesh(R)

Vice Chancellor, MAHE

Dr. Rati Godrej

Physician and Industrialist

Mr. Ranganathan Natarajan

Co-Founder, Foundation Partners

Dr. Muzaffar Ahmad

Former Member, National Disaster Management Authority and Former DG Health, Government of J&K, India

Mr. Atul. K Nishar

Founder and Chairman Emeritus, Hexaware Technologies Limited.

Ms Vandana Shroff

Partner, Cyril Amarchand Mangaldas

Prof. K. P Krishnan

Honorary Research Professor at CPR
Former Secretary, Government of India

ACADEMIC PROGRAMS

PHFI strives 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. Our academic engagements span across four levels of specialization; short courses, certificates, post graduate diploma/ masters and doctoral programs. These programs contribute towards skill enhancement as well as creating the next generation of the public health workforce.

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

Our Academic Journey:

- 10 on-campus programs & 19 eLearning programs till date
- 3567 enrolments for on-campus programs & 9449 enrolments for eL programs till date
- 493 scholarships awarded for on-campus students
- 93% placements since inception for on-campus graduates
- 19735 participants trained through 791 short-term trainings till date
- Rich pool of 54 full time faculty members, 107 adjunct faculty members
- Multiple national and international academic collaborations
- Regular participant feedback solicited as part of a quality improvement loop
- Academic systems and processes in place to offer state-of-the-art learning experience

The academics segment has consistently responded to the public health education priorities of the country. We work closely with the Ministry of Health, Government of India, state governments and other academic institutions to strengthen public health capacity. We have consistently diversified our academic offerings, and the academic portfolio has witnessed impressive growth since the launch of our first program in 2008-09. We have consciously provided opportunity to bright and eager minds from diverse professional backgrounds for enrolling in our on-campus programs. This diversity in enrolment criteria helps enrich our classroom discussions and fosters a spirit of team-work in the classroom. Till date male students constitute 52.9% of our on-campus students; while government nominations constitute 35% of our total intake.

On-campus Programs:

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

Summary of Our Journey

On-Campus Programs	eLearning Programs	Short-term training
• 10 On-Campus Programs • 3567 enrolments • 2717 graduates • 93% placements since inception • 493 scholarships awarded	• 19 eLearning Programs • 9449 enrolments • 6821 graduates	• 791 short-term trainings conducted • Over 19735 participants

54 full time faculty members

107 adjunct faculty members

Multiple national and international collaborations
Peer-reviewed articles on public health education
Regular feedback solicited
System and processes in place

Figure 1: Our journey so far

Scale up of eLearning Programs

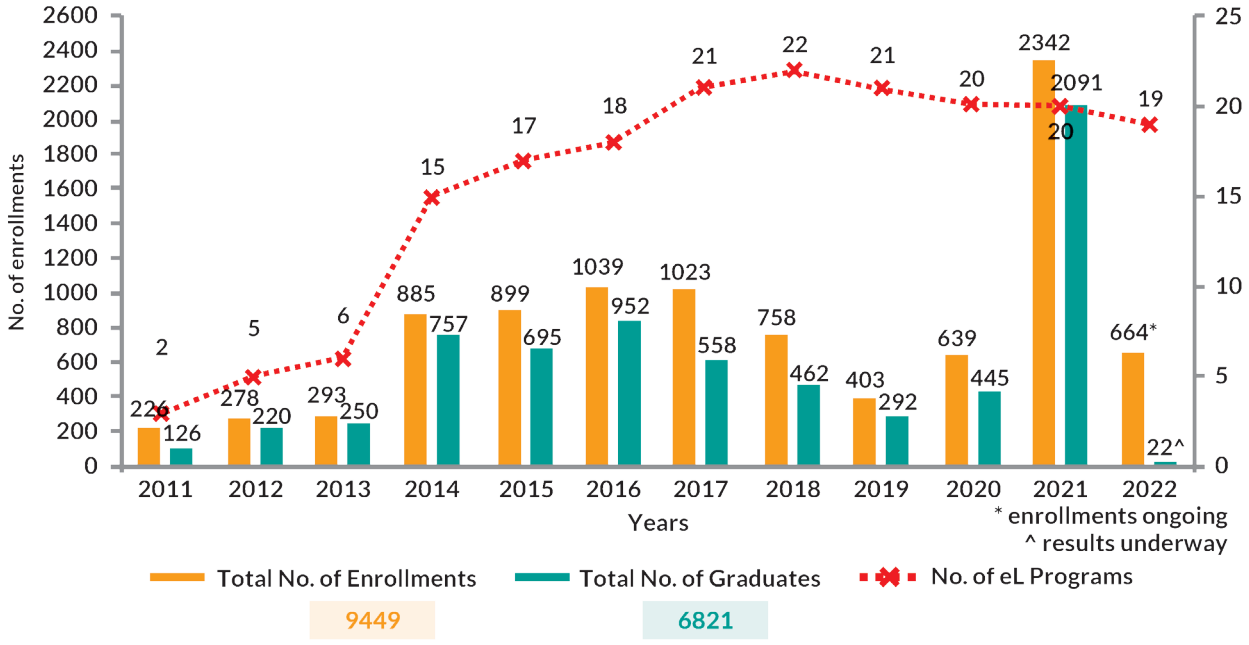


Figure 2: Scale-up of eL programs

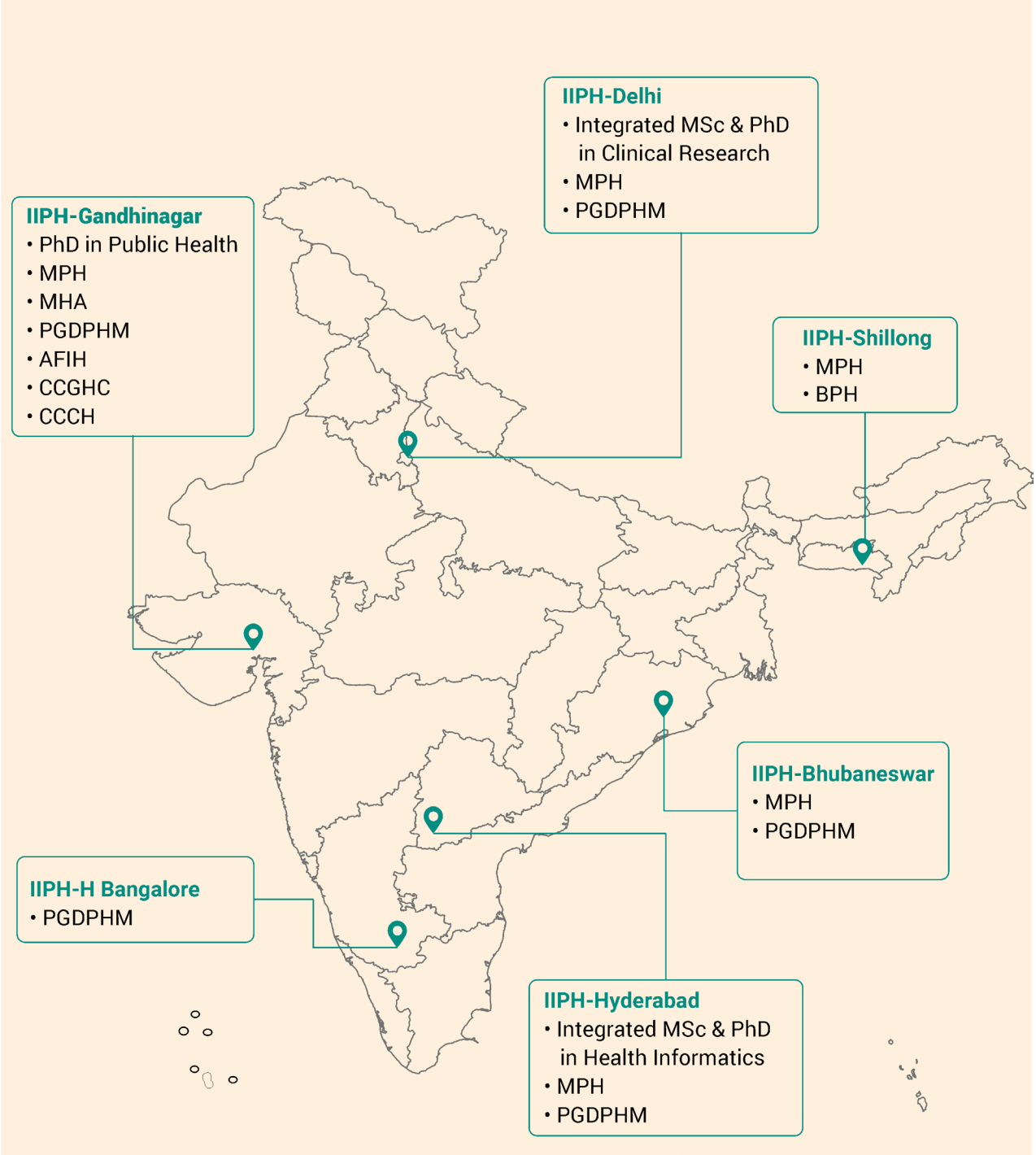


Figure 3: On-Campus Academic Programmes at Indian Institutes of Public Health

We have consciously invested in the creation of a multi-disciplinary faculty pool. We have created systems to recruit faculty members from all core speciality areas of public health.

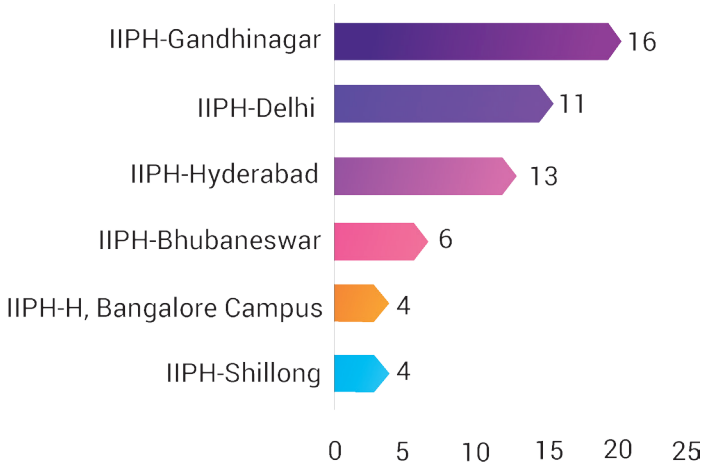


Figure 4: Faculty Resources for Academic Programmes

eLearning Programs

ePost Graduate Programs (1 year)

- Public Health Nutrition
- Health Promotion
- Epidemiology
- Management of Reproductive and Child Health Programmes
- Public Health and Hospital Management for Nursing and Allied Health Professionals
- Public Health Services Management
- Health Economics, Health Care Financing and Policy

eCourses (3-6 months)

- Research Methodology
- Monitoring and Evaluation of Health Programs
- Public Health Surveillance
- Health, Safety and Environment Management
- Tobacco Control
- Maternal, Infant, Young Child and Adolescent Nutrition
- Systematic Review & Meta-Analysis
- Public Health Disability and Research
- Research Ethics
- Effective Grant Writing in Public Health
- Advanced Hospital Management
- Clinical Research Methods

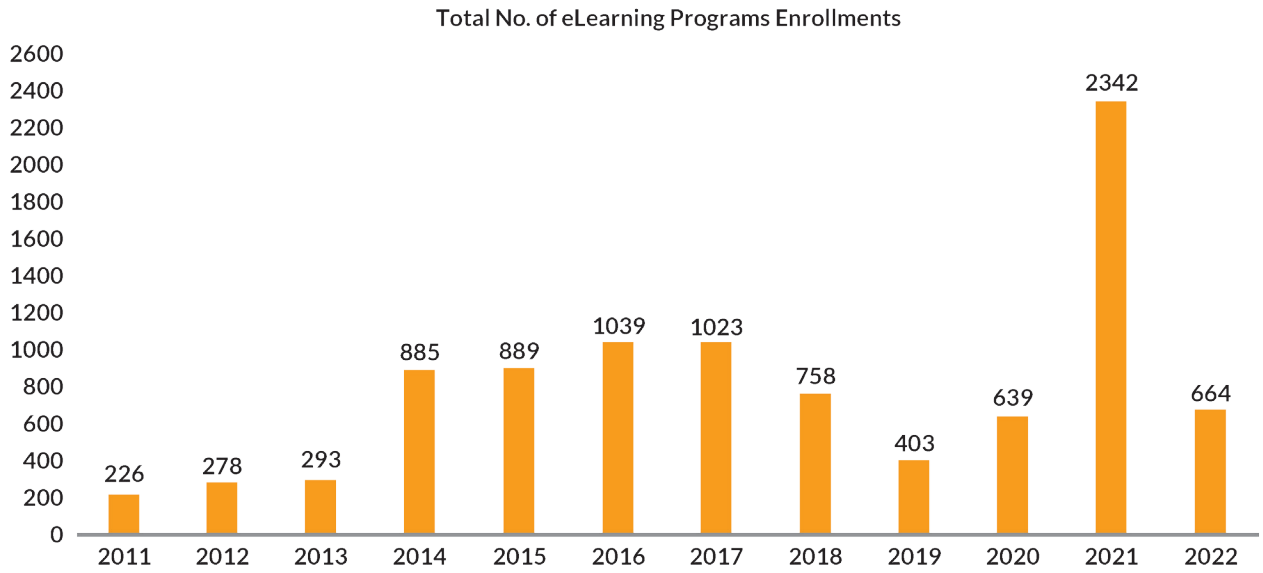


Figure 5: Growth in eLearning Programs

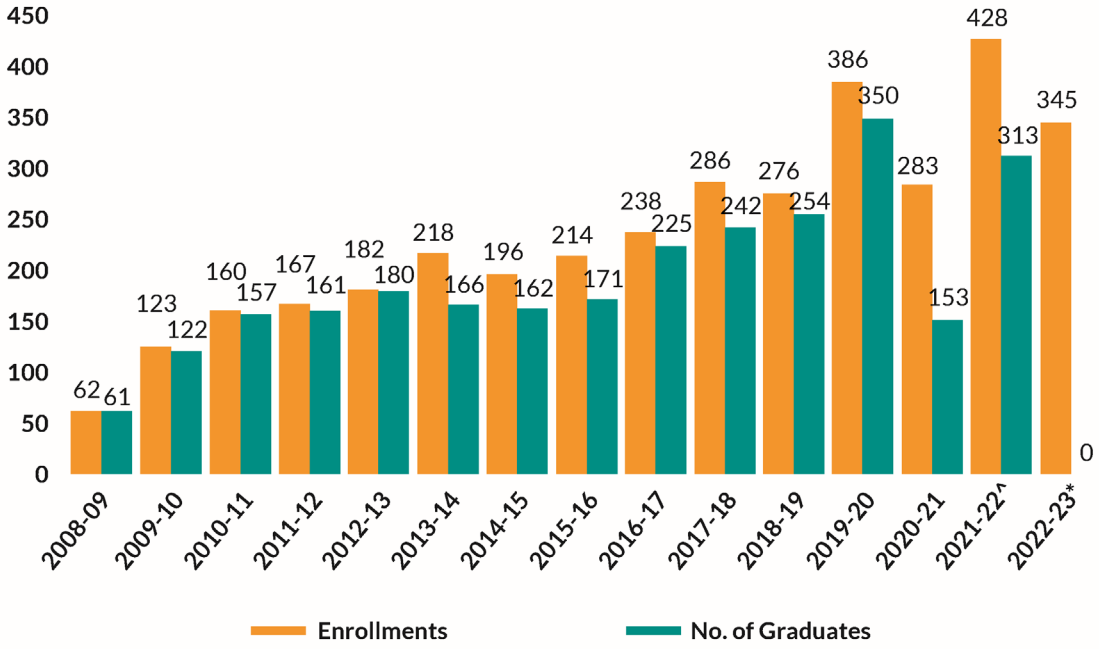


Figure 6: Growth in On Campus Programs

^Admissions ongoing (2021-2022)
*Examinations ongoing(2022-2023)

to indicate the symbols ^ and * given in the picture.

Unique features of PHFI on-campus programs:

- Inter-disciplinary approach
- Competency driven curriculum
- Linkages with public health practice
- Emphasis on problem solving, case based learning
- Use of innovative pedagogy
- Focus on transformative learning

Unique Features of PHFI Centre for eLearning:

- Wide range of programs in key areas of public health
- State of the art Learning Management System
- Enriching virtual classroom experience
- Competency driven curriculum
- Multidisciplinary faculty
- Self-paced learning
- National and international collaborations

Engagement in health professional education

PHFI, along with its IIPHs, is engaged in health workforce development through health professional education and training, program and policy relevant research, capacity-building and technical assistance. Our on-campus programs, eLearning programs and short-term trainings foster the development of contemporary skills among a multi-disciplinary group of public health professionals and practitioners. We also get nominations of in-service health professionals from various states for our on-campus and distance learning programs. Our engagement in academics extends beyond the conventional offerings of academic programs and trainings. Our mandate also extends to include capacity-building, strengthening of existing institutions and accreditation. To this end, we have systematically enhanced PHFI's footprint in the 'education of health professionals' space within the country and the region.

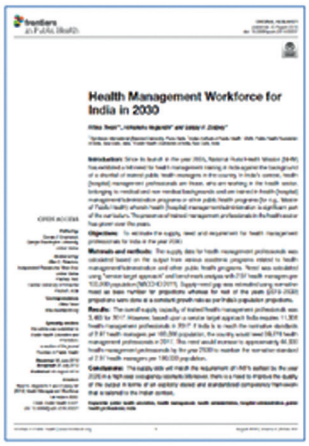
Monograph: MPH Programs in India

Monograph: Public Health Initiatives in India

The 5-Country Situational Analysis India Report

Current status of Master of Public Health programmes in India: a scoping review

WHO South-East Asia Journal of Public Health



Health Management Workforce for India in 2030

Frontiers in Public Health

Forecasting the future need and gaps in requirements for public health professionals in India up to 2026

WHO South-East Asia Journal of Public Health

Building interdisciplinary leadership skills among health practitioners in the twenty-first century: an innovative training model

BMJ Open

Since inception, we have completed 16 projects which include estimation of the need and demand of health professionals in India, mapping of public health education institutions and programs as also for specific skills such as epidemiology skills in India, cross-country comparisons between competency-driven curricula, etc. We can check if there's an update in number of projects.

We have undertaken over 30 initiatives related to program development over the last twelve years". We can check if the number of years need to be changed. These include design and development of curricula for various eLearning programs, short-term certificate courses and training programs through technical alliances, north-south collaborations, partnership with government bodies, etc.

Program Context and Relevance

On-campus programs

- **Post Graduate Diploma in Public Health Management:** Program's genesis was linked to a critical shortage of public health managers in the health systems
  - conceived, designed & developed on the request of Ministry of Health & Family Welfare (MoHFW)
  - Govt. of India constituted consortium of 10 institutions
  - National Health Mission (NRHM) context and support
  - continues to have a strong connectivity to the health system
  - draws students and some faculty from the health system
  - contribute towards creation of public health cadre
- **MSc Clinical Research:** Increased recognition about need to provide quality clinical research education in the country. This program was launched to contribute to a niche area of the market. It addresses issues surrounding design, conduct and analysis of clinical trials in India.
- **MSc Health Informatics:** A niche program and the first in Asia. Health Informatics is an emerging area with a strong technology application.
- **Master of Public Health:** The MPH is a two-year long on campus program that will create public health professionals. The MPH program is competency driven, lays emphasis on trans disciplinary skills and has a strong health systems connect. Our MPH is sensitive to the expectations from public health professionals and includes modules that are relevant for addressing the current and future challenges. It includes modules on program organization and management, problem solving, critical thinking in public health, public health research, leadership and communication skills among other relevant domains that are critical for public health practice.
- **Master of Hospital Administration (MHA):** The programme is designed to develop professionally trained administrators who can play an effective managerial role and provide leadership in public/private hospitals and healthcare institutions. For achieving its intended objective the programme curriculum is structured on a multi-disciplinary perspectives including general management and hospital management theories and practices.
- The Bachelor of Public Health (BPH) program is a full-time course of 3 years' duration with an optional fourth year of internship and or research training. Alternatively, the students may also opt for an integrated MPH program which is a three years BPH + 2 years Masters MPH (3+2). The BPH curriculum has been designed by various subject experts in the field of public health to help students learn about epidemiology, social sciences, environmental health sciences, health policy, health communication, disease outbreak investigation and health education

Curriculum: Relevance

- Health system/ industry need in their context, content and interface
- Responding to Indian public health challenges, while remaining global in outlook
- Engaging stakeholders in curriculum design and review
- Incorporating feedback in revising the curriculum

Focus on transformative learning

Our courses are "Breaking the mould" by pushing the traditional discipline-based boundaries of academia, research and public health. We lay a greater focus on the importance of leadership with focus on complexities—political, economic and social for achieving global improvements in public health and creating 'change agents' for public health. We focus on transformative learning through our MPH programs.

Placement Details

The PHFI graduates are placed in both public and private sector. Several graduates have significantly contributed towards advancing the public health agenda. The overall feedback regarding PHFI graduates has been good from the employers. We have successfully placed 93% of our self-sponsored students from on-campus programs. We have also worked closely with the industry and its CSR outreach to connect with communities. The average remuneration for our on-campus graduates is 5.2 lakh rupees.

India has a large shortage of trained public health professionals. Through our academic initiatives, PHFI has substantially contributed towards public health capacity building. Since inception, PHFI has produced 2717 graduates from on-campus programs and 6821 graduates from eLearning programs. Through these initiatives PHFI visualizes a core team of graduates who will partner and work for supporting national public health initiatives.

Sector-wise Placement details, IIPHs (Self Sponsored Students)

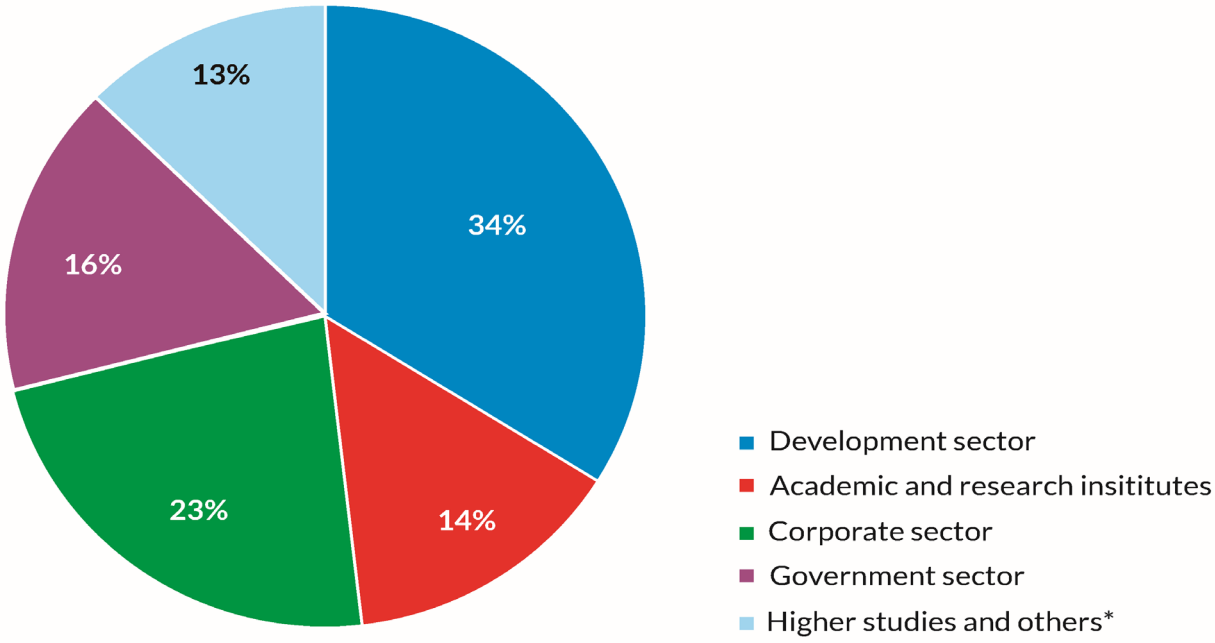


Figure 7: Sector wise placement of self-sponsored graduates (2008-09 to 2022-23)-2021-22

*Others include students who voluntarily opted out of placement support/ not applying actively/ dropped from placement/ disqualified etc.

Short term training programs

Each year we organise a series of short term trainings for participants. These trainings are widely advertised and well subscribed by participants. We offer skill based short term trainings that are useful for building required public health competencies among professionals. We also closely work with the government and organize trainings for them on special requests.

We have several tailor-made programs in niche areas such as field epidemiology, monitoring and evaluation, operations research in HIV/AIDS, Geographic Information Systems, Qualitative Research Methods and Data Analysis to name a few. We receive positive feedback from our national and international trainees and stakeholders. We have multiple requests for conducting additional rounds of trainings as per our stakeholders' request. This exhibits acceptability and 'repeat value' of our trainings programs and has led to our long-term engagement with the stakeholders.

Short-term Training and Workshops (Domains)

All IIPHs including PHFI Central Training

Distribution of Domains (Nov 1, 2008 - Sep 30, 2022)

Training Domains	IIPH Delhi	IIPH Gandhinagar	IIPH Hyderabad	IIPH Bangalore	IIPH Bhubaneswar	IIPH Shillong	PHFI	Total in all IIPHs including PHFI Central
Public Health Management and Health Economics	147	36	64	9	24	3	33	316
Quantitative Research Methods	176	14	63	4	17	1	-	275
Qualitative Research Methods	24	14	-	4	-	3	-	45
Public Health Education	37	10	-	3	2	-	3	55
Nutrition and Allied Health Sciences	23	1	1	-	6	-	-	31
Biostatistics and Data Management	30	3	29	1	6	-	-	69
Total	**437**	**78**	**157**	**21**	**55**	**7**	**36**	**791**

All IIPHs including PHFI Central Training Domains (Nov 2008 - Sep 2022)

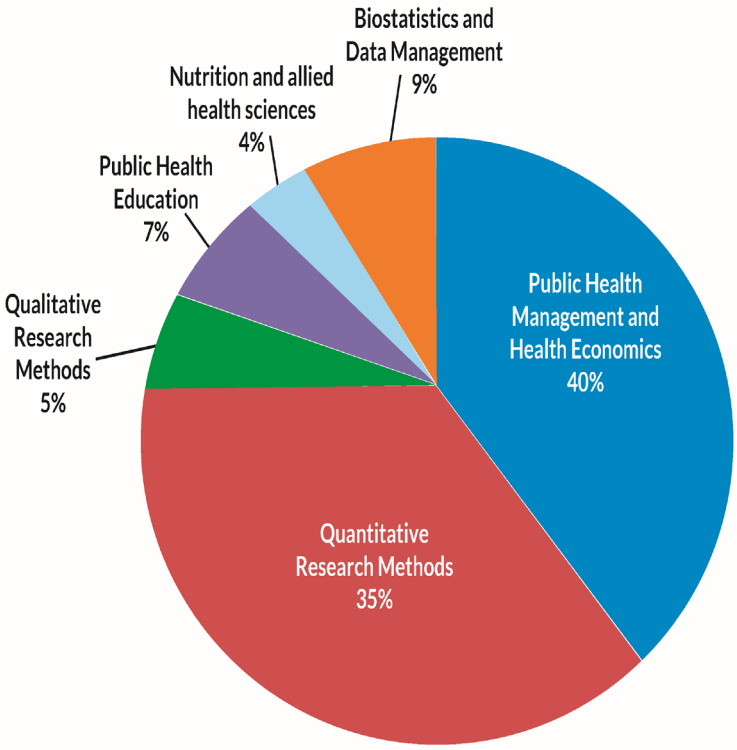


Figure 8 :Trainings offered at IIPHs including PHFI Central Training

RESEARCH & IMPLEMENTATION PROJECTS (SEPTEMBER 2021 – AUGUST 2022)

Since its inception in 2006, PHFI has been undertaking projects in multiple areas including epidemiology and control of infectious and chronic diseases, maternal and child health, health systems, and social determinants of health and public health technology. PHFI recognises scientific curiosity as fundamental to research and endeavours to cultivate an enabling and robust research eco-system for faculty, staff and students, to undertake studies in various disciplines of public health and drive the research agenda at PHFI and IIPHs.

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

The success and impact of these projects are evident through the range of scientific publications in top scientific peer-reviewed journals. More than 4100 articles in national and international scientific journals, with an overall Impact Factor (IF) of 9.72 has been published till date by the reserchers and faculty.

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

CENTRES OF EXCELLENCE(CoEs)

CENTRE FOR CHRONIC CONDITIONS AND INJURIES(CCCI)

The Centre for Chronic Conditions and Injuries (CCCI) at the Public Health Foundation of India has been established with the mandate to generate world-class knowledge that can impact policy and practice aimed at reducing the burden of chronic conditions in India and beyond. The vision of the centre is to carry out cutting-edge science to understand the dynamics, determinants and dimensions of chronic conditions and to develop, evaluate and help scale up evidence-based solutions.

Key projects

QuEST Network

Principal Investigator: Prof. Dorairaj Prabhakaran

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

Project summary: The mission of the QuEST Network is to build the evidence base to support transformation to high quality health systems by improving measurement, testing solutions, and creating generalizable knowledge in partnership with changemakers in low- and middle-income countries. The QuEST Network will be built around local research centers (QuEST Centers). The QuEST India Center at PHFI will conduct joint research, develop and fundraise for new research, and support the activities of the QuEST Network, to strengthen the health system in India.

Expected impact on public health in India: This study will assist India in improving health system competence for better maternal and newborn health by shedding light on bottlenecks for health system performance. It will lead to the development of a new, efficient measurement tool, e-Cohort, for assessing the quality of care for pregnant women. The data obtained with this tool will provide an assessment of health system competence for longitudinal care in pregnancy and thus also inform quality improvement reforms. This study also assesses the feasibility of implementing a Maternal and Child Health Service Delivery Redesign (SDR) to improve survival of mothers and newborns. The SDR will benefit by increasing efficiency in use of health system resources such as health providers and infrastructure as these would be concentrated in fewer facilities.

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

Principal Investigator: Prof. Dorairaj Prabhakaran

This is an ongoing project and is jointly funded by DBT, India, and Medical Research Council (MRC), UK

Project summary: This study aims to evaluate the effectiveness of a tablet-based electronic decision support system (EDSS) to enhance routine antenatal care (ANC) and improve the screening and management of Pregnancy Induced Hypertension (PIH), Gestational Diabetes Mellitus (GDM), and anaemia in pregnancy in primary healthcare facilities of Telangana, India. The EDSS will work at two levels of primary health care facilities, i.e., at the sub-centre and the primary health centre levels, and is customized for three cadres of healthcare providers – physicians, staff nurses, and Auxiliary Nurse Midwifes (ANMs). The effectiveness evaluation will be conducted through a cluster randomized controlled trial involving 33 clusters and a total of 660 pregnant women each in the intervention and control arms. One cluster will include three health facilities - one Primary Health Centre

(PHC) and two linked sub-centers (SC). Facilities in the intervention arm, ANMs, Staff nurses, and Medical Officers will use the EDSS while providing ANC for all pregnant women. Facilities in the control arm will continue to provide ANC services as per the existing standard of care in Telangana. The primary outcome is ANC quality, measured as provision of a composite of four selected ANC components (measurement of blood pressure, blood glucose, haemoglobin levels, and conducting urinary dipstick test) by the healthcare providers per visit, observed over two visits. Trained field research staff will collect outcome data via a ANC observation checklist.

Expected impact on public health in India: This is the first trial in India to evaluate an EDSS, targeted to enhance the quality of ANC and improve the screening and management of PIH, GDM, and anaemia, for multiple levels of health facilities and cadres of healthcare providers. If effective, insights from the trial on the feasibility and cost of implementing the EDSS can inform potential national scale-up. Lessons learned from this trial will also inform recommendations for designing and upscaling similar mHealth interventions in other low and middle-income countries.

Indo-European Consortium for Next Generation Influenza Vaccine Innovation

Principal Investigator: Prof. Sailesh Mohan

This is an ongoing project and is funded by Department of Biotechnology (DBT), India and European Commission (European Union as a part of Horizon 2020) through the National Institute of Immunology, New Delhi

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 are as follows:

1. To assess the awareness about influenza among various population sub-groups (elderly population≥65 years, pregnant women, people aged ≥30 years and ≤65 years with chronic illnesses, and parents of children aged 0-5 years) in the selected rural and urban areas of Sonipat and Visakhapatnam districts.
2. To understand the perception of the aforementioned population subgroups with regard to the influenza vaccine and its attributes using a discrete choice experiment (DCE).
3. To develop an influenza surveillance system and conduct influenza surveillance in the community and sentinel sites in rural and urban areas of Sonipat, Haryana and Visakhapatnam, Andhra Pradesh in order to measure the influenza incidence, morbidity, mortality and their seasonal variation.
4. To conduct a health system and needs assessment in rural and urban health facilities of aforementioned areas for identifying existing gaps (infrastructure, human resource and their training) in implementation of influenza vaccination and community mobilization.

Expected impact on public health in India: The anticipated knowledge and expertise generated by this study will significantly contribute to the influenza disease surveillance and improved pandemic preparedness. Additionally, this study will provide an insight into the awareness of influenza and help in estimating the theoretical demand of vaccine. Furthermore, this study will contribute to develop a blueprint on the implementation of the vaccination program in a stratified manner and community mobilization for enhancing the uptake of the vaccine.

Promoting uptake of Low sodiUm iodized salt by Rural And urban households in India: the PLURAL study

Principal Investigator: Prof. Sailesh Mohan

This is an ongoing project and is funded by Vital Strategies through Resolve To Save Lives (RTSL)

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. We propose this study to understand the sale, use, health benefits and uptake of low sodium iodised salt (LSIS), design an intervention based on the formative research and subsequently implement and evaluate the impact of the intervention (using the RE-AIM framework) on the uptake of LSIS, at the household and retailer/supplier level in the last six months of our survey. Our hypothesis is that consumer education about LSIS along with retailer education, engagement and reinforcement for ensuring easy availability of LSIS will increase its uptake amongst consumers and providing consumer subsidy to buy LSIS will further increase the uptake.

Key findings summary: The formative phase of the research has been completed in which a diverse range of stakeholders were approached to participate and data was collected using in-depth interviews and focus group discussions. The awareness and availability of low sodium iodized salt was low both in Sonipat and Visakhapatnam. Participants were open to the idea of providing the subsidy to buy LSIS to offset the increase in cost. Taste, color and texture were listed as important attributes of LSIS that was important to the participants and which would drive their choice to purchase.

Expected impact on Public Health in India: The evidence from this project will help policy makers decide rolling out LSIS for hypertension prevention and control through various schemes. The government may also want to procure LSIS in place of LSIS for its various programmes.

Comprehensive Need Assessment of Patharlapalli PHC in Srikakulam (Andhra Pradesh) to come up with a PHC upgradation plan

Principal Investigator: Prof. Sailesh Mohan

The project was funded by Dr. Reddy's Foundation (DRF) and is now completed

Project summary: India is undergoing a rapid epidemiological and demographic transition. With the accelerated rise in non-communicable diseases (NCDs) along with injuries and mental health, and the continuing challenge posed by communicable and nutrition related diseases, we are facing a "triple burden" of diseases. The Government of India has initiated several national health programmes that operate under the aegis of the National Health Mission. To modernize, transform and provide comprehensive primary care, the Government of India launched the Ayushman Bharat Yojana, under which health subcenters, primary health centres and urban primary health centres, will be transformed to Health and Wellness Centres (HWCs). These centres are envisaged to deliver a range of services encompassing the full continuum of care from health promotion, prevention, management and rehabilitation. The Public Health Foundation of India proposed a timely and relevant package of interventions for comprehensive PHC upgradation (which included best practices/tested digital technologies/innovations). These were delivered through the primary care system to demonstrate the effectiveness of a suite of digital solutions to provide comprehensive primary care in select health facilities of Srikakulam district in Andhra Pradesh, in alignment with the Government of India's Ayushman Bharat Yojana and the National

Digital Health Mission. The digital solutions include digital decision support system and assisted telemedicine. To introduce, implement and evaluate the comprehensive PHC upgradation plan, including the digital health solutions, the first step was to carry out an assessment of select health facilities to determine: a. the current capacity to provide comprehensive primary care for various common conditions and b. the existing digital infrastructure including assessment of e-Sanjeevani - stage of deployment, extent of utilization and effectiveness.

Key findings summary: NQAS assessment - The overall PHC score was 61.2 score. Department wise scores are as follows: Outpatient department 77.7, labor room 58.7, inpatient department 58.0, laboratory 55.7, National Health Programme 60.3 and general 51.5. Patients were satisfied with the services being provided at the PHC. There was a need expressed for female medical officer. Training the staff on use of electronic devices was identified as a prerequisite for carry out their daily routine tasks as now most of the reporting is through applications developed by the government of Andhra Pradesh. Computers and printers were requested to be installed in the laboratory, pharmacy and reception for accessing medical records and printing prescriptions and reports of the patients. Respondents also requested ceiling fans and drinking water facility in the patient waiting area. They said that in summer months it becomes very hot and uncomfortable to sit in the waiting area.

Expected impact on public health in India: Detailed report has been submitted to the funder which they plan to share with the district health authorities to fulfil some of the requirements of PHC/PHC staff.

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

Principal Investigator: Dr. Kavita Singh

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

Project summary: This is K43 Fogarty fellowship and aims to develop, implement, and evaluate a Collaborative Quality ImProvement (C-QIP) intervention (non-physician health worker, text messages for healthy lifestyle and clinical decision-support system) effect on processes of care measures and clinical outcomes among individuals with existing cardiovascular disease (CVD) in India using United Kingdom Medical Research Council (MRC) framework for developing and evaluating complex interventions

Expected impact on public health in India: The Collaborative Quality ImProvement (C-QIP) interventions among people in India who already have cardiovascular disease (CVD) will significantly improve the patient's current state of disease and contribute in lowering the burden of mortality and morbidity. The feasibility (screening, recruitment, randomization, and follow-up rates), fidelity (adherence to study protocol), adoption, and acceptability from the perspectives of patients and providers (use of EHR-DSS management plan for the intervention arm patients, number of DSS prompts accepted by the physicians, use of text-messages as reminders for the next clinic visit, lab appointment, and health appointments) will all be revealed through this study. The adoption of a similar model for CVD secondary care will benefit policymakers.

We have provided the training to all the four sites (AIIMS, Ganagram, GB Pant and SDM) related to our study intervention and now all the sites are in process of recruiting the participants.

Novel Salivary Diagnostics for Screening and Detection of Early Oral Cancer

Principal Investigator: Dr. Krithiga Shridhar

The project was funded by Aqsens Health Private Ltd, India and is now completed

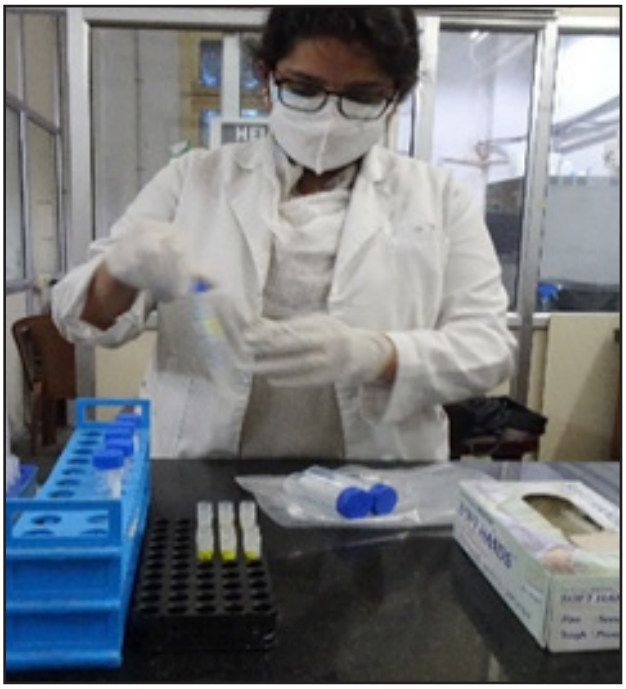
Project summary: The project aimed at developing a non-invasive method for screening early stages of oral cancer detection from saliva for the Indian population. Primary Objective -- To develop and test Time-Resolved Fluorescence (TRF) salivary luminescence fingerprint for early detection of oral cancer. Secondary Objective –To understand

time intervals and patient-level factors in oral cancer diagnostic pathways.

Key findings summary: Primary objective: We have completed data collection and lab work for the development of TRF assay. The results are being analyzed and interpreted. We expect the work to be complete by December, 2022 and disseminate information through scientific publications, conferences and workshops. Secondary objective: We have completed data collection and analysis (N=226 oral cancer patients (mean age (± SD) 51.9 years (± 10.9); 81.9% men; 70.3% advanced stage). Our key findings highlight that over a half of patients presented with prolonged appraisal and help-seeking intervals, and a third reported prolonged diagnostic interval. Interventions targeting sociocultural and economic determinants, symptom awareness, sensitizing persons at risk (especially women) and primary care providers might reduce overall time to diagnosis. Further, patients without any known risk factors for oral cancer might be at-risk for prolonged appraisal interval.

Expected impact on public health in India:

1. The expected clinical and public health relevance of TRF detection tool is the simplicity, non-invasiveness and possible rapidness of the new screening/diagnostic tool, which can be up-scaled cost-effectively.
2. Understand time intervals and patient-level factors in oral cancer diagnostic pathways, might help inform 'pull' strategies for cancer control, in relation to a leading cancer site, in India and similar settings.



Sample processing & storage

Deep Learning for Oral Cancer Screening and Referral: A Feasibility Investigation (DL-CANSCREEN)

Principal Investigator: Dr. Krithiga Shridhar

This is an ongoing project and is funded by Google India Pvt Ltd. through Centre for Chronic Disease Control

Project summary: We investigated the feasibility of different DL multiclass digital image classifiers to classify digital photographic pictures of the oral cavity into oral cancer (CLASS-3) and precancer lesions (CLASS-2) by differentiating them from healthy mucosal variants and common benign lesions (CLASS-1). We aimed to identify the best fitting model with several systematic experiments, to classify individuals in the 'healthy-to-diseased' spectrum that may further help in referral pathways and may serve as an automated care linkage tool, in future, for patient care continuum (e.g., with management algorithm and/or a health system navigation tool). We acquired labelled digital photographic images of healthy mucosa, mucosal variants, benign oral lesions, precancer lesions, and early and late cancer (biopsy confirmed). The images

Lab analysis - Time-Resolved Fluorescence assay

and epidemiological data were de-identified for any personal identifiers. We regrouped image data into three classes – class-1 healthy & benign lesions (n=202); class-2 oral precancer lesions (n=411) and class-3 early and late oral cancer (n=166). in order to prevent overfitting of models and to resolve class imbalance, we utilized data augmentation techniques of rotation with 45, 90, 135, 180 degrees and flipping or increased gamma contrast to 1.8x the original value (for YOLO only) or rgb-hsv color conversion (for AlexNet only) to transform class-1 & 3 images. The final set of images included n=606 for class-1; n=411 for class-2; and n=492 for class-3. We trained, tested and validated three DL neural networks for multi-class image classification –EfficientNet, AlexNet and YOLOv5m and confirmed the performance of the networks through transfer learning with state-of-the art neural networks. We explored best-fitting models for localization of regions of interest and decision-tree analysis using risk factor data of individuals

Key findings summary: With limitations of sample size and potential misclassifications during training, we conclude: *AlexNet is the best-fitting model for multi-class classifier. EfficientNet is comparable to AlexNet but not YOLOv5m. These are confirmed through transfer learning comparisons. *Heterogeneity in benign and precancer lesions is handled reasonably well by AlexNet and EfficientNet with minimal misclassifications between classes-1 & 2 with augmentation of images, and by increasing the dropout value and hyperparameter tuning. *Localization of lesions is precise with YOLOv5m. *Performance of an image classifier improves with decision-tree analysis. *Patch-wise approach is less feasible in real-time. Recommendations: 1. AlexNet for image classification with YOLOv5m for localization of regions of interest can be one of the best-fitting solutions. 2. Decision-tree algorithm will improve the classification performance of the model.

Expected impact on public health in India: Artificial Intelligence - machine or deep learning algorithms - has shown promising results for several diagnostic and therapeutic uses of cancer including differentiating benign and early malignant lesions, assessing tumour location, stage, grade and degree of metastasis and for planning and evaluating treatment response. 1. Validated AI model may impact the stages at diagnosis, patient survival, lifestyle practices (e.g., tobacco cessation), health service provider practices, care linkages, healthcare costs, and patients' quality of life. 2. Could be upgraded into an offline mobile-application & integrated with the national cancer screening programme Could serve as a model for similar efforts for other cancer sites (e.g., cervix). 3. Can aid in the overall advancement of the AI models of optical imaging

Oral microbiota and early oral cancer (MICRO-ORAL)

Principal Investigator: Dr. Krithiga Shridhar

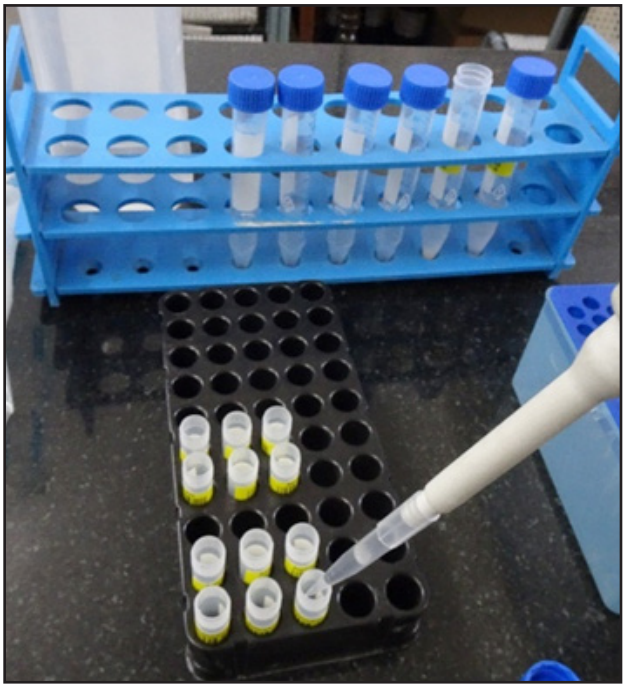
This is an ongoing project and is funded by Yusuf Hamied Faculty Fellowship, Columbia Mailman School of Public Health, USA through Columbia Global Centres, Mumbai

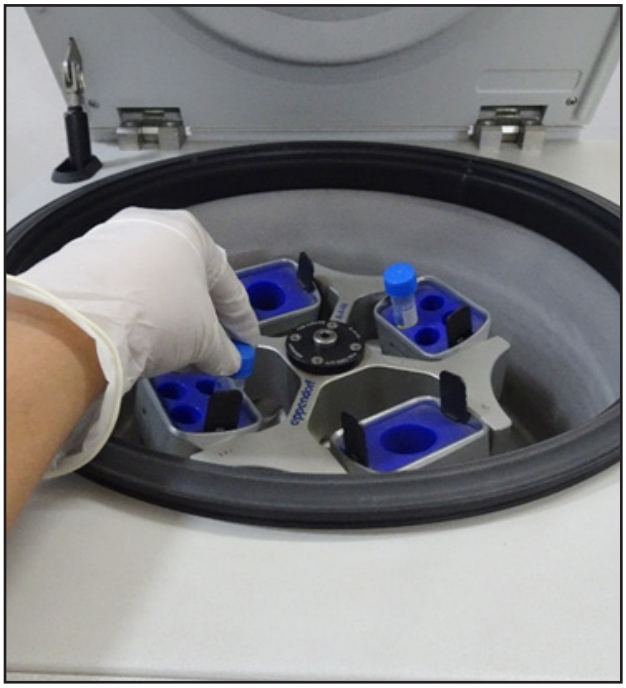
Project summary: To build India-US collaborations and specialized research skills for large-scale studies in human microbiome and environmental factors in India.

As a first step, we plan to generate pilot data for oral microbiota in early oral cancer cases (N=50) and healthy controls (N=50) through 16S rRNA sequencing of saliva samples processed and stored in PHFI biorepository.

This pilot project will help us address the following objectives:

1. To standardize laboratory protocol and methods for sequencing of oral microbiota in saliva samples
2. To generate preliminary data to explore differences in oral microbial composition in early oral cancer cases compared to healthy controls.
3. To set-up a training platform for bioinformatics and microbiome data analytics using the generated data.





Saliva samples in PHFI's Genetics and Biochemistry lab biorepository

Worksite based Lifestyle Program for Reducing Diabetes and Cardiovascular Risk in India (INDIA-WORKS)

Principal Investigator: Prof. Dorairaj Prabhakaran

This is an ongoing project and is funded by Emory University, USA

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

Key findings summary: 6265 individuals were screened from participating worksites from which 2108 eligible participants were identified as participants eligible for intervention against the target of 2,000. Baseline data collection and intervention were completed in all study sites. As part of the program, staff members at the sites were trained in delivery of lifestyle education, providing healthy food options to employees, and motivating healthy decisions at the workplace. The intervention was delivered by peer educators through 16 weekly core classes, followed by a maintenance phase of 8 monthly classes. The quantitative data collection of the second annual follow up has been completed in all study sites. Despite the challenges posed by the COVID19 pandemic we were able to complete the first

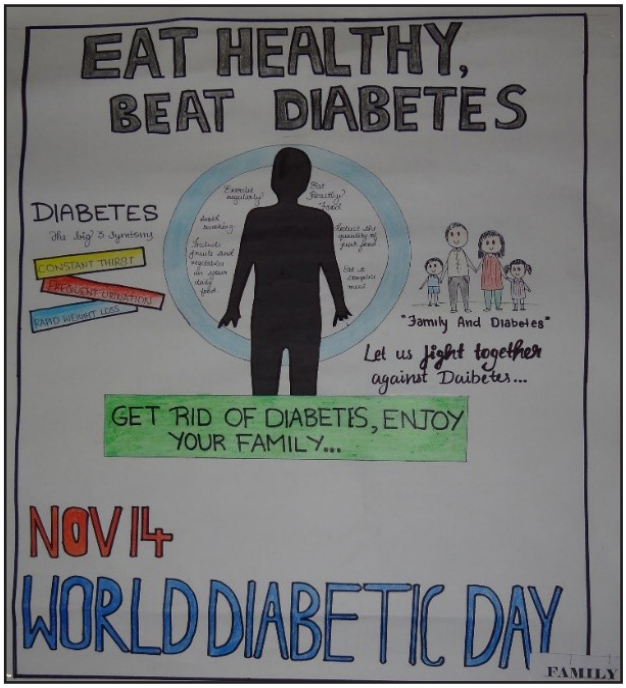
follow up of 1492 participants and the second follow up of 1358 participants. Data analysis of quantitative and qualitative data, and manuscript preparation is currently in progress.

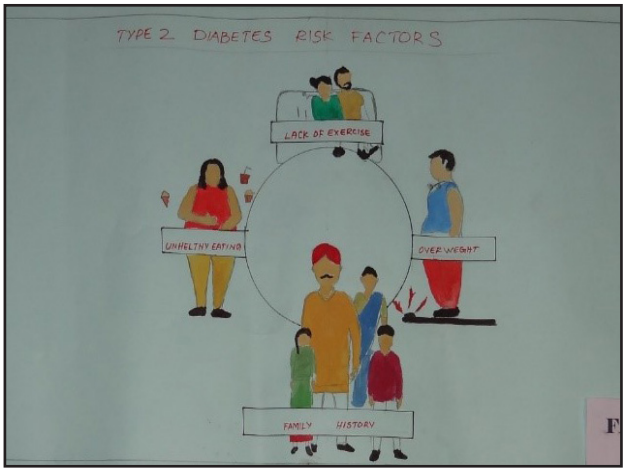
Expected impact on public health in India: The worksite-based lifestyle improvement programme is designed to address the growing diabetes burden in India, through targeting employees in the organized workforce (both public and private sectors). It follows a peer led programme with classes on diet, physical activity, and behavioral modification. A major focus of this project is to demonstrate full-scale sustainability at worksites across India. It will inform stakeholders who might consider adopting this intervention program to be fully informed of the upfront (fixed) and recurring (variable) costs to deliver the intervention and the potential return on investment.

A yoga session in progress as part of intervention in HLL Lifecare

Stake holder meeting- SAIL Rourkela

Symbolic Marathon organised in HLL Lifecare on World Diabetes Day





Diabetes awareness poster competition for children of HLL Lifecare staff

Variation in innate immune activation and cardiovascular disease risk as drivers of immune pathology in COVID19 outcome in South Asians in UK and India (CARDINNATE Study)

Principal Investigator: Dr. Kavita Singh

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

Project summary: This study has four aims:

1 To use existing datasets of hospitalised 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. This is designed to provide confirmatory data on the contribution of pre-existing cardiovascular disease (CVD)/diabetes and cardiac damage/dysfunction.

2 To determine whether there are inherent differences in microbially-induced proinflammatory and antiviral immune responses between COVID-19 naïve South Asians in the UK versus India, and their association with CVD/diabetes and autoantibodies to interferon. Subjects to be studied will have similar demographic and CVD profiles to those identified in Aim 1. This will allow us to assess whether innate immune responses are different between UK SAs and India and how this is affected by CVD/diabetes.

3 To perform extensive prospective systemic immunophenotyping, and analysis of endothelial, complement activation, and cardiac function in South Asians admitted with severe COVID-19 in London and India to identify and cross-compare key immune and CVD signatures associated with clinical outcome.

4 To determine the inter-relationship between immune responses, pre-existing CVD and functional outcome in South Asians 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.

This study is ongoing in four hospitals in India (AIIMS Delhi, AIIMS Jodhpur, DMC Ludhiana, Punjab, and Apollo Hospital, Hyderabad). These four sites will recruit 200 patients (50 patients each site). Baseline data, including demographics and pre-existing conditions, are collected with the electronic data capture platform REDCap. These patients will be asked to visit clinics after 12 months of COVID infection for follow up assessment. Follow-up assessment data, including outcomes – re-hospitalizations, reinfections, persistent COVID signs and symptoms, Laboratory results and other investigation data will be collected 12-24-months post-hospital discharge. One site has started patient recruitment and follow up data collected for 10 patients.

Expected impact on public health in India: The project will provide important new information on the biological mechanisms and environmental influences that underlie ethnicity-dependent variations in COVID-19 outcome thereby filling a critical gap in the investigations on the impact of ethnicity to date. The study findings would be useful to rapidly enhance the risk prediction and clinical care with near patient testing in India. The healthcare system in India is not set up to provide follow-up care and our project will also inform the immunological mechanisms underpinning 'long- covid' illness, in this at-risk population, addressing a key healthcare unmet need.

Brave Bones: My Story; My Voice

Principal Investigators: Prof. Shifalika Goenka & Dr. Sangamitra Pati

This project was funded by Wellcome Trust (WT), UK and is now completed

Project summary: "Brave Bones: My Story; My Voice". Qualitative interviews with sufferers of rheumatoid arthritis, osteoarthritis, and osteoporosis especially women were elicited and documented as illness narratives. These included their daily living challenges both from a mental health and physical health perspective. These then influenced the guidance and solutions

and living advice being given by the physicians to similar patients. These were then transformed into culturally appealing audio-visuals by employing a mix of traditional, and modern techniques. Thus, these were co-created which were helpful to other patients as well as providers.

Key findings summary: Patients' illness narratives enabled the health care providers and care givers to understand the depth and nuances of the patients' care needs and constraints, became more sensitive to them and also addressed these real issues in their clinical practice. The co-created audio-visual aids enhanced the mental and physical health of patients and enabled providers to deliver clinical care more aligned to the patients felt needs. Patients with newly diagnosed arthritis would benefit and so would providers

Expected impact on public health in India: Post dissemination and uptake of the co-created audiovisual material the providers will have enhanced sensitivity to the suffering of patients with arthritis especially women and future patients will benefit too.

Public Health Ethics in India- Establishing linkages and Synergies

Principal Investigator: Prof. Shifalika Goenka

This project was funded by Wellcome Trust (WT) , UK and is now completed

Project summary: With this grant we established the "Centre for Ethics and Humanities" at the Public Health Foundation of India. In the Center of "Public Health, Humanities and Ethics we aim to create "Thought leaders" in Humanities, Social Sciences and Public health". We aim to integrate more public health into humanities and vice versa and integrate multiple disciplines. We wanted public health ethics integral to public health vision and planning. Our work and objectives are aligned to "The National Education Policy 2020, Government of India" which emphasises the importance of doing multidisciplinary research in "Social Sciences, Humanities and Health"

Key findings summary: With this grant we established the "Centre for Ethics and Humanities" at the Public Health Foundation of India. Researchers, faculty, students of Public Health and students of humanities have largely benefited. The first Moot Court in Public Health and law was conducted which was highly successful. Additionally, an MOU was signed between the Public Health Foundation of India and NLU- Odisha

Expected impact on public health in India: This will help in integrating Ethics and Humanities into Public Health and Vice-versa; integrating Public Health into Law; will help in Research Ethics, Public Health Ethics and law teaching and training

Maternal Docosa - Hexanoic Acid (DHA) supplementation and offspring Neurodevelopment in Infants (DHANI) (Early Career Fellowship)

Principal Investigator: Dr Shweta Khandelwal

This was funded by The DBT/Wellcome Trust India Alliance and is now completed

Project summary: Evidence suggests a strong association between nutrition during the first 1000 days (conception to 2 years of life) and cognitive development. Maternal docosahexaenoic acid (DHA) supplementation has been suggested to be linked with cognitive development of their offspring. DHA is a structural component of human brain and retina, and can be derived from marine algae, fatty fish and marine oils. Since Indian diets are largely devoid of such products, plasma DHA levels are low. We have tested the effect of pre- and post-natal DHA maternal supplementation in India on infant motor and mental development, anthropometry and morbidity patterns. DHANI is the first large pre- and post-natal maternal dietary supplementation trial in India. It is a double-blinded, parallel group, randomized, placebo controlled trial supplementing 957 pregnant women aged 18–35 years from ≤20 weeks gestation through 6 months postpartum with 400 mg/d algal-derived DHA or placebo.

Expected impact on public health in India: To the best of our knowledge this is the first such randomised controlled trial conducted anywhere in the world which starts supplementation during pregnancy and continues through 6 months post-partum. This has led to enhanced understanding of the role of maternal DHA supplementation on in-utero and early-life cognitive and motor development among their infants. Results from this study have provided the first high quality evidence on whether a prenatal and continued as postnatal DHA supplement improves the neurodevelopment of 1 year old infants born to supplemented mothers. Although the mechanisms involved are not completely understood, the active properties of DHA are thought to include effects on neuronal development and plasticity, receptor-mediated signaling, changes in membrane fluidity, the formation of second messengers, and/or enhancement of the production of anti-inflammatory lipid mediators due to the availability of DHA as substrate.

Evaluating Causal Relationship Between Regional Body Fat Distribution and Lipid Profile in Indian Population(Early Career Fellowship)

Principal Investigator: Dr. Gagandeep K Walia

The project is ongoing and is funded by The DBT/ Wellcome Trust India Alliance

Project Summary: The aim of the proposed study is to examine whether regional body fat distribution is causally associated with lipid levels in Indian population. We will first identify and validate the genetic variants associated with adiposity and lipid traits to derive instrument variables based on allelic risk scores and then use them as proxy for exposures and outcomes in examining the causal pathways using bi-directional Mendelian Randomization approach. We will be generating genome-wide data on intensively phenotyped "CARRS cohort study" participants using a recent GWAS chip named Global Screening Array (~640,000 markers) to identify India specific genetic variants of different cardiometabolic traits. We will also utilize the available cardio-metabochip data (~200,000 markers related to cardiometabolic traits) on another well-phenotyped samples from "Indian Migration Study" in order to validate the loci of interest. Therefore, this will collectively help in deriving allele scores to be used as genetic proxies for the traits to be examined on the causal pathway i.e. body fat distribution (exposure) and lipid levels (outcome). Apart from undrestanding the genetic variants of cardiometabolic traits for indian population, the findings from the proposed study will provide evidence for the causality between regional adiposity and levels of lipids.

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

ATMAN: Adaptation and Evaluation of a Psychosocial Intervention for Self-Harm in Youth (Early Career Fellowship)

Principal Investigator: Dr. Shilpa Aggarwal

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

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

first phase are: To adapt an intervention by

1 Identifying specific components to address individual, peer and family targets for symptomatic recovery in youth who self-harm.

2 Describing domains of psychopathology and targets to address in Indian youth with self-harm.

3 Integrating additional contextual information within the intervention framework to improve its acceptability and effectiveness.

4 Evaluating acceptability and feasibility of the intervention. The specific goal of the second phase is to evaluate effectiveness of the intervention delivered by the counsellors in reducing self-harm thoughts and behaviour in youth. The objective is to adapt a psychosocial intervention to prevent recurrence of self-harm behavior in young people.

Expected impact on public health in India: The rates of suicide in India have shifted with economic development with a rising rate of suicide evident in young men and women. Suicide has overtaken maternal causes globally as a major cause of death in young women. Self-harm is a strong antecedent to suicide. However, there are very few evidence-based interventions available to target this public health challenge amongst youth in India. ATMAN will target this area of need by modifying and evaluating an intervention to reduce self-harm in youth in India.

Is high sensitivity C-Reactive Protein (hsCRP) associated with depression in pre-diabetes and diabetes subjects participating in a worksite-based lifestyle modification program in urban India? (DST-INSPIRE Faculty Fellowship)

Principal Investigator: Dr. Debarati Mukherjee

This project was funded by Department of Science & Technology (DST) as a sub-study of the INDIAWORKS project funded by NIH, and is now completed

Project summary: Individuals with type 2 diabetes mellitus (T2DM) are twice as likely to have comorbid depression compared to the general population (Anderson et al, 2001). Since elevated hsCRP is associated with pre-diabetes and diabetes (Mohan et al, 2005), and emerging evidence suggests a positive association with depressive symptoms (van Dooren et al, 2016), chronic low-grade systemic inflammation could be a mechanistic link (Herder et al, 2017) between the two disorders. This sub-study was aimed to determine if high systemic inflammation (as measured by high-sensitivity C reactive protein; hsCRP) is positively associated with depressive symptoms in individuals with pre-diabetes and diabetes in the Indian population. Till date 6265 individuals (1192 women) have been screened across 11 sites in India. 2108 participants (477 women) met the inclusion and exclusion criteria. Baseline data collection and 16 intervention classes designed to reduce the risk of cardio-metabolic disorders have been completed at all sites in the 2017-2019 time period. Complete baseline data is now available for 2108 participants, along with a subsample of annual follow-ups across two sweeps (First FU N = 1111; Second FU N = 890).

The mean (SD) age of the participants was 47.72 (8.75) years. 22.62% were female. Depressive symptoms were measured using the 8-item Patient Health Questionnaire (PHQ-8).

Key findings summary: 4.24% of the participants had a PHQ-8 score ≥10 (score cut-off for 88% sensitivity and specificity for diagnosed depression) during baseline, which reduced to 0.63% and 0.77% during the first and second annual follow-ups respectively. Mean (SD) depression scores increased with increasing stress levels at work (0.602 (1.84) in very low stress vs 6.54 (6.69) for very high stress). Although the absolute values were lower, similar trends were observed for the two annual follow-ups: Mean (SD) for depression scores were 0.204 (0.78) in very low stress vs 2.88 (1.56) for very high stress during the first FU and 0.743 (1.38) in very low stress vs 3.86 (2.85) for very high stress during the second FU. Mean (SD) hsCRP levels are also higher among those with high levels of stress during baseline (1.83 (2.21) mg/L in very low stress vs 2.94 (2.62) mg/L for very high stress). As with depression scores, trends for hsCRP levels were similar for low vs high stress during both the follow-ups: 1.89 (2.15) mg/L in very low stress vs 3.30 (3.25) mg/L for very high stress during the first FU and 2.58 (2.35) mg/L in very low stress vs 4.47 (2.98) mg/L for very high stress during the second FU.

Expected impact on public health in India: The associations of higher levels of depressive symptoms and systemic inflammation in employees who experience high levels of stress at work demonstrate the harms of high stress jobs on health and well-being of the productive human capital in India. The study suggests that both depressive symptoms and systemic inflammation markers should be regularly assessed at workplaces, and appropriate interventions should be put in place to enable higher levels of productivity and improved health and quality of life in Indian worksites.

CENTRE FOR ENVIRONMENTAL HEALTH (CEH)

To understand and to address the environmental health burden of disease in India, the Centre for Environmental Health was established in May 2016 with support from Tata Sons and Tata Consultancy Services, with the mandate:

- Action towards the conduct of multi-disciplinary research focused on national priorities
- Build capacity in environmental health (research, short-term training & education)
- Cohesive efforts towards implementing remedial action for key environmental issues of concern
- Development of evidence-informed policy recommendations for india
- Establish multi-institution partnerships to leverage institutional capabilities, raise awareness, engage in discussions to address issues locally and holistically

Key projects

CONsortium for Climate and Health (CONCH)

Principal Investigator: Dr. Poornima Prabhakaran

Project Summary: The CONsortium for Climate and Health (CONCH), South Asia has been established with the aim of building on the positive momentum to collectively work towards advancing the agenda for climate change and the impacts on health in the South Asia region. This region with 11 countries hosts a diverse profile of regional climate vulnerabilities with associated disease burden. We are witness to an increasing frequency of acute climate events- heatwaves, droughts, floods, storms, cyclones, deteriorating air quality, impacts on agricultural productivity that have direct and indirect consequences on food and nutrition security and impacts on both physical and mental health of impacted communities. The myriad consequences of a changing climate necessitate a conscious, coherent and collective response from the health and allied sectors.

This Consortium will provide a platform to jointly work, learn and build capacities to address climate change and health through research, training, remediation, communications and sharing of best practices for mitigation and adaptation. The "conch" is blown on auspicious occasions in some of our regions and we sincerely hope that this initiative augurs an auspicious beginning for positive health outcomes. The virtual launch event and first convening of the Consortium was held virtually on August 30, 2022. Over 100 individuals representing various organisations from the region have joined the Consortium so far. In the coming months, we hope to engage with members to stimulate joint research collaborations, training programs, local and regional engagement with stakeholders in the pre-COP months.

Virtual launch event and first convening of Consortium for Climate and Health (CONCH), South Asia

Dissemination of the Health and Climate Network's Policy Messages

Principal Investigator: Dr. Poornima Prabhakaran

This project was funded by Wellcome Trust, UK and is now completed

Project summary: The main aim of this project was to raise awareness of how health both benefits from and drives decision-making in climate, sustainability, health and related global policy processes. Objectives: • Develop a set of evidence-informed, consensus-based recommendations and tools to support global advocacy on climate action and health, • enhance collaboration and coordination between health and non-health advocacy organisations in global policy venues that relate to climate and health, • mobilise and support a broad set of climate and health stakeholder sectors to advocate for health centred climate policy

Stakeholders Consultation

Stakeholders consultation

Air Pollution awareness program at Bhagat Hospital

Meeting with Assam State Official with our International collaborators

National Action Plan for Climate Change and Human Health (NAPCCHH)

Principal Investigator: Dr. Poornima Prabhakaran

The project was funded by National Centre for Disease Control (NCDC) and is now completed

Project summary: Generating Awareness: IEC campaigns, sensitization workshops & advisories for effective information dissemination.

- Capacity Building: Training of health professionals; guidelines & workshops for effective capacity building, inclusion of climate change in medical curricula.
- Strengthen Health Sector Preparedness: development of health adaptation plans; vulnerability need assessment; enhanced surveillance of climate sensitive diseases, developing green and climate resilience in healthcare facilities.
- Collaborative Partnerships: synergizing inter-ministerial efforts & intersectoral coordination with other national programmes and organisations.
- Research & Development: steering research for climate sensitive diseases through Indian Council of Medical Research (ICMR), Department of Science and Technology (DST) and other research organization

Co-Benefits of Largescale Organic Farming On HuMan Health (BLOOM)

Principal Investigator: Dr. Poornima Prabhakaran

This is an ongoing project and is funded by the University of Edinburgh

Project Summary: The goal of the project is to determine if Zero Budget Natural Farming, a policy introduced by the government of Andhra Pradesh (AP) in 2016, is an effective approach to transforming agro-food systems for sustainability.

Objective 1: To determine the effects of an organic farming programme on human health, specifically:

(i) urinary biomarkers of exposure to pesticides,

(ii) child stunting,

(iii) anemia among women, and, among adults,

(iv) mental health,

(v) type 2 diabetes,

(vi) chronic kidney disease.

Objective 2: To ascertain the role of crop yields, crop diversity, net household income, health care utilisation, decent work, women's empowerment, food security, and diet quality in the causal pathway between organic farming and the outcomes in Aim 1 using path regression models.

In order to achieve these objectives, we will conduct population-based surveys of ~2,000 rural households in AP in 2021 (baseline) with two annual follow-up visits (2022 and 2023). Within each selected household, field team will enrol all adults (≥18 years) and all children <5 years, and collect data according to standard operating procedures. We will purposefully sample households during the summer sowing period (Jul-Oct) when pesticide application is highest. We will follow up with the same households in 2022 and 2023, again, during the spraying period.

E-Learning Course on Global Perspectives for Climate and Health

Principal Investigator: Dr. Poornima Prabhakaran

This is an ongoing project

This interdisciplinary (medical, dental, nursing, and public health) international course examines the impact of climate change on human health in Finland, India, Nigeria, and the U.S. Students from different regions of the world (Finland, India, Nigeria, & US) study climate health science; health impacts of climate change; strategies of mitigation and adaptation; local, national, and international policy; and real-time ground-level climate realities from each participating nation. This e-learning course is ideal for graduate and post-graduate students in medicine, nursing,

public health and allied disciplines including nutrition, social, behavioural and environmental sciences.

The course broadly covered the following topics: climate science, examining and analyzing the climate data, climate vulnerabilities (people, systems), migration of people/conflict, extreme of temperatures - heat & cold, flooding & droughts, non-communicable diseases (NCDs), infectious disease, food sustainability, health system preparedness, response, resilience, public health impact & response, mental health, national & global policy & programs related to mitigation, adaptation & resilience. The teaching covered a combination of lectures and video presentations, suggested reading and group activities besides providing a forum for interactive exchange with students from 4 countries.

Climate-Health Risk Management in India

Principal Investigator: Dr. Poornima Prabhakaran

This is an ongoing project and is funded by Vlaamse Instelling voor Technologisch Onderzoek(VITO) (Flemish Government)

Project Summary: The project aims 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. India faces many health challenges strongly linked to climate change, e.g. extreme heat and spread of diseases (malaria, dengue, chikungunya) by insects such as mosquitoes and ticks. Many of these vectors are sensitive to variations in climate and are settling in new areas due to climate change. The project focuses in particular on rapidly growing urban areas which, by their nature, are highly vulnerable to the negative effects of climate change due to the urban heat island effect and increased flood risks combined with high population density, commercial and transport activities. In collaboration with Indian health administrations and research institutes, VITO, the Flemish SME Avia-GIS, and the Indian Centre for Environmental Health (which is part of the Public Health Foundation of India) will go through a co-creation process (including stakeholder meetings and workshops) in which, based on local needs, available data, and economic reality, operational climate adaptation information systems and tools will be delivered for a better management of the more frequent and more intense extreme heat events and the increased health risks of vector-borne diseases. In addition to the demonstration of the climate health service in the elaboration of local climate health adaptation plans, training will be developed, tailored to the knowledge and expertise of the Indian stakeholders.

The objective of the collaboration between the parties is to enhance climate-health to support India in managing climate change induced health problems. The mechanisms that the parties will use to collaborate is anticipated to be one or more of the following actions that will be facilitated for PHFI by the Centre for Environmental Health:

- Perform together applied research and policy support projects about the impact of climate change on public health in India with a particular focus on urban areas;
- Develop and deploy climate health services on heat stress and vector-borne disease problems for Indian health stakeholders;
- Apply together for funding within its own national/regional funding organizations and international initiatives (European Union, International foundations, Climate Funding).

Climate Health and Air Pollution Research In India (CHAIR India): Addressing gaps in achieving sustainable development goals

Principal Investigator: Dr. Poornima Prabhakaran

This is an ongoing project and is funded by Swedish Research Council through Karolinska Institute

Project Summary: The overarching aim of this project is to realize sustainable goals on a global level linking air pollution and climate change with health. Key Objectives: 1. To develop a nation-wide exposure model for daily ambient PM2.5 and ambient temperature from 2008-2020 at a spatial resolution of 1 km x 1 km and locally

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

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

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

Principal Investigator: Dr. Aditi Roy

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

Project summary: An estimated 50 million Indian children are not reaching their full physical and cognitive development potential before school-entry. While some risk and protective factors have been identified, little data exists on short and long-term developmental risks posed due to neurotoxin pollutant exposures or their interactions with other known factors in low- and middle- incomes countries (LMICs). I propose to prospectively study the interplay between two contextually important neurotoxins, lead and particulate matter less than 2.5 micrometer (PM2.5), individual- and neighbourhood- level factors, developmental and learning outcomes among preschool-to-first grade children. The central hypothesis is that children with higher exposures to lead alone or jointly with PM2.5 will have poor developmental and learning outcomes. Individual or neighbourhood-level protective factors such as having green space, quality home or preschools, responsive parenting or better nutritional status will attenuate the toxin-associated developmental deficits. The proposed study will be in Patna, Bihar, where lead-battery recycling facilities within residential neighbourhoods were identified. City's estimated PM2.5 concentrations were 12 times higher than recommended levels. The proposed project will help advance children's environmental health and early child development research in LMICs by using inter-disciplinary approaches, a largely underexplored area of enquiry with potential implications for policy and interventions.

Expected impact on public health in India: Findings from this project will contribute to the growing evidence in India on health impact of toxic pollutants among vulnerable population such as children. A wide range of data collected in this study has the potential to inform actions at the local level. Results will be disseminated to pollution control board and urban local bodies to support preventive and remedial actions that could protect children's health.

SOUTH ASIA CENTRE FOR DISABILITY INCLUSIVE DEVELOPMENT & RESEARCH (SACDIR)

South Asia Centre for Disability Inclusive Development & Research (SACDIR) is a Centre of Excellence established under the aegis of the Public Health Foundation of India (PHFI) in technical collaboration and support from the London School of Hygiene and Tropical Medicine (LSHTM), and its component institution, the International Centre for Eye Health (ICEH), London, UK, with a mandate to improve quality of life and health outcomes of persons with disability through appropriate public health interventions.

- A Public Private Partnership (PPP) Model for Integrating Services for Prevention, Screening and Management of Retinopathy of Prematurity (Integrative Sciences LLC-USAID CBP)
- Preventing Childhood Blindness and Visual Impairment: Strengthening Health Systems for low vision care - Reaching the children with low vision in Telangana State (Integrative Sciences LLC-USAID CBP)
- Adolescent Injury and Violence Detection (AVID) (John Hopkins University)
- Community Eye Health Journal (CEHJ) SOUTH ASIA (Tijjsen Foundation and Mission for Vision)
- Multi-centric Task Force project "Study of impact of exposure to Ultra Violet Radiation (UVR) & aerosol exposure on ocular health in India Phase-II"(ICMR)
- Indian Health outcomes Public Health research and economics (I-HOPE)/ Centre for Health outcomes research and economics (CHORE) (The DBT/WT India Alliance)
- Operational Research Capacity Building in eye care (Seva Foundation, USA)

(Detailed description of these projects are given in the IIPH Hyderabad section)

THE RAMALINGASWAMI CENTRE ON EQUITY AND SOCIAL DETERMINANTS OF HEALTH (RCESDH)

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

Key projects

Equity, Social Determinants, and Health Outcomes

Principal Investigator: Prof. Gita Sen

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, we deepen investigation into two areas of prior research that impinge on the larger issues of quality of care and effectiveness: the importance of attention to antenatal risk; and respectful maternal care. We pay attention 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 National Health Mission, specifically its focus on maternal and reproductive health.

Key findings summary:

- 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.
- Digital health interventions that support frontline workers – instead of replacing them – become sources of empowerment.
- Disrespect and abuse of women delivering in institutions take different forms and are associated with different sets of factors. They take subtle and insidious forms that are uncovered through careful quantitative and qualitative data analyses.

Expected impact on public health in India: The project supports public health in the country by providing in-depth analysis to support improvements in respectful maternal care; has developed a tool for antenatal care support that can be used at the state level; and will provide fresh insights for advancing health equity to improve the health of the most disadvantaged women and girls.

Technical support and advice for RCH-SBCC Strategy Development & Implementation

Principal Investigator: Dr. Shreelata Rao Seshadri

This is an ongoing project and is funded by The World Bank Group

Project Summary: The objective of this project is to provide technical assistance to the World Bank Task Team for its implementation support on a social and behavior change communication (SBCC) strategy focused on adolescent reproductive and child health as part of the Tamil Nadu Health System Reform Program. Specifically, the consultancy will require working with the World Bank Task Team to accomplish the objective of the consultancy, which includes research and analytics to determine the strengths and potential revisions in the current adolescent

SBCC strategy and to provide technical advice and recommendations for the Government of Tamil Nadu to consider while updating SBCC strategic guidance for adolescent reproductive and child health.

Expected impact on public health in India: This project will have a direct impact on the Government of Tamil Nadu's health policy on adolescent health. It will aid in improving the social and behavior change communication (SBCC) strategy for increasing the uptake of Adolescent Friendly Health Services.

Measures of Girls and Women's Health & Wellbeing and Exemplar Case Studies

Principal Investigator: Prof. Gita Sen

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

Project summary: The project aims to undertake a comprehensive assessment of the language and measures of women's "well-being"; translate new conceptual thinking into a proposed list of national measures and indicators; assess national performance rankings across a wide number of countries; identify "exemplar" countries that show a high level of performance on women's health and well-being indicators; and partner with these countries to assess policy conditions and programming that have promise to accelerate women's health and well-being in other countries.

Key findings summary: Improving girls and women's health and well-being is a high priority across development sectors, both local and global. It is an acknowledged fact that, despite progress on the health outcomes of women and girls, serious gender inequities as well as regional and country-level disparities persist and are yet to be addressed. However, 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, we apply Amartya Sen's Capabilities Approach to develop a conceptual framework that provides a nuanced way to define and understand the barriers and contributors to girls' and women's well-being over the life course. We also consider the larger context of norms, practices and laws within which girls' and women's well-being are constructed.

Expected impact on public health in India: Gender inequality in girls' and women's health outcomes continue to be a public health challenge across India, despite progress made in certain key indicators. National Family Health Survey (NFHS)-5 data show that indicators such as gender ration at birth, women's literacy, women married before the age of 18, female sterilization rates, anemia among 15–49-year-olds, among many others, are still a cause for concern. In this context, our effort to conceptualize the determinants of girls' and women's health and well-being and create a rubric for measuring and assessing it can have important policy and programmatic value.

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

Principal Investigator: Prof. Gita Sen

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

Project summary: This project forms part of an MoU between RCESDH and UNU-IIGH. Collaboration to collect evidence on effective interventions and best practices for integrating gender in health programming at the regional and country level in South and South-East Asia. The project involves working together by the partner organisations (UNU-IIGH and PHFI/RCESDH) along with the School of Public Health at the University of the Western Cape.

Key findings summary: This project is still underway; hence key findings are yet to be arrived at. However, the process has commenced: following an open call, desk reviews and direct contacts across the three regions, 51 potential case-studies were identified, with 18 from Africa, 19 from South-East Asia and 14 from South Asia. These were shortlisted based on a set of criteria and reviewed by a Technical Advisory Group. Three case studies of promising practices in the

South Asia region are under preparation by the RCESDH team. Secondary data collection through literature searches/desk review is underway, as also primary data collection through key informant interviews, focus group discussions and direct observation. The analysis and findings are expected to be finalized by February 2023.

Expected impact on public health in India: Case studies documenting efforts to integrate gender into on-going government health programs would benefit public health programming in multiple ways. First, they would help to develop policy lessons on how to successfully scale and sustain gender considerations into government programs. Lessons learned from the case studies would help transfer strategies and methods to address inequalities in access to services, ensure the provision of quality care, transform harmful gender norms, and challenge power dynamics. Finally, the case studies should provide valuable insights into ways in which to sustain interventions that are aimed at gender mainstreaming within government health programs.

Evidence synthesis: System-level issues and interventions from medical education/ training through organization of care in the respectful maternity care context

Principal Investigator: Prof. Gita Sen

The project was funded by World Health Organization and is now completed

Project summary: In November 2019, WHO convened a small working meeting of experts to discuss a conceptual approach to address the drivers of women's mistreatment during childbirth. As part of its programme of work, WHO/SRH commissioned a series of literature reviews to better understand the evidence base around interventions to reduce the phenomenon. Our scoping review focused on issues and interventions around the organization of care that may be applied to reduce mistreatment during childbirth and enable respectful maternity care (RMC).

Key findings summary: Key organisational challenges related to high workloads, unbalanced division of work, professional autonomy, low pay, training, feedback and supervision, and workplace violence, and these were differentially influenced by resource shortages. Interventions that respond to these challenges focus on leadership, supportive supervision, peer support, mitigating workplace violence, and planning for shortages. While many of these issues are worsened by resource shortages, medical and professional hierarchies also strongly underpin a number of organisational problems. Frontline providers, particularly midwives and nurses, suffer disproportionately and need greater attention. Transforming institutional leadership and approaches to supervision that would support a culture of respectful care may be particularly useful to tackle existing power hierarchies.

Expected impact on public health in India: The review provides the basis for further empirical research and interventions to promote respectful maternity care in healthcare facilities.

Human rights and gender equality in training modules for frontline health workers

Principal Investigator: Dr. Aditi Kameshwar Iyer

The project was funded by World Health Organization (WHO) and is now completed

Project summary: Research evidence over the years points to the relationship between gender inequality, the violation/neglect of human rights and negative sexual and reproductive health (SRH) outcomes. This highlights the need for greater cognizance and integration of gender equality and human rights approaches into interventions, especially provider training, service delivery, awareness- and capacity-building. The goal of the project was to identify whether training programmes for SRH service providers on the frontlines demonstrate a commitment to human rights and gender equality. The content of globally available training materials for frontline

health workers were reviewed and gaps as well as best practices were identified.

Key findings summary: Training programmes tended to incorporate issues of human rights and gender equality in a clear and non-judgmental manner, but varied widely in their scope and approach. While universal conceptions of human rights (bodily integrity, autonomy) underlaid nearly all manuals, understandings of SRH and rights were limited and often imprecise. Discussions of gender tended to focus on vulnerability rather than power and inequality. Certain SRH services (e.g., provision of information) were emphasized over others (childbirth, cancers, infertility, abortion). Issues of accessibility received greater attention than those of availability, acceptability and quality. Finally, while training manuals attempted to make the material contextually relevant, they paid limited attention to the practicalities of implementation and evaluation.

Expected impact on public health in India: Gaps and best practices identified by the review can strengthen the design of training programmes for frontline health workers providing SRH services in India.

CENTRE FOR DIGITAL HEALTH (CDH)

PHFI established a Centre for Digital Health in April 2020 to facilitate harmonization of its research initiatives currently undertaken, and advance new and potentially transformational initiatives across the PHFI universe. The unit explores applications of digital health technology in public health, and strives to lead the nation's effort in transforming healthcare. It aims to bring together players in the public and private sector as well as civil society organizations. PHFI's evidence based, insightful research that is regional in perspective and global in outlook, combined with committed professionals of multi-disciplinary expertise, is the backbone of this centre. It is an intersection between PHFI's research, training and knowledge of public health and the network of partners who are leaders in technology.

Key projects

DIGISAHAYAM- An Assisted Telemedicine Solution

Principal Investigator: Dr. Arun P Jose

This is an ongoing project and is funded by Star Health & Allied Insurance Company Limited

Project summary: The PHFI – Centre for Digital Health developed an assisted telemedicine program "Digisahayam" to improve quality and access to healthcare through trained bridge personnel. The Star Arogya Digi Seva clinics located at different locations in Tamil Nadu (urban and rural) are assisted telemedicine clinics being implemented by the Public Health Foundation of India. Supported as a part of Star Health and Allied Insurance's Corporate Social Responsibility initiative, the clinics are aimed at improving the quality of care through the point of care diagnostics and electronic clinical decision support systems and improving access to primary and tertiary care through trained bridge personnel that provide assisted telemedicine solutions. Each TMC has a quality assurance officer, a telemedicine nurse, a lab technician, staff for community mobilization and a stationed doctor. The Quality Assurance Officer is responsible for all the onsite activities. He/she does the initial screening, checks vital signs, and records them in the Telehub App. The Tele Nurse is responsible for all the patient-related activities at the center. He/she ensures proper identification and follow-up for the patient. S/he facilitates all the doctor-patient discussions, after consultation care, counselling and reinforcement. The Lab Technician performs lab tests for those patients requested by the physician. On average 15 -20 patients each visit the TMCs daily. In addition to the services provided at the clinics, the staff engages in various community engagement and health awareness activities. General consultations as well as lab tests are provided free of cost.

Key findings summary: Total number of consultations provided at the clinic in less than 2 years are 15375. Out of which the total number of Specialist Consultations is ~27% of the total consultation. Out of all patients who visited the clinic, 60% were female. More than 25% were elderly patients. 47% of the patients had a history of NCD (for which history was collected). The TMC has seen ~1000 diabetic and ~2000 hypertensive patients. There are 191 patients with newly detected diabetes (Patients having no H/O diabetes but had abnormal blood glucose readings when tested at the clinic) and 1321 patients with newly detected hypertension (Patients having no H/O hypertension or no history available but with abnormal blood pressure readings when measured at the clinic considered as newly detected hypertensives).

Expected impact on public health in India:

- Bridge the gaps between community, technology and digital healthcare through trained personnel.

- Will ensure continuity of care and longitudinal health data through the use of inbuilt electronic health records.
- Generation of valuable data that can inform the development of suitable insurance models for urban underprivileged and rural communities.
- Generation of livelihood opportunities through the hiring of field staff from the local community.
- Considerable reduction of indirect healthcare costs related to travel and loss of daily wages.
- Prevention of complications through improved awareness, early detection and treatment, and timely referral thereby potentially avoiding instances of distress financing and catastrophic health expenditures.
- Decreasing the need for visits to hospitals that have become less accessible due to the COVID pandemic.

Feasibility study for Heart failure remote monitoring device

Principal Investigator: Prof. Dorairaj Prabhakaran

This is an ongoing project and is funded by GPrognostics Private Ltd.

Project summary: This program is pilot, single-center, prospective, observational study to assess the feasibility, implementation, and adherence of remote patient monitoring (RPM) with the GPx monitoring platform in patients with Heart Failure with HFrEF and NYHA symptoms class III. The study aims to determine whether RPM using the GPx remote monitoring platform can be successfully implemented in patients with HFrEF and NYHA class symptoms III. It is designed to assess the feasibility, implementation and adherence of RPM with the GPx monitoring platform for a total time period of 7 weeks. It includes biomarkers using the CardioID phone App, Bluetooth scale, and medical grade smartwatch along with blood markers for the measurement of NT-proBNP, Potassium and Serum creatinine during the study period.

Expected impact on public health in India: This study uses non-invasive remote patient monitoring strategy along with a biomarker guided treatment strategy for patients of Heart failure. The combination of these two innovative strategies may lead to reduction of heart failure related events such as hospitalization and cardiac mortality.

Cardiology Masterclass short course series

Principal Investigator: Prof Dorairaj Prabhakaran

This is an ongoing project and is funded by Sun Pharma Laboratories Ltd.

Project summary: The Masterclass short course series is a program envisioned to deliver short courses on selected topics related to cardiovascular disease management and prevention.

The primary objective of the course is to enhance the knowledge, skills and core competencies of physicians in prevention and management of cardiovascular diseases, to develop/update a standard teaching protocol and modules for evidence-based learning for building a network of physicians and super-specialists & to update the physicians with the latest advancements in the medical field. The courses have been designed by the leading cardiologists across the country with an aim to build capacity among physicians. It is offered in a blended format with online interactive self-paced learning material along with dedicated live webinar sessions with case-based learning. This delivery model enables the physicians to upskill themselves while managing clinical responsibilities. The short course series program comprises two courses on ECG and Hear Failure. Each of the courses are designed in a modular format with 3 modules delivered over span of 2 months. It includes an optional examination at the end of the course. Participants are awarded a certificate of attendance and completion after successfully attending all the session along with the course activities and passing the examination. The first course of the program on ECG enrolled over 1100 participants in its first batch.

Expected impact on public health in India: The program aims to train 2000 primary care physicians in ECG interpretation and management of heart failure. The program is designed to refined clinical skills of the physicians which will help them improve their diagnostic accuracy resulting in better care.

Endocrinology Masterclass

Principal Investigator: Dr. Arun P Jose

This is an ongoing project and is funded by Sun Pharma Laboratories Limited

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

Key findings summary: All the session of clinical grand round and journal club were well received. Till date, 130 fellows have been registered in the program, with 45 (35%) females and 85 (65%) males. DM trainees account for 107 (82%) of the 130 registered trainees, while DNB trainees account for 23 (18%). In addition, 71 (55 %) work for the government, while the remaining 59 (45%) work in private practice.

Expected impact on public health in India: The program intends to widen the horizon of endocrinology training in the country and instill confidence among young minds to become future leaders. The refined clinical skills of the young these trainees will improve their diagnostic accuracy resulting in better care. Research exposure will increase understanding of clinical medicine, facilitate critical thinking and critical appraisal and increase exposure to best clinical minds.

Cardiology Masterclass

Principal Investigator: Dr. Arun P Jose

This is an ongoing project and is funded by Sun Pharma Laboratories Limited

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

Key findings summary: Several clinical grand round, journal club and sessions on special topics were conducted, all of which were well received and garnered great appreciation with positive feedback. A total of 429 DM/DNB Cardiology trainees were registered in the program, of

which 276 (64%) were DM fellows and 153 (36%) were DNB trainees. There is almost equal representation of public (49%) and private (51%) sectors among registered fellows.

Expected impact on public health in India: The program intends to widen the horizon of cardiology training in the country and instil confidence among young minds to become future leaders. The refined clinical skills of the young trainees will improve their diagnostic accuracy resulting in better care. Research exposure will increase understanding of clinical medicine, facilitate critical thinking and critical appraisal and increase exposure to best clinical minds.

HEALTH TECHNOLOGY

Development of Application and Swasthya Sahayak as a point of Care Device with specific focus on providing Maternal and Child Health

Principal Investigator: Dr. Sunil Saksena Raj

This is an ongoing project and is funded by The Procter & Gamble Company

Project summary: PHFI intends to partner with Procter & Gamble to achieve following objectives:

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

Key findings summary: Goa-So far, 2000 diagnostic tests such as Haemoglobin, Sugar, and Blood Pressure etc. were conducted and around 36000 people have undergone NCD screening. Sitapur-Around 865,000 people have been registered, more than 12,000 diagnostics have been performed on over 4000 pregnant women. Vidisha-Around 500000 people have been registered, more than 4000 diagnostics have been performed on over 1500 pregnant women.

Expected impact on public health in India: Focusing on utilizing more digitized public health solutions like Swasthya Sahayak to support and improvise the Maternal and Child health including awareness of Good health to the rural population and guiding them to take preventive measures to overcome heath challenges. NCD screening of population is also underway with high risk cases being referred to health centers for further management.

Diagnostic tests performed by Swasthya Sakhi's in rural areas of Sitapur

Training session at Vidisha , Field visit by P&G team, Data collection by field team

Launch of Goa project by Hon. Smriti Irani Ji , Training sessions of ANMs and Swasthya Sakhi's at CHC Valpoi and Canacona at Goa

To deploy Swasthya Sahayak Point of care kit in rural areas of Bangalore, on a pilot basis, with the support of Capgemini

Principal Investigator: Dr. Sunil Saksena Raj

The project was funded by Capgemini Technology Services India Limited and is now completed

Project summary:

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

Key findings summary: 245 patients have undergone screening in a clinical setup .131 patients were tested for blood glucose, 156 patients were screened for blood pressure and 147 patients were screened for hemoglobin.

Expected impact on public health in India: It was a trial project and people were largely benefitted from it. The funder is planning to launch this project on bigger scale.

Support for Deployment of Swasthya Sahayak technology for community screening for Covid-19 & Tuberculosis, in dist. Auraiya and Ferozabad

Principal Investigator: Dr. Sunil Saksena Raj

This project was funded by GAIL India Ltd and is now completed.

Project summary:

Objective:

1. To develop application for identifying population who have migrated back from other areas and are at risk of developing Covid-19 infection and to identify presumptive cases of Tuberculosis.
2. To develop a comprehensive dashboard which provides detailed information on Covid-19 cases including the risk levels (mild, moderate and severe), age wise and geography wise analytics. There will be an additional information on suspected and confirmed TB cases
3. To conduct screening of families in a district's rural population to identify the risk level of the population screened using standard medical criteria for Covid-19 (As prescribed by ICMR).
4. To identify presumptive cases of Tuberculosis during home visits and refer them to the DOTS centre.
5. Confirm the risk assessment for high risk population identified using identity management, diagnostics and Telemedicine (In select cases).

Key findings summary: we were able to cover more than 150000 population and identified more than 2000 suspected cases for Tuberculosis and 26 Positive Tuberculosis patients were put on treatment

Expected impact on public health in India: Reducing the burden of tuberculosis (TB) in India is a priority for Public Health. Identifying the suspected cases and positive TB cases and putting them on treatment will reduce the Burden of TB

Mobile van for taking presumptive cases to health facility, launch of project, Swasthya Sahayak users doing survey and identifying presumptive cases and microscopic testing of presumptive cases at Gail PATA lab

Assistance to provide Swasthya Slate diagnostics through Common Service Centers of Min Of Information & Technology

Principal Investigator: Dr. Sunil Saksena Raj

The project was funded by CSC e-Governance Services India Ltd and is now completed

Project summary: PHFI has signed an MOU with CSC e-Governance services to provide Swasthya Slates and training on conducting diagnostic tests to the Village level Entrepreneurs (VLEs) who manage the Common Service Centers located across the country. These VLEs provide multiple services to the rural population apart from health related services like Telemedicine Solution. They will be supported during State level training's and remotely. Their performance will be monitored and feedback provided to them and Ministry of IT. Currently we have deployed devices in selected CSCs in the States of Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Himachal Pradesh. The required modification in the application has been successfully done and integrated with the CSC services. The initial feedback from the users and response on utilization has been very good.

Key findings summary: The rural population was unaware of the consequences of not taking care of their basis health parameters like BP, Sugar, and Hemoglobin etc. Through awareness campaign and providing the basic services using the Swasthya Sahayak devices significantly brought the behavior changes in the community. The Health education gets a boost in this area since such awareness campaigns are executed. The population of around 2,351 got benefitted by this technology till date and about 1500 diagnostics have been conducted so far

Expected impact on public health in India: The local population of the area is now approaching to the CSCs instead of big hospitals in the neighbouring cities which is saving their time and transportation cost to visit twice to the Centre for collecting their reports. They get the printed reports of their diagnostic results on spot in real time with the outliers mentioned in the reports, so that they can take a call to visit to the nearby medical facility for further health care management.

Various training sessions on Swasthya Sahayak

Implementing an assisted telemedicine solution to ensure uninterrupted care for NCD patients using Swasthya Sahayak Platform

Principal Investigator: Dr. Sunil Saksena Raj

The project was funded by World Health Organization (WHO) and is now completed

Project summary: The Public Health Foundation of India and the Centre for Chronic Disease Control WHO Collaborating Centre have been implementing an assisted telemedicine solution to ensure uninterrupted care for NCD patients. In the assisted telemedicine model, the trained healthcare workers connect, convey findings, facilitate doctor-patient interactions and also prevent wasteful visits.

Swasthya Sahayak implementation and Development

Principal Investigator: Dr. Sunil Saksena Raj

The project was funded by Spectris India and is now completed

Project summary: With the support of Spectris Technologies, PHFI proposes to develop:

1 Software application which is in alignment with the Government of India Technology platform. This would require developing the application in modular forms and ensuring they confirm to the minimal viable products for the platform.

2 We also intend to integrate multiple options for Identity management system to facilitate follow up and data retrieval by the user. We are in discussion with organizations who provide the same.

3 To include new advance tests in advance version of Swasthya Sahayaki.e. Swasthya Sahayak Pro.

Key findings summary: With the support of Spectris India we have been able to improvise an integrated application i.e Swasthya Sahayak and include many advance features. Also we have estimated the feasibility of new diagnostics to be included in SS pro version

Expected impact on public health in India: With integrated application and advance SS pro significant health challenges can be taken care of especially in rural areas where there is a huge challenge of accessibility and awareness.

Implement the technology solutions activities under "Strengthening villages in Karnataka and Telangana through improved health and livelihood"

Principal Investigator: Dr. Sunil Saksena Raj

This in an ongoing project and is funded by CONCERN INDIA FOUNDATION

Project summary: The objective of this project was to implement the technology solutions activities under the "Strengthening villages in Karnataka and Telangana through improved health and livelihood" Project

Key findings summary: More than 5000 household, around 19000 individuals have been registered, 235 pregnancies have been identified and screened for blood pressure, blood glucose, and etc. 8000 individuals have been screened for NCD out of which 1308 were found to be at risk and referred.

Expected impact on public health in India: Focusing on NCD, maternal health and child care will generate health seeking behavior in the community

Training sessions held at Hyderabad and Telangana

HEALTH PROMOTION & ADVOCACY

Evaluating the implementation of the peer educator intervention for improving adolescent health in India's National Adolescent Health Programme

Principal Investigator: Dr. Monika Arora

This is an ongoing project and is funded by Medical Research Council (MRC), UK

Project summary:

Research Aim 1: Describe the process of implementation, and context of PE Programme under the RKSK during COVID-19, in two Indian states.

Research Aim 2: Understand peer educators' engagement during COVID-19 pandemic and adolescent's response to PE engagement in community and accessing the health system.

Research Aim 3: Understand the resource use and implementation cost of peer educator programme and its variations across two states of India.

Research Aim 4: Identify key components of PE intervention which work to improve health system access and community engagement of adolescents during COVID-19 for informing building back better response and for scaling up (Research to Policy and program action) of adolescent health programmes in other states of India.

Target Audience/Beneficiaries: State Level: Mission Director (NHM), Deputy Director, Additional Director, State RKSK Nodal Officer; District Level: District Coordinator, District RCH Officer, Medical Officer, District Community Mobilizer (DCM), NGO Trainer cum Mentor, Faculty Trainings; Block Level: Counsellors, ANM ; Village level: Peer Educators, Adolescents, Parents of Peer Educators and Adolescents, ASHA, ASHA facilitator, School teachers; National Level: Adolescent Health team at MOHFW

Key findings summary: The study is ongoing and we are in the process of analyzing the data. A few have been published in scientific peer reviewed journals

Expected impact on public health in India:

1 The study would help to understand engagement of PE during COVID-19 pandemic for meeting the needs of adolescents and adolescent's response to PE engagement in community (Footfall in AHDs) and accessing the health system (footfall in AFHCs).

2 The study findings will also help to explore how the PE implementation is adapted in two study states and their selected districts during the pandemic.

3 Study will explore how PE programme was adapted in a state with Government led implementation Model (Maharashtra) vs a state with NGO led implementation model (Madhya Pradesh) and provide insights on scalability.

4 Apart from its applicability to India, the outcomes of this study will be relevant to other countries across globe and SEAR.

Development of Briefing Papers for NITI Aayog

Principal Investigator: Dr. Monika Arora

This is an ongoing project and is funded by Institute of Economic Growth, Delhi

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

and adolescents and to get OW-OB included in Poshan V.2. Four streams of work have been finalized by NITI Aayog after PHFI, UNICEF, IEG and other organisations made a presentation to them on the burden of OW-OB in India and need to tackle this issue alongside undernutrition. These four themes are being addressed by developing four scientific publications and related policy briefs:

1. Strengthening Advertising Regulations for Foods and Non-Alcoholic Beverages High in Fat, Salt and Sugar (HFSS): A Policy Analysis
2. Taxation of HFSS foods in India: Policy Options and Way Forward
3. Behaviour Change Communication (BCC) Strategy for prevention and management of overweight and obesity
4. Prevalence, trends, and determinants of overweight and obesity in children and adolescents (0-19 years) in India; 5. Childhood and adolescence obesity risk prevention: Government regulations, policies, and programs

Expected impact on public health in India: The development of these papers will help to identify current evidence and gaps in Indian context on prioritized themes and areas related to overweight and obesity among women, children and adolescents and providing policy and programme recommendations to NITI Aayog.

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

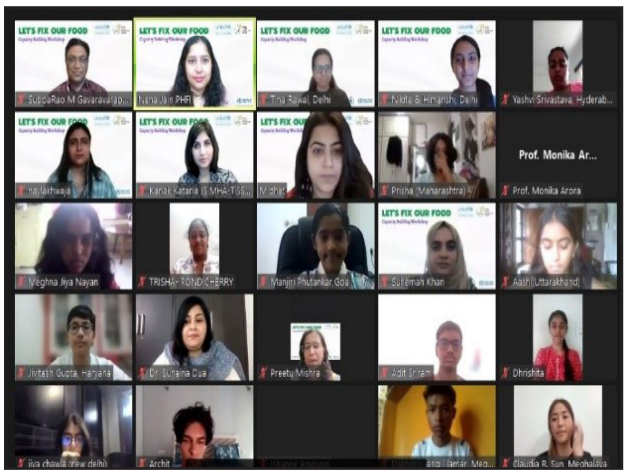
Principal Investigator: Dr. Monika Arora

This is an ongoing project and is funded by United Nations Children's Fund (UNICEF)

Project summary: PHFI in collaboration with UNICEF and consortium partners are conducting a series of adolescent-focused activities under the "Let's Fix Our Food" initiative to involve adolescents meaningfully and provide them the platform as equal and valuable partners in the execution of initiatives led by different stakeholders in India to foster healthy food environment among Indian adolescents. The primary objective is to Capture and create a two-way dialogue platform for a wide range of adolescent girls and boys (10-19 years) approx. 1 million (leveraging the adolescent network of PHFI, and UNICEF) living across the 36 Indian States to share lived experiences of their food choices (including but not limited to knowledge, cost, labeling, and media) and advice to stakeholders and peer groups on actions to correct surrounding unhealthy food environments.

Key findings summary: "Let's fix our Food Survey" has been launched and designed to understand young people's perceptions on what influences their food choices and what in the food environment needs to change is now live on U-Report India in 12 languages for ages 10 to 19. An advisory group and adolescent network (representing approx. 30 states of India) have been convened. Development of Knowledge products and Annual U Report are in the process.

Expected impact on public health in India: Capacitated adolescents as equal and valuable partners in the execution of initiatives led by different stakeholders in India on the critical need for strict compliance with legislations and marketing of unhealthy foods to foster a healthy food environment.



Glimpses from Capacity Building Workshop of Adolescent Network Members

Social Media optimization – Let's Fix Our Food Survey for U

Development of Multi-sectoral strategy and action plan for prevention and control of non-communicable diseases.

Principal Investigator: Dr. Monika Arora

This project was funded by World Health Organization (WHO), Bhutan and is now completed

Project summary: The Royal Government of Bhutan implemented a multi-sectoral plan for the prevention and control of non-communicable diseases (2016-2020). With the expiry of this plan, a second plan needs to be developed aligning with the 2025 NCD targets and SDG commitments of the country. Faculty members from the Public Health Foundation of India (PHFI) (as an International review team), developed the second Multi-sectoral strategy and action plan for the prevention and control of non-communicable diseases (NCDs) (MSAP II) in Bhutan in consultation with WHO Bhutan and Ministry of Health, Bhutan. The plan was reviewed by international experts also. The plan was developed in coordination with the National review team. Situational analysis including a desk review and key informant interviews was conducted. Based on the findings of situational analysis including a desk review and key informant interviews, MSAP II was developed. In consultation with WHO Bhutan, MoH, Bhutan, and the National review team, the draft is being contextualized and finalized.

Key findings summary: The second Multi-sectoral Strategy and Action Plan for prevention and control of non-communicable diseases (NCDs) (MSAP II) was developed based on the findings of situational analysis including a desk review and key informant interviews with the stakeholders in consultation with WHO Bhutan, Ministry of Health, Bhutan and international experts. The plan was reviewed by international experts also. The draft is being contextualized and finalized.

Expected impact on public health in India: The second Multi-sectoral strategy and action plan for the prevention and control of non-communicable diseases (NCDs) (MSAP II) was developed to advance the prevention and control of NCDs in Bhutan.

Health Champion Course - PHFI and PRATHAM

Principal Investigator: Dr. Monika Arora

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

Project summary: Young people are an important resource in promoting preventive messages to mitigate risks and disseminate these messages to families, peers, and communities. With the right training on disease prevention, young

people can become change agents and health champions. Despite digital inequalities, this generation of young people is more connected through technology and the internet. In the time of social distancing and lockdowns, young people's ease with technology has been vital in keeping communication channels open, informed, and supportive of each other and the larger community. They can play a critical role in disseminating and amplifying preventive messages on healthy living habits not only in the current scenario but also in the future. Given this background, PHFI in collaboration with the Pratham education foundation aimed to address health-related challenges and provide innovative solutions and opportunities for adolescents and youth to become change agents and health champions. Considering the ferocity of the second wave of COVID-19, activities were prioritized and conducted to raise awareness around preventive measures and early detection to contain COVID-19, especially in community settings. Short audio-visuals/ snippets were by the Health experts on addressing vaccine hesitancy, preventing community infection, and mental health wellbeing during the second wave of COVID in India in regional languages (English, Hindi, Marathi, Kannada, Telugu, Tamil, Odia, Gujarati, Bengali, and Assamese). Webinars with experts/ doctors/public health experts – live interaction/ Q & A was also conducted with the community members

Key findings summary: Short audio-visuals/ snippets were developed by Health experts on addressing vaccine hesitancy, containing the infection, and mental health wellbeing during the second wave of COVID in India in regional languages (English, Hindi, Marathi, Kannada, Telugu, Tamil, Odia, Gujarati, Bengali, and Assamese). Webinars with experts/ doctors/ public health experts – live interaction was also conducted with the community members.

Expected impact on public health in India: Raised awareness on addressing vaccine hesitancy, containing the infection, and mental health wellbeing during the second wave of COVID in India in regional languages.

eCourse in Tobacco Control

Principal Investigator: Dr. Monika Arora

The project is currently ongoing

Project summary: It aims to strengthen the capacity of public health and medical professionals in tobacco control issues and cessation in India. The course focuses on the health, economic, social and environmental impact of tobacco use. It equips candidates with an understanding of tobacco control research, best practices as well as tobacco cessation skills, which can be integrated into their professional practice. The course is taught by leading tobacco control experts from India and international faculty with opportunities to attend interactive guest lectures.

Expected impact on public health in India: It equips candidates with an understanding of tobacco control research, best practices as well as tobacco cessation skills, which can be integrated into their professional practice.

A study to assess the compliance of ENDS ban in India

Principal Investigator: Dr. Monika Arora

This is an ongoing project and is funded by World Health Organization (WHO)

Project summary: Limited research has been undertaken to assess the online availability and sales of ENDS in India after the implementation of ENDS ban in 2019, but no research in this area during COVID-19 (since March 2020). COVID-19 is an important context for online sales as there was a tremendous increase in the amount of time spent online by youth, as well as an increase in-home delivery services through online portals, due to pandemic transportation restrictions. Therefore, considering the environmental changes (pandemic context) the study has been conceptualized to evaluate the compliance of the E-cigarette Act (2019) prohibiting online sale and advertisements of ENDS

Specific Objectives:

- To identify the popular e-commerce portals and online stores selling ENDS in India
- To identify Instagram and Facebook influencers, who are popular among youth (18-24 years) and promote ENDS
- To undertake the content analysis of identified web pages, e-commerce portals, online stores, and influencers promoting the online sale of ENDS.

Expected impact on public health in India: The study will provide evidence for compliance with The Prohibition Of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage And Advertisement) ACT, 2019, and facilitate the strengthening of the existing Regulation to protect youth.

Technical Support to National Tobacco Testing Laboratories

Principal Investigator: Dr. Monika Arora

This project was funded by World Health Organization (WHO) and is now completed

Project summary: Tobacco product testing is a valuable procedure to support tobacco control and regulatory efforts, which can have a clear impact on population health. As per the existing body of evidence the devastating public health impact of tobacco products is primarily due to the interplay of three factors i.e. attractiveness, addictiveness and toxicity. Currently, Government of India has notified three labs, purchased equipments, recruited scientific manpower, developed Operational guidelines for National Tobacco Testing labs to guide the functioning of these labs, however there is a need to make these guidelines more comprehensive by including additional elements like mapping of the tobacco products available in the market, sampling, methodology to be adopted for sampling, coordination across labs, reporting, etc. With this background, study was conducted:

1 To assist the MOHFW, GOI in expanding comprehensive guidelines for supporting the functioning of National Tobacco Testing Labs (NTTLs).

2 To collate and adapt existing global best practices on tobacco product regulation to the Indian context.

3 To document identified priority chemicals in tobacco products (smoking & smokeless) for laboratory testing and related testing protocols for India

Key findings summary: Apart from the measurement of "tar", nicotine and carbon monoxide, there are currently no internationally recognized standard methods for measurement of the other priority analytes. If each laboratory uses their own methods the laboratory-to-laboratory variations would be large, also the variations over time in a given laboratory can be substantial, making it impossible to draw meaningful conclusion with respect to their content and human exposure. Therefore, it is important that in any comparison of analytes in tobacco products, the analytes should be measured in the same laboratory and at the same time using validated methods or if interlaboratory comparison is planned Standard Operating Procedures for analysis of each analyte has to be developed and strictly followed. To ensure implementation of Articles 9 and 10 of the WHO FCTC, laboratory capacity must be available that meets the highest standards of excellence, transparency, reliability and credibility. Standardized, reliable, accurate analytical methods are required by laboratories to conduct the scientifically rigorous testing required for tobacco products globally and subsequent regulation as an effective means to achieve a comprehensive tobacco control strategy.

Expected impact on public health in India: Tobacco testing is a costly and a time-consuming method but this is an essential step for India to be in alignment with global regulatory efforts. The seamless functioning of three tobacco testing laboratories in India will further strengthen the tobacco Control efforts and its enforcement in India.

Development of National Alcohol Control Policy and Model Alcohol control bill

Principal Investigator: Dr. Monika Arora

This project was funded by World Health Organization (WHO) and is now completed

Project summary: In India, there is an absence of a National Alcohol Control Policy based on public health approaches, and since alcohol is a state subject in the seventh schedule of the Constitution, there is lack of uniformity of State laws. There exists conflict in policies between the Centre and State, and a greater emphasis is laid on the revenue component and promotional aspects of alcohol use. We untertook a study for development of a National Alcohol Control Bill, proposing amendments to existing legislations, and drafting of a model Act (legislation) – will bridge all these gaps and fill the existing policy and legal lacuna in alcohol control in India. Following activities were planned under this projects:

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

Key findings summary: The developed alcohol policy included the Policy Framework, that's consisted of the goals and objectives of the policy, guiding principles and the 10 focus areas with over 200 policy statements. The 10 focus areas are as follows:

- Strengthen restrictions on access and availability Health Service Response: Facilitate Access to Screening, Brief Intervention and Treatment
- Reducing Health Impacts from Illicit Alcohol and Informally Produced Alcohol
- Preventing Alcohol Industry Interference
- Promoting Healthier Communities
- Strengthening Community Action
- Restrictions on Advertising, Sponsorship and Promotions
- Excise Taxes and Pricing Policies
- Packaging and Labelling Requirements
- Drink-driving Policies and Counter measures

Expected impact on public health in India: A Comprehensive National Alcohol Control Policy for India will promote health equity and improve health outcomes by bridging the gap in policy and legal lacuna in the existing alcohol control efforts, and in effect will minimize the negative consequences of alcohol consumption and sales in India particularly by reducing the national NCD burden and other associated co-morbidities.

To develop an IMNCI digital-package for e-learning by Health Workers

Principal Investigator: Dr. Monika Arora

This project was funded by World Health Organization (WHO) and is now completed

Project summary: Improvement in India's indicator could be attributed to the continuous government efforts and one such effort is the Integrated Management of Neonatal and Childhood Illness (IMNCI) strategy. In a recent communication MOHFW has directed WHO-CO for India to undertake two major activities in support of Child Health capacity building, in a time bound process. One of them is Digitalisation of harmonized CH training packages. With this background, Health Promotion Division (HPD) and Training Division, PHFI coordinated and provided support in the development of a strategy for digitising the IMNCI training package.

Key findings summary: Developed module included: Management of young infants age upto 2 months (0 to 59 days old); Management of sick children 2 months upto 5 years (2 to 59 months); The module included were introduction to IMNCI, Management of young child upto 2months (0 to 59 days old) Part-1;Management of young child upto 2months (0 to 59 days old) Part-2;Management of sick children 2 months up to 5 years (2 to 59 months) Part -1; Management of sick children 2 months up to 5 years (2 to 59 months) Part -2

Expected impact on public health in India: To accomplish the task of developing an interactive multimedia E-learning training package in IMNCI for helping in training the health workers to manage sick children rationally. The E-learning package will be designed to allow health workers to learn at their own pace from their home or workplace

ePost Graduate Program in Health Promotion

Principal Investigator: Dr. Monika Arora

This is an ongoing project

Project summary: It aims to build health capacity of the participants to enhance their skills and proficiency in designing and implementing health promotion interventions and programmes. This course has been designed to suit the needs of students wishing to gain employment in health promotion, public health, community development, program delivery, research and evaluation or to cater to those who want to upgrade their knowledge in public health field. The course faculty includes national and international experts. The course is open to both Government Nominated as well as Self-Sponsored applicants.

Expected impact on public health in India: It will help to build the capacity for those looking to gain a comprehensive understanding of key concepts in health promotion and its application to programmes, policies and interventions in India.

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

Principal Investigator: Ms. Shalini Bassi

This project was funded by AXA Business Services Pvt. Ltd and is now completed

Project summary: The Health Promotion Division of Public Health Foundation of India (PHFI) conducted a study to support Government of India's efforts to generate awareness and increasing acceptance and uptake of COVID-19 vaccination. The study was conducted in two blocks of Pune (Velhe & Haveli) Maharashtra. The study aimed to disseminate information about COVID-19 vaccine(s) in order to alleviate apprehensions about the vaccine and to ensure its acceptance and encourage its uptake among healthcare workers and community members. The study was funded by the AXA Business Services as part of their CSR initiative.

Key findings summary: The study findings revealed that over 90% of healthcare workers knew about COVID-19 vaccination and had a positive attitude towards COVID-19 vaccination. Among them, vaccine uptake was high (93% with two doses and 4% with a single dose). 98% of healthcare workers believed that vaccine is safe to use. However, few gaps existed around vaccine safety, side effects and allergic reactions, as 27.7% believed that the COVID-19 vaccine could increase the risk of allergic reactions, 51.8% believed that acquiring natural immunity by contacting the virus is better than vaccination, 16.5% believed that it is possible to reduce the incidence of COVID-19 without vaccination, 28.9% believed that vaccine might have side effects and 14% believed vaccine is not the most likely way to control the pandemic (Bassi S etal, 2022). Vaccine hesitancy was reported in community members, especially in elderly. The most reported vaccine hesitancy response was being worried about vaccine side effects at 9.2%. The other set of reasons reported among aged 60 years and above were being old (1.6%) and having a co-morbid condition (1.1%).

Expected impact on public health in India: The vaccine uptake in sensitized villages of Velhe and Haveli blocks looked at high and even complete vaccination in two villages. The study contributed to formulate a pool of 140 frontline health workers who were trained as Master Trainers to sensitize community members on various aspects of COVID-19 vaccination. The study findings will help to provide useful information to plan future interventions and improve COVID-19 vaccination acceptance among the community.

Master Training (TOT) workshops of Healthcare workers of Haveli and Velhe block

HEALTH SYSTEM STRENGTHENING & HEALTH FINANCING

Sahyog- Capacity building support to NACO (GFATM)

Principal Investigator: Dr. Preeti Kumar

This is an ongoing project and is funded by HLFPPT through Global Fund - National AIDS Control Organization (NACO) (Principal Recipient)

Project summary: In order to fast-track the ambitious UNAIDS 95-95-95 targets, India's National AIDS Control Program has adopted the 'National Strategic Plan (NSP) for HIV/AIDS and STI (2017-24).' This underscores the need for a comprehensive capacity building on program management of National AIDS Control Program (NACP) workforce at the national (NACO), State (SACS, TSUs, PLHIV Networks), District (DAPCUs, PLHIV Networks) and sub-district (TIs) level. A consortium composed of PHFI along with HLFPPT and FH India, has been selected for undertaking this extensive exercise. The salient features of this massive training initiative for comprehensive, integrated and cross-cutting capacity building of NACP workforce entails the following:

1. Building a pool of 100 Master Trainers on Program management
2. Two-day Program Development Workshop for Project Directors and Additional Project Directors of SACS
3. Three-day class room training of over 1250 NACO/SACS/DAPCU Staff across the country;
4. Three-day training of 190 Technical Support Unit Staff
5. Three-day training of 751 District TB Officers / District AIDS Officers
6. The project will also train 963 program managers of Migrant and Trucker NGOS (who run Targeted Intervention program) through a three-day training program. In addition, E courses for imparting online training for the different program cadres and stakeholders will be designed and hosted on the national government LMS portal, to ensure continuity and sustainability of this capacity building initiative.

Key findings summary: At the end of the first year, the Project has achieved the milestones set out; the Project has successfully trained a pool of 40 master trainers in the first phase, conducted a two-day orientation workshop for the Project Directors of 22 states, and trained 270 program staff from NACO and SACS.

Expected impact on public health in India: A well informed and trained program workforce, with adequate knowledge and skills to ensure delivery of program targets and goal.

Strengthening Multi-Sectoral Partnerships for Delivering Public Health Services In Primary Care Settings

Principal Investigator: Prof. K Srinath Reddy

Co-PI: Dr. Preeti Kumar

This is an ongoing project and is funded by INFOSYS FOUNDATION

Project summary: A major weakness of public health planning and delivery across India is the inadequacy of multi-sectoral planning for coordinated delivery of several services relevant to public health. While consultations are sometimes held at senior levels, capacity for catalysing 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. This creates both inefficiencies and inequities that result in sub-optimal delivery with disproportionate impact on the poor. Not only is convergence missing between the official agencies but partnerships are not forged with the local communities and field based NGOs. PHFI seeks 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 will require PHFI to engage with government departments, community representatives and NGOs. Unfortunately, governments do not pay for such initiatives which span multiple departments (due to siloed budget lines) and field based NGOs are often resource constrained. The funds will be utilised to support the multi-disciplinary technical teams undertaking this capacity building initiative for strengthening multi-sectoral 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 AP, Odisha and Uttar Pradesh

Key findings summary: Teams in Odisha, Telangana and UP, successfully engaged with the State and District government and non-government representatives to develop multi-sectoral strategies on "addressing Non communicable diseases," "Maternal and Child Health, Anaemia and TB" and "Reducing Road Traffic Accidents through Inter-sectoral Coordination" respectively in 1-2 districts each of the three states. The key activities included, conducting Stakeholder consultations, Situational Analysis, Stakeholder analysis, Desk review of national and global initiatives on strengthening inter-sectorality in Primary healthcare delivery. In addition, the UP team has submitted a District Action Plan on Reducing RTAs to the District Health Society. Currently, all teams are developing training materials for capacity building of stakeholders drawn from different sectors, to strengthen inter-sectoral coordination on key public health issues, in their respective states.

Expected impact on public health in India: Strengthened and coordinated efforts across different line departments relevant to healthcare, and NGO partners working with these departments, to optimize impact of their activities on primary healthcare delivery.

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

Principal Investigator: Dr. Preeti Kumar

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

Project summary: The national program is dependent on state health systems for effective delivery of interventions in the states; however, differential capacities in the state health systems enormously influence the outcomes of the program. In order to ensure effective implementation, the TSU supports the SACS through:

1. Evidence-based strategic planning, implementation, monitoring and evaluation of the State AIDS control program using innovation / best practices
2. Improve program performance through data collection, collation and analysis of key program indicators. Customize tools and methodology for scaling up, improving coverage of services etc.
3. Capacitate TIs, with continuous assessment, mentoring, monitoring & supportive supervision
4. Provide need assessment & forecasting for ensuring continuous supply of drugs commodities and consumables.
5. Strengthen partnership, through identification of key partners; facilitate coordination among stakeholders

Key findings summary:

- **Gujarat:** Against the ambitious UNAIDS target of 95-95-95, the state has identified 90% of the estimated 104,000 PLHIV, of which 81% are on treatment while 91% on treatment

have achieved viral suppression. HIV India Estimates -2021 & CST MPR July 2022

- **Uttar Pradesh:** Against the ambitious 95-95-95 target set by UNAIDS, the state has diagnosed 115589 PLHIV, against an estimated population of 160600, of which 96205 are on Antiretroviral treatment with 81000 having achieved viral suppression.
- **Rajasthan:** Out of an estimated PLHIV population of 62980, the state has achieved the target of 1st 95 by identifying 95% of the estimated population; of which 84% are on treatment and 85% have achieved viral suppression. Estimation report, 2019 & CST MPR – Jun, 2022
- **Uttarakhand:** Against the ambitious UNAIDS target of 95-95-95, the state has identified 69% of the estimated 11327 PLHIV, of which 79% are on treatment while 84% on treatment have achieved viral suppression. HIV India Estimates -2021 & CST MPR July 2022

Expected impact on public health in India: Support SACS to improve oversight and governance of AIDS control program in the state.

Lessons on key Health Service Strategic Purchasing Reforms in India

Principal Investigator: Dr. Sakthivel Selvaraj

This is an ongoing project and is funded by Duke University

Project summary: Currently, India's health financing mechanism remains fragmented with inadequate prepayment and risk pooling options. Government allocations to the health sector were determined on an input-based historical basis and incurred through 1,000-plus line items, including but not limited to salaries and other emoluments, travel expenses, office supplies, rent and other administrative expenses, drugs and supplies, and medical equipment. The purchaser and provider functions in India were mostly integrated in government services since 2007. Beginning in 2007, with the roll out of the Rajiv Aarogyasri scheme in the state of Andhra Pradesh, and the subsequent launch of the national government tax-funded scheme, called Rashtriya Swasthya Bima Yojana (RSBY), the purchaser-provider split has become prominent in the country. The introduction of the Pradhan Mantri Jan Arogya Yojana (PMJAY) scheme that replaced RSBY in 2018 provided a much-needed boost to the purchasing function. With the introduction of PMJAY, states in India are moving towards a model of autonomous agencies (trust mode) managing the pooling and purchasing functions. Currently, 20 states/union territories (UTs) follow the trust model, while 7 states rely on insurance companies and the remaining 5 states/UTs have adopted a mixed mode involving trust and insurance companies. Even when the trust mode is predominant, it is often found that insurance agencies or third-party arrangements (TPAs) services are called upon to implement the scheme. One of the key objectives of insurance agencies/TPAs is to act as a purchasing entity, procuring services from both government and private health care providers. The overall objectives of this study are to:

1 Record and document the purchasing reforms process in India

2 Assess the impact of purchasing reforms on universal health coverage (UHC) objectives

3 Synthesize key lessons learnt about major purchasing reforms in India.

A mixed-methods study has been adopted to assesses coordination and harmonization of health schemes in India. The study is based on desk-based review of the academic and grey literature on strategic purchasing, in depth interviews with key stakeholders, both at the national and state level to understand the coordination of strategic purchasing in India. Given the key role of state governments in health delivery, the study focuses on the state of Kerala. The government of Kerala launched the Karunya Arogya Suraksha Padhathi - Pradhan Mantri Jan Arogya Yojana (KASP PM-JAY) scheme in 2019 as a key program to improve the population health status and provide financial risk protection against catastrophic hospitalization care expenditure in the state. KASP PM-JAY provide free cashless services and financial risk protection for secondary and tertiary care hospitalization to a total of 4.44 million beneficiary families and

approx. 19 million (50%) individuals in the state. The study would help identify key challenges, progress, achievements, and lessons learnt from strategic purchasing in India.

Expected impact on public health in India: The findings from this study is expected to provide evidence for advocacy at national and state level to enhance strategic purchasing mechanisms. It is also expected to highlight key bottlenecks, barriers and opportunities for harmonization and coordination of purchasing arrangements across various schemes at the state level.

Inequity in Access to Medical Devices in India

Principal Investigator: Dr. Saktivel Selvaraja

This is an ongoing project and is funded by Astrum Management Advisory Private Limited

Project summary: A high import dependency on medical equipment has also created a dual market in India between public and private providers of health care. 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 healthcare services in government facilities. We propose to undertake an 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, we intend to carry out research:

a) To assess the current import procedures/ rules for import of top-end medical devices (top-end medical devices in 2-3 specialists) by public and private health facilities in India

b) To investigate the current procurement rules/ procedures (involving top end medical devices in 2-3 specialists) in public and private health facilities in India

c) To 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

d) To disseminate the key findings among key stakeholders and to augment advocacy efforts in removing hindrances in procurement and import procedures.

Expected impact on public health in India: Evidence from the study will help to identify factors that hinder the availability of medical devices in the public sector facilities and provide suggestions for improving access to quality health services in the public sector.

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

Principal Investigator: Dr. Sakthivel Selvaraj

This is an ongoing project and is funded by World Health Organization (WHO)

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 percapita that triggers in a reduction in development for health i.e, a process known as transition. The specific focus of this study is to understand (a) whether governments have been able to mainatin coverge of priority interventions (eg family planning commodities, HIV medicines etc) and (b) whether changes in service delivery architecture, health financing arrangements, information systems and governance arrangements have influenced coverge. Donor transition studies are popularly undertaken and documented in Government and donor reports as part of donor requirements. However, they are rarely subject to robust independent evaluations, as evident from scoping review of secondary literature, revealing limited information on the subject. Hence, we undertook independent case studies of the United States Agency for

International Development supported largest Family Planning Project in India namely the Innovations in Family Planning Services (IFPS) project and the Bill and Melinda Gates funded HIV/AIDS Avahan project to assess whether the coverage of Family Planning/Reproductive Health and HIV/AIDS programs were sustained or not post donor transition and what factors favored and hindered this. A Mixed methodology approach using data from large scale survey data such as District Level Household Survey (DLHS) and National Family Health Survey (NFHS) , data on health systems obtained from the Rural Health Statistics, and data from HIV Sentinel Surveillance reports , India HIV Estimates-Technical Reports etc., were used along with an extensive desk review of all project related documents, project data analyis and interviews with Key Informants from the donor Agencies and Implementers at the national, state and district level .

Key findings summary: From the assessment, it is evident that in order to ensure smooth transitions, all donors need to ensure a well laid out transition plan with transition readiness assessment tools developed in collaboration with all stakeholders involved in the program and implemented in a phased manner. Constant engagement with federal and state governments is vital for sustainability. Donor support to national programs should not end abruptly and post transition support should continue for a certain period of time and should cease gradually.

Expected impact on public health in India: The study would help identify whether there has been a change in coverage or not in the FP/RH and HIV Program post donor transition, the enablers and impeders for effective coverage of FP/RH and HIV interventions and suggest policy recommendations to improve coverage sustainability post transition.

Transition from Donor Assistance in India for HIV, Malaria & TB Programs

Principal Investigator: Dr. Sakthivel Selvaraj

This is an ongoing project and is funded by Centre for Policy Impact in Global Health, Duke University

Project summary: India's key national programs on HIV, TB and Malaria have obtained significant funding from donor agencies as soft loans and grants over the previous decades. The magnitude of donor financing has varied over the years with entry and exit of major donors, dependent on evolving national and global priorities, the magnitude and distribution of the burden of the individual diseases across the country and availability of funding at the national and global level. Since the launch of the National AIDS Control Program (NACP) in 1984, the dominant share of funding has transitioned from donor to domestic budgets in the current Phase 4 of the program. Recently, there has been an increase in donor funding to the National TB Elimination Program, with enhanced investments by multiple donors – large and small - for elimination of TB by 2025. Similarly, the Malaria Elimination Program (MEP), run by the National Vector Borne Disease Control Program (NVBDCP), has shown an uptick in donor investments in the past decade. The heterogeneity and diversity of donors has been another unique feature, varying in extent of the funding, scope and area of investment, with significant implications on policies and priorities of these programs. In turn, national and state policies and priorities have also influenced the changing landscape of donor funding and transition. It is expected that the recurrent entry and exit of donor funding across different programs will produce implementation challenges for the programs and also have major implications on long term funding, planning and sustainability. The donor transition underlying HIV/AIDS that has occurred over the years and the resulting integration at the state level needs to be captured. Examining the process of such transition of resources from donor to national, to state and to district level is critical as lessons for other major transition that is likely to happen, such as, Malaria and TB. Examining such processes and studying the transition has immense lessons for integration at the frontline level, via, integration of personnel, products, finance at the state/district/facility level. A mixed method approach, applying both quantitative and qualitative methods is proposed. In addition, to a thorough review of national strategic documents

for each of the proposed disease programs, key policy documents related to external aid in LMIC countries, in-country key informant interviews (KII) with the donors, and implementers will be conducted to understand the long term impact of donor investment, and future strategies which will guide funding decisions. The study will provide useful inputs for donors and policymakers regarding future investments.

Expected impact on public health in India: This exercise is considered relevant and timely to provide critical insights into the shifting landscape of donor funding, priorities and resultant transitions, understand the challenges and barriers to effective transition and recommend measures to help governments in LMICs (India) to achieve effective donor transition.

OTHER MAJOR PROJECTS

Assessing the impact of COVID-19 on primary healthcare services and antibiotic provision by rural healthcare providers in India and co-designing a multi-stakeholder intervention.

Principal Investigator: Prof. K Srinath Reddy

co-PIs: Dr. Sanghita Bhattacharya & Dr. Priya Balasubramaniam

This is an ongoing project and jointly funded by the Medical Research Council, UK; Economic and Social Research Council, UK; Wellcome Trust and Department for International Development (DFID) UK, through London School of Hygiene and Tropical Medicine (LSHTM)

Project Summary: The objectives of the study are:

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

Expected impact on public health in India: We will use the survey findings, together with the consultations with a wide range of national and state level stakeholders to co-design interventions for improved primary care with principles of antibiotic stewardship

Every New-born Health Assessment & Neonatal Care Evaluation study 2020

Principal Investigator: Prof. Rakhi Dandona

This is an ongoing project and is funded by Oxford Policy Management

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

Key findings summary: The initial findings from the study suggest an increase in neonatal mortality rate and stillbirth rate in the state as a result of Covid-19 pandemic. The study is on-going and detailed analysis are being undertaken to understand the reasons behind this increase.

Expected impact on public health in India: The study will 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.

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

Principal Investigator: Prof. Rakhi Dandona

This is an ongoing project and is funded by Indian Council of Medical Research (ICMR) through 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 showed that a simple training, auditing of 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 need to address these barriers. This study shall include assessment of the system in 6 selected states, and assessment of the MCCD practices at facility level in 8 selected facilities (which are reporting MCCD data) in 2 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.

Improving CRVS in Bihar: coverage, quality and cause of death

Principal Investigator: Prof. Rakhi Dandona

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

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

Key findings summary: Birth of 1 in 3 children in Bihar is not registered, and about 80% of neonatal deaths do not have birth and death registration in Bihar. Stillbirths are rarely registered. Considering all ages, death registration coverage was similar irrespective of the place of death. Significant age and gender differential was documented for death registration. Deaths of older men with financial incentives (insurance, pension, property, etc) are more likely to be registered. We documented poor understanding of the death notification process at the health facilities responsible for poor death coverage in CRVS. System-wide effort is needed to improve cause of death documentation and not just by training of medical doctors. Health system ownership and linkages between departments will improve both birth and death notifications is urgently needed.

Expected impact on public health in India: With Bihar contributing significantly to the neonatal mortality and stillbirths in the country, the extent of missingness in the birth and death registration has significant impact on tracking the SDG 2030 and ENAP goals for neonatal mortality and stillbirth reduction. The recommendations to improve cause of death and death registration have relevance beyond the state, given that there is an acute need to count the deaths correctly and to understand what do the Indians die of to plan effective prevention and treatment programs.

Preparation of the national INAP roadmap 2021-2030

Principal Investigator: Prof. Rakhi Dandona

This project was funded by United Nations Children's Fund (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), launched in June 2014, laying out a vision and a plan for India to end preventable newborn deaths and stillbirths by scaling up high impact, cost-effective preventive and curative interventions at community and facility levels. India has made considerable progress in addressing neonatal mortality in recent years and has achieved significant gains in reaching its targets, including the NMR 2017 milestone of 24 (NMR for India is 23 for 2017). There is a commitment in the INAP to review and update the action plan in 2017-2020. The proposed INAP review and updating exercise provide an opportunity to review progress; align

actions to achieve the newly released ENAP 2025 targets, and to adopt strategies to mitigate the impact of COVID-19 on the achievement of the NMR & SBR targets. The proposed INAP review will be undertaken within the background of the gains made so far in neonatal mortality reduction through wide-ranging system strengthening; emerging new knowledge in addressing the causes of neonatal mortality; and specificity in terms of sub-national state or district levels, based on where the need for action is the most to reach the NHP 2025 and SDG 2030 targets.

The review has the following Goals:

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

Improving CRVS in Uttar Pradesh: coverage, quality and cause of death

Principal Investigator: Prof. Rakhi Dandona

This project was funded by Sambodhi Research & Communications Pvt. Ltd and is now completed

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

Key findings summary: Birth of 2 in 5 children in UP is not registered, and about 80% of neonatal deaths do not have birth and death registration in UP. Stillbirths are rarely registered. Considering all ages, death registration coverage was similar irrespective of the place of death. Significant age and gender differential was documented for death registration. Deaths of older men with financial incentives (insurance, pension, property, etc) are more likely to be registered. We documented poor understanding of the death notification process at the health facilities responsible for poor death coverage in CRVS. System-wide effort is needed to improve cause of death documentation and not just by training of medical doctors. Health system ownership and linkages between departments will improve both birth and death notifications is urgently needed.

Expected impact on public health in India: With UP contributing significantly to neonatal mortality and stillbirths in the country, the extent of missingness in the birth and death registration has significant impact on tracking the SDG 2030 and ENAP goals for neonatal mortality and stillbirth reduction. The recommendations to improve cause of death and death registration have relevance beyond the state, given that there is an acute need to count the deaths correctly and to plan effective prevention and treatment programs.

A validation study of a dietary assessment instrument capturing ultra-processed food consumption in multiple countries

Principal Investigator: PROF. K SRINATH REDDY

Project In-Charge: Dr. Suparna Ghosh-Jerath

This is an ongoing project and is funded by London School of Health and Tropical Medicine (LSHTM), UK

The project aims to:

1. To adapt a 23-item food-based screener capturing ultra-processed foods (UPF) consumption (previously validated within the Brazilian setting) to three different LMIC
2. To validate this adapted short food-based screener within a purposive sample from each of the three LMIC
3. To develop and test a protocol, applying the validated instrument in a probabilistic sample (sentinel group) in three low-and-middle-income countries (LMIC), India, Ecuador and

Senegal for tracking and comparing UPF intake.

Country partners will help adapt the existing NOVA-UPF tool to their contexts by adapting or replacing the 23 original items/subgroups of UPF as needed. A context-specific expert panel will be invited to review and revise the NOVA-UPF tool, in order to assess the appropriateness of the adapted tool. This process will help estimate the content validity of the tool. At the end of this project, three, comparable but contextually adapted and validated, NOVA-UPF tools will be available for India, Ecuador and Senegal in Hindi (and other local languages), Spanish and French respectively. In the second year of the grant, a protocol will be developed for the application of the validated NOVA-UPF tool into surveillance and M&E systems and test it within a probabilistic sample of adults selected using simple random sampling, from sentinel locations.

Expected impact on public health in India: This tool has the potential to address a crucial information gap in terms of UPF consumption pattern in India which has a direct implication on the triple burden of malnutrition and can be crucial in informing potential policy measures that limit their intake and disease prevention. The aim is to develop interdisciplinary methods and metrics to better inform policy and actions to improve food systems and nutrition in India.

A randomised controlled trial to compare two different doses of maternal B12 supplementation in improving infant B12 deficiency and neurodevelopment

Principal Investigator: Dr. Manu Raj Mathur

This is an ongoing project and is jointly funded by jointly funded by DBT, India, and Medical Research Council (MRC), UK

Project Summary: Vitamin B12, also called cobalamin, is a water-soluble vitamin that has a key role in the normal functioning of the brain and nervous system. We proposed this research to compare two different doses (a treatment dose in comparison with a dose known to just prevent further deficiency) of maternal Vitamin B12 supplementation in terms of their effectiveness in removing infant B12 deficiency and neurodevelopment. We are undertaking a multi-centric trial in India and Nepal as these are countries where high incidence of deficiency is reported. We will recruit 720 pregnant women from the antenatal clinics of the department of Gynecology and Obstetrics at Sitaram Bhartia institute of Science and Research, New Delhi and Paropakar Maternity Women's Hospital, Kathmandu, Nepal. The subjects will be recruited at their first presentation to the antenatal clinic and should be vegetarian as they are at high-risk of B12 deficiency. Mothers who are >40 years of age, are already on B12 supplementation, have multiple gestation, chronic medical conditions, known psychological illnesses or those who anticipate moving out of the city before/after delivery will be excluded from the study. Recruited mothers will be randomly allocated to 2 equal groups (360 each). Group 1 (Intervention) will receive daily 250 micrograms Vitamin B12 supplementation to the mother through pregnancy and up to 6 months' post-partum. Group 2 (Control) will receive 50 micrograms Vitamin B12 supplementation to the mother through pregnancy and up to 6 months post-partum. The profile information of the mother including age, height, weight, ethnicity, education, socioeconomic status, maternal dietary assessment (by Food Frequency Questionnaire), intake of any supplements (iron, folate, Vitamin-D) etc. will be recorded. Vitamin B12 dosage will be provided at enrolment and then monthly to mothers. Mother's blood levels for Vitamin B12 status and other deficiencies will be drawn. Sampling for these biochemical tests will be combined with other routine tests at these stages to avoid any additional discomfort for the mother. Supplementation of the mother in both groups will be stopped at 6 months after childbirth followed by evaluation at 9 months. The neurodevelopmental assessment (DASII Scale) and home environment assessment will be done by a developmental therapist and complementary feeding assessment by a nutritionist.

Key findings summary: The project has reached its final phase. Recruitment and Follow up at the India site (SBISR) and the Nepal study site (PMWH) has been finished. This includes neurodevelopmental assessment (DASII), Blood sampling, HOME assessment and dietary recall. Monitoring and safekeeping of blood samples is being continued as before. Data monitoring, data cleaning, data entry is being regularly done by PHFI for both India and Nepal. All blood samples are now available to be sent for biochemical analysis. At this stage the study code will be broken, and the initial statistical analysis will be done at PHFI. Once the complete results are available the final dissemination exercise will start, and all the study objectives will be met. We will be undertaking our first dissemination meeting in New Delhi on September 19th 2022.

Expected impact on public health in India: The project will provide key insights to strengthen the Janini Suraksha Yojna and Janini Shishu Suraksha Kariyakram initiated by the Government of India and similar initiatives by the Government of Nepal. Because of the high worldwide prevalence of maternal B-12 deficiency, the study findings will be highly relevant for maternal/neonatal health in nutritionally vulnerable and at-risk populations (e.g. vegetarians) globally.

Developing a Comprehensive Package for Promoting Healthy Behaviours

Principal Investigator: Dr. Monika Arora

This is an ongoing project and is funded by Tata Industries Limited

Project summary: Behavioural patterns often established during childhood or adolescence track into adulthood and become difficult to change. Promoting health in children and adolescents is a 'life-course' approach to promote healthy behaviour. Focus on early years of life holds the key to create fairer societies and reduce health inequalities. India is a demographically young country with a significant proportion of the population who are adolescents. Many children and adolescents, especially those living in poor urban areas like urban slums suffer from illnesses caused due to poor general and oral hygiene and involvement in harmful behaviours like tobacco use. These diseases have a negative effect on health and the wellbeing of children. School attendance suffers greatly as a result, which means that less time is spent learning. Creation and co-designing of learning environments that promote good health equip children to develop healthy routines and, because they are healthier, to make the most of their opportunities. Various single interventions among children specifically targeting reduction in tobacco use, sugar consumption, and promoting oral hygiene have been tested in different countries and in India, but do not cover the comprehensive and sustainable way of promoting health in urban slum settings. While there is literature around behaviour change best practices among adolescents from many countries of the world, relatively less has been explored on practices that can be adopted in India. There are many stakeholders working in multiple approaches for promoting behaviour change. However, considering personnel, resources, and material constraints are often challenged by theoretical, implementation capacity (practicability), and financial concerns. We aim to address this by co-designing and implementing a set of simple behaviour change activities for promoting healthy behaviours among adolescents and reducing their risk of developing diseases throughout their life-course.

Key findings summary: The following activities have been successfully completed in the project:

- General Sessions were conducted in each of the selected slum areas on topics such as Hand Washing, Mental Health, Oral Health, Menstrual Hygiene and Harmful Effects of Tobacco and Alcohol on Adolescents. The aim of each session was to create awareness among adolescents about the respective topics.
- Interactive drawing session was held to understand the concepts taught to the participants on each of the topics in 5 slums.
- Rallies were conducted in each of the selected slum areas to create awareness on topics such as general hygiene; tobacco;

alcohol awareness; menstrual hygiene and oral health hygiene (including but not limited to).

- Skits were performed using a hands-on approach for each of the themes. The skit comprised of catchy dialogues, attractive slogans and powerful dramatic elements. The youths mainly came forward to play this. The primary goal of a skit was to take a social message to a large group of people.
- Focus group discussions were done to gather information about the perspectives and opinions about new ideas. Focus group participants were asked questions in an interactive setting and were encouraged to discuss their thoughts freely with other participants. These discussions thus generated ideas that provided a wealth of information. FGDs were held with participants, parents and other stakeholder by using a checklist of questions. A total of 67 adolescent took part in the FGDs.
- Nukkad nataks were held (including but not limited to general hygiene; tobacco and alcohol awareness; oral health hygiene) with a focus on influencing environmental factors (social norms, role models, social support, opportunities, practical arrangements and structures in communities to promote healthy behaviours) and intrapersonal factors (knowledge, values, meanings, beliefs, skills) that determine health behaviours among adolescents.
- Slogan writing was done to attract the audience and make them remember about the activities being performed. The slogans had a musical tone to it and were used to capture the attention of the audience.
- Wall paintings were used as collective thought spaces.

Expected impact on public health in India: This project brought together multiple stakeholders, and will be one of the many steps that will enhance local capacity by providing ideas and activities to identify, prioritize and organize health related issues and take necessary steps to promote health. Developing and testing such an educational package will also facilitate a national level strategy and plan of action for strengthening the National Adolescent Health Programme.

To support the research on Enhancing Peoples Participation to Propel UHC in SEAR

Principal Investigator: Prof. K Srinath Reddy

This project was funded by World Health Organization (WHO) and is now completed

Project summary: To undertake a review of the ways and means through which population engage directly, through community mobilization efforts and through civil society to influence policy at both national and sub-national levels and assess the role of these mechanisms in contributing to the achievement of UHC and health-related SDG goals among SEAR countries. This will include country level case studies that will contribute to a better understanding of the extent to which and how the population and communities are engaged with and able to influence national policies. The case studies will also help to further our understanding of facilitating factors and barriers to civil society and community engagement and how these have changed (or not) post the COVID-19 pandemic.

Key findings summary: An initial scoping analysis has been completed and the draft report has been made available to SEARO for comments. Ethical approval has been sought for the next phase of the project and the protocol for the larger qualitative study developed.

Expected impact on public health in India: The project has its implications in enhancing the social participation and community empowerment as a tool to strengthen health systems in the SEARO Region

Exploratory Randomised trial of face to face and mobile phone counselling against usual care for tobacco cessation in Indian primary care

Principal Investigator: Dr. Raj Mohan Panda

This is an ongoing project and is funded by University College of London (UCL)

Project summary: The delivery of comprehensive, person-focused primary care behavioural interventions will provide pathways for understanding long term prevention and management of not just tobacco but also non-communicable diseases. Through the project, tobacco cessation interventions will be provided to under-serviced (rural) and vulnerable populations. Thus we envisage that there will be modest improvements in health service delivery, clinical practice, and improved health outcomes. Even a modest success rate could have a large effect on uptake of services in smokeless tobacco cessation and make a valuable contribution to public health by lowering prevalence of smokeless tobacco in the state. This will add momentum to cessation efforts in Odisha in particular and provide evidence for cessation of smokeless tobacco in India at large.

Key findings summary:

- Conducted an exploratory randomised controlled trial. Recruited seven out of nine urban primary health centres (78%) and 250 of 315 eligible smokeless tobacco users (79%)
- Followed up 238 of the 250 smokeless tobacco users and collected their information at three months (95%)
- Achieved a compliance rate of 64% with the intervention
- Documented majority of complete outcome measures with negligible amount of missing data (4.8%)
- Assessed tobacco abstinence at three months using self-reported measures and salivary cotinine test and found that a higher proportion of users who received the intervention tested negative for tobacco use.
- Conducted in-depth-Interviews with smokeless tobacco users who received the intervention at the end of the trial and explored their experience, challenges, and suggestions regarding the intervention.
- Conducted a conference to disseminate the findings of the study with Government of Odisha, local research teams, and patients/ trial participants

Expected impact on public health in India: The health care providers in India will benefit from the proposed research through an improved understanding of the low-cost mHealth intervention model for tobacco cessation which can be integrated in primary care. The primary care clinics capacity for counselling will be enhanced by the trainings. Findings from this study will provide insights for designing similar studies and appropriate interventions in tobacco cessation and non-communicable diseases in the state of Odisha.

Conducting the exploratory randomized controlled trial

Dissemination of study findings conference

Evaluating ECHO telementoring program in the capacity strengthening of Community Health Workers (CHWs) in context of COVID-19 and other allied health services in alignment with HWCs

Principal Investigator: Dr. Raj Mohan Panda

This project was funded by Extension for Community Healthcare Outcomes (ECHO India) and is now completed

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

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

Key findings summary:

- The ECHO model is feasible and acceptable for the provision of refresher training to ASHA workers and significantly improved their knowledge in health-related areas and use of technology.
- The competence and performance of ASHAs improved leading to positive changes in their clinical practices and treatment strategies.
- The case-based discussion encouraged greater engagement and enhanced learning of ASHAs. The opportunity to connect with large number of participants across disciplines and ease of joining the ECHO platform was beneficial.
- The key challenges for the ASHAs to participate in the training were network disturbances, difficulties in operating mobile phones and transport to reach the place of training.
- The ECHO model is sustainable for training ASHAs in addition to the training provided at recruitment for their continuing education to serve the community.
- There is a need for strengthening the infrastructure and expanding the training to enable sustained capacity-building and supportive supervision for the ASHAs.

Expected impact on public health in India: This model of tele mentoring can be embedded into the existing healthcare policies to enhance the coverage and quality of frequently implemented training for ASHAs. The findings and recommendations from this study provide evidence for improving digital training interventions for community health workers (CHWs) in low middle income settings like India.

Implementation of the ECHO tele mentoring program for the capacity strengthening of Community Health Workers (CHWs)

Improving Maternal, Newborn And Sam Management Outcomes Through Digital Health And Sbc Interventions

Principal Investigator: Dr. Samresh Sengupta

This is an ongoing project and is funded by UNICEF, Lucknow

Building on the previous Hello didi (2020) experience during COVID phase, In the year 2021 UNICEF with support from Public Health Foundation of India (PHFI) established a phone-based counselling system (Hello Didi 2.0) to accelerate rehabilitation of Severe Acute Malnourished (SAM) at home and care during pregnancy. Under the project, a team of trained tele-counsellors were periodically engaged with women (caregivers of SAM children and pregnant women) to improve their health and nutrition knowledge and support them in translating it into practice. It is continued in the current year also. The key tasks under this project are:

- Establishment of a centralized tele counseling system to accelerate rehabilitation of SAM children at home
- Personalized, intensive support to mothers of SAM children
- Structured, problem solving sessions between counselor and caregivers of SAM children
- Bridge service gaps by building linkages with local ICDS and health system.

Expected outputs of this project are: Use mobile phone technology to improve cure rate of SAM children in program districts; Improve nutrition outcomes by enhancing AWW's capacity to conduct Nutrition BCC engagements; Institutionalization of Mental Health Services in Academic Universities through three-tier management system and peer led approach; Provide technical assistance to expand adolescent and nutrition interventions

Expected impact on public health in India: The project is expected to accelerate improvement in health and nutrition indicators of women and their newborn children and in SAM management outcomes.

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

Principal Investigator: Dr. Ashish Awasthi

This project was funded by Department of Science & Technology (DST) and is now completed

Project summary: The broad objective of the study was to generate estimates of age-sex-cause specific mortality at community level using available in-hospital mortality data at selected sites in India. For the project two different existing standard databases were used to train models for extracting the disease names. NCBI Corpus: NCBI Disease Corpus is a large-scale disease corpus consisting of 6900 disease mentions in 793 PubMed citations; derived from an earlier corpus. BC5CDR Corpus: The BC5CDR corpus consists of 1500 PubMed articles with 4409 annotated chemicals, 5818 diseases, and 3116 chemical-disease interactions. Apart from these standard databases, we have created our own database for training a model from scratch. The database was built manually with the assistance of medical professionals by extracting diseases names from death summaries and were annotated in BIO format.

Key findings summary: We developed a computer aided algorithm using natural language processing-based models and machine learning methods. We extracted important clinical information from unstructured death summaries and assigned ICD-10 codes after removing noise in data. We used CORE and NER models using standard corpus with aid of automated search to assign ICD codes. Our final model and 94% precision to assign ICD codes for in-hospital deaths using unstructured death summaries.

Expected impact on public health in India: We have poor quality cause of death estimates at all administrative level. The algorithm from this study can be used to utilize the available death summaries at health facilities to assess the cause of death estimates and its change over time.

Role of yoga therapy against TB in PLHIV infection (DST Fellowship under the Women Scientist Scheme KIRAN)

Principal Investigator: Dr. Arohi Sandeepkumar Chauhan

This is an ongoing project and is funded by Department of Science & Technology (DST)

Project summary: Tuberculosis (TB) is the commonest opportunistic infection(OI) among people living with Human Immunodeficiency Virus (PLHIV) infection. According to the Annual TB report 2021 for India an estimated 71000 (CI: 49000-98000) had HIV-TB co-infection in 2019. Both HIV and TB have potentiating effect on each other and PLHIV has 8 times greater risk of acquiring TB compared to HIV negative people. Yoga therapy has beneficial effect on lungs and immune system and it has the potential to prevent the progression of HIV. Hence, an intervention was planned amongst PLHIV on Isoniazid prophylactic therapy (IPT), to assess the incidence of tuberculosis among PLHIV practicing yoga as compared to those not practicing yoga. Methods: A double arm Randomized controlled, mixed method study is being conducted from Dec-2019 to Mar 2023 at one of the ART center of Ahmedabad city. After obtaining ethical clearance from the ethics committee, Smt. NHL MMC, Ahmedabad and Institutional Ethics Committee, Public Health Foundation of India, New Delhi, During the conduct of the study, all the ethical directions were strictly adhered and followed up. PLHIVs confidentiality was strictly maintained and their written informed consent were taken before recruiting the participants. PLHIV were recruited once they met the inclusion criteria of age 18-65 years, were on IPT and physically fit. PLHIV were randomized into intervention group (n=600) and control group (n=1200). Intervention group received training in yoga in a structured manner and were asked to continue at home. Control group (n=1200) received usual care without Yoga. Yoga therapy training was imparted to Intervention group consisting of meditation and joint loosening exercise(10 min), Asana (yogic postures) and pranayama (breathing exercises) for 20 min) and yoga nidra; a form of yogic mindfulness (10 min) by a qualified yoga instructor. Currently the following findings are from the one year interim follow up of the PLHIVs.

Key findings summary: The mean(+SD) age of PLHIVs in Intervention group and Control group was 35.5+10.5 years and 36.5+11.4 years respectively. There were 210 females (35.6%) in intervention group and 341 females(37.0%) in control group, proportion of PLHIV with HIV duration <1 year in intervention group was 12 (2.0%) and control group was 27(2.2%). Mean CD4 count among intervention group at baseline was 550.8 +/- 250.0 cells/microliter and 524.4+/- 285.4 cells/microliter. The baseline difference between intervention group and control group in terms of age (p=0.086), sex(p=0.066), duration <1 year of HIV diagnosis (p=0.342) and CD4 count (p=0.06) was statistically insignificant. After one year of follow a total of 1564 PLHIV were retained in the study and the drop-out rate was 13.1%, among intervention group was 14.3% (86/600) and control group was 12.5% (150/1200). A total of 246 PLHIV were practicing yoga therapy after one year of follow up. A total of 37 (2.3%) PLHIVs developed TB after a one year follow up out of which 9 (1.7%) were in intervention group and 28(2.6%) were in control group, a significant difference(p=0.02) was observed. Logistic regression showed an insignificant association between practice of yoga therapy and occurrence

of TB (OR=0.848, CI=0.290-2.482). PLHIV practicing yoga therapy were 0.59 (CI: 0.404-0.885) times more likely to have a increase in CD4 count and 0.56 (CI: 0.413-0.773) times more likely to have a decrease in HIV-1 a viral load where as those not doing yoga therapy were 1.67 (CI:1.129-2.469) times more likely to have a decrease in CD4 count and 1.76 (1.292-2.416) times at risk of having an increase in viral load after 1 year of practicing yoga therapy.

Expected impact on public health in India: Owing to the fact that TB and HIV are the most common infectious disease in India particularly affecting lower socio-economic status and the mortality rates also high for TB infected HIV patients, utilizing the hidden treasure known for ages in India i.e. Yoga therapy will definitely benefit the society in terms of improving symptoms and treatment adherence in both the infection and increasing productivity and earning capacity as both the disease are common in adults. Yoga therapy will be proposed as a supplementary therapy along with ART and Isoniazid preventive therapy in PLHIV.

PROJECTS AT IIPHS

INDIAN INSTITUTE OF PUBLIC HEALTH, DELHI

Dietary diversity and nutritive value of indigenous foods in addressing food security and nutritional status of vulnerable tribal communities of India

Principal investigator: Dr. Suparna Ghosh-Jerath

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

Project Summary: Aim of the project: To evaluate the potential of indigenous foods in contributing to dietary diversity and nutrient intake for improving food security and nutritional status of vulnerable tribal communities of Jharkhand, India.

Objective #1: Characterize the food environment to:

- Appreciate knowledge and perception of specific tribal communities regarding the indigenous foods
- Map biodiversity and assess availability, access and utilization of indigenous foods by these communities
- Assess any shift in dietary patterns in these communities vis-à-vis the indigenous food intake
- Characterize their farming system to understand constraints and opportunities for improving indigenous food production and the resilience of these systems to climate variability.
- Examine barriers and facilitators to increase sustainable production, procurement and consumption of indigenous foods

Objective #2: Assess the nutritive value of indigenous foods that are routinely accessed

Objective #3: Estimate the contribution of indigenous foods to nutrient intake and nutritional status of the communities.

Expected impact on public health in India: The findings from the study would lead to development of a prototype for a multi-level approach incorporating an environmental assessment followed by development of evidence-based, nutrition-sensitive agricultural and BCC interventions for encouraging production and consumption of these indigenous foods.

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: Dr. Jyoti Sharma

This is an ongoing project and is funded by The Ministry of AYUSH, Government of India

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

cases in compliance with the National Clinical Management Protocol (NCMP) on Ayurveda and Yoga for Covid-19 related outcomes.

Expected impact on public health in India: The study will provide learnings for: Availability and quality of date available at the AYUR institution, Data collection and report systems, Extent of utilization of National Clinical Management Protocol (NCMP) on Ayurveda and Yoga for Covid-19

Assessment of The Covid-Free Village Program (CVP) For Covid-19 Risk Reduction

Principal Investigator: Dr. Saurav Basu

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

Project summary:

1. Providing technical support for conduct of surveys in the intervention and control sites
2. Analysis of the quantitative and qualitative data collected in the surveys
3. Submission of the project report and a manuscript to journal

Key findings summary: The study conducted an assessment of the Covid Free Village programme in Pune district using a control district and matched analysis (Satara). The salient findings were the CFV significantly improved Covid-19 related awareness, adherence and persistence to Covid appropriate behavior, improved vaccination coverage, and reduced Covid-19 related stigma in the intervention compared to the control site.

Expected impact on public health in India: The study findings suggest the applicability of a village volunteer driven, empowerment oriented, government civil society collaborative effort in improving risk reduction and potential epidemic or pandemic preparedness. The CFV model may also be replicated with modifications for select non-communicable control.

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: Dr. Shomik Ray

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

Project summary: Aims and Objectives:

1. To assess and summarise 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.
2. 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.
3. To assess the willingness of private vehicle users to shift to public transport for their daily commute to office and determinants thereof.
4. To assess the willingness to pay of private vehicle users to continue using their private vehicles for their daily commute to office and associated welfare gain.

Expected impact on public health in India: This will be the First Contingent valuation study in the domain in India. It will have a monetary value on health impact of pollution from an user perspective. Will be helpful in providing specific inputs to policy makers on taxation policy and incentives for shift from private to public transport

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: Dr. Shomik Ray

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

Project summary: Primary objective: The study would aim to assess the relative efficiency of the

three COVID-19 vaccines granted EUA by their modes of delivery through a complete economic evaluation (cost-effectiveness and cost-utility analysis). Secondary objectives: Multiple secondary objectives would collectively lead to the fulfilment of the primary objective. They are as follows.

1. To assess the cost of vaccination for the COVID-19 vaccines granted EUA by their modes of delivery.
2. To assess cost of illness (COI) of COVID-19 illness in Government and Private service providers.
3. To assess the effectiveness of vaccination for three COVID-19 vaccines granted EUA by their modes of delivery in terms of lives saved and Quality adjusted life years (QALY)

Expected impact on public health in India: First economic evaluation of COVID vaccines in India; establishment of relative efficiency of COVID vaccines in India and first cost of COVID illness study in India

Systematic review of evidence on the cost-effectiveness of rota virus vaccination in low and middle income countries

Principal Investigator: Dr. Shomik Ray

This project was funded by Department of Health and Research (DHR), Ministry of Health & Family Welfare, Government of India and is now completed

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 disease outbreaks. This major goal will be achieved by pursing the following specific objectives:

a) Address the current knowledge gap by performing comprehensive immunome profiling of responders and non-responders to influenza vaccines at baseline and post vaccination with standard vaccines to identified the underlying mechanisms

b) Advance the development of two next generation universal vaccines

c) Identified predictive biomarkers of responsiveness to vaccination to develop new diagnostics

d) Perform a health systems and investment analysis, and discrete choice experiments to assess the suitability of the developed technologies for low- and middle-income countries and to identify potential downstream constraints that might affect uptake by health care systems

Design and scale up of Alternate models for responding to the critical shortage of medical specialists in selected states

Principal Investigator: Prof. Sanjay Zodpey

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

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

Key findings summary: The Project has been successful in helping states offer DNB and CPS programs through District Hospitals.

Expected impact on public health in India: This project will increase the production of specialists

through adoption of alternate models for responding to the critical shortage of medical specialists. The participating DHs will witness a strengthening of their capital infrastructure as well as the staffing of specialists. The presence of Post-Graduate trainees around the year will have a domino effect that may lead to higher utilization/ access of services.

Analysis and expert inputs on online and blended learning for NNF partnership program, India

Principal Investigator: Prof. Sanjay Zodpey

This is an ongoing project and is funded by Centre for Online and Blended Learning through University of Copenhagen

Project summary: The analysis will provide expert input, background information, and new insights to inform the drafting of a component on online and blended learning as part of a larger and longer-term NNF partnership program aimed at strengthening health professions education (HPE) in India, particularly within the topics of prevention and treatment of cardiometabolic diseases (CMDs).

Key findings summary: There is a significant scale-up of digital and blended learning in the past two years. Significant challenges persist at institutional level for scaling up digital and blended learning.

Expected impact on public health in India: This work will provide a deeper understanding of the digital and blended learning landscape in India.

Program Management for setting-up an Integrated Command and Control Centre for Government of Haryana in partnership with Deloitte

Principal Investigator: Prof. K Srinath Reddy

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

Project summary:

1. Identify and curate the relevant content related to Covid-19 treatment protocols, appropriate health behaviour and specific health action approved by the MoHFW and other relevant departments for Covid-19 management to be used for dissemination to specific stakeholders directly involved in the frontlines of Covid-19;
2. Repurpose the curated content for two purposes of: a. Training: Virtual training of RMPs, paramedical staff, administrative staff, ASHAs, Anganwadi Workers and Auxiliary Nurse Midwives (ANMs); b. Dissemination: Digital and electronic outreach to the larger population, with special focus on high-risk population [those with co-morbidities]
3. The training content will be in the form of short learning modules with focus on: Guidelines, Identification of cases, Interpreting tests, Triaging, proper referral and patient management, Follow-ups of patients, Potential patient risk assessment and referral and Pre- and post-vaccination process and protocols.
4. The dissemination content should be in the form of short, easy-to-understand, easy-to-use and easy-to-action widgets that focus on: Prompt recognition of symptoms; Early outreach & contact with health worker; Minimising stigma, myths & misconceptions; Addressing vaccine hesitancy;
5. Awareness generation on COVID appropriate behaviour.
6. Document the Karnal model along with select members of the Deloitte team with an intention to jointly showcase [PHFI-Deloitte Report]

Key findings summary: The material was developed and implemented by the donor in Karnal District.

Expected impact on public health in India: Greater public awareness and improved health worker skills for handling community activities.

Development of a SEARO Human Resources for Health Leadership and Management Course.

Principal Investigator: Prof. Sanjay Zodpey

This project was funded by World Health Organization (WHO) and is now completed

Project summary: The main objective of the APW is to develop the content, including identification of learning objectives, speakers, learning materials, and activities, of a one-week HRH executive course that will strengthen the capacity and function of mid-and senior-level HRH managers in SEAR countries.

Key findings summary: Session plan and contents were developed and shared for a one-week executive course on Human Resources for Health.

Expected impact on public health in India: The course provides an opportunity to build country level capacity for executives in Human Resources for Health.

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

Principal Investigator: Dr. Habib Hasan Farooqui

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

Project summary: Key Objectives:

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

Key findings summary: Private market sales of systemic antibiotics in India were vast. We found higher sales of Watch single antibiotics compared with Access single antibiotics, while the overall sales of Access antibiotics slightly exceeded sales of Watch antibiotics. Combinations not recommended by WHO accounted for 41.5% of sales of fixed-dose combinations and were predominately Watch group combinations. Another major finding is that 236 out of 395 formulations of fixed-dose combinations were marketed without formal central approval, accounting for 15.4% of fixed-dose combination sales. Many fixed-dose combinations banned by the government continued to be marketed in India.

Expected impact on public health in India: The evidence generated through this research has highlighted the need for greater transparency and review of antibiotic fixed-dose combinations marketed and strengthening the effectiveness and enforcement of the regulatory process in India. Given that antimicrobial resistance is a global concern, such efforts are required to counter the overuse and misuse of antibiotics in the country to preserve the effectiveness of existing antibiotics.

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

Principal Investigator: Dr. Preeti Himanshu Negandhi

This is an ongoing project and is funded by World Health Organization (WHO) India Country office

Project summary:

1. Analyse the latest available NFHS-5 data for the 7 thematic areas as conducted in phase 1 of the project.
2. Conduct some key informant in-depth interviews to get on-ground perspectives of the programs and schemes in the 5 States.
3. Update and submit the HEP report for India and the 5 States, including NFHS-5 data.

Key findings summary: The National Health Equity profile has been developed across 7 thematic areas including reproductive, maternal and child health, nutrition, communicable and non-communicable diseases, health financing and WASH.

Expected impact on public health in India: This report is expected to help understand the current status of various indicators across equity stratifiers, as well as the trend for each indicator over time (from 2005-06 to 2019-21).

Developing a strategic plan for establishing Centre of Excellence for Urban Primary Healthcare in Maharashtra

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by United Nations Children's Fund (UNICEF) Maharashtra and is now completed

Project summary: This activity included developing a strategic plan for operationalizing a Centre of Excellence for strengthening urban primary health care. This included will include providing the terms of reference for the CoE, preparing a costed action plan for the same and the roadmap for the future, for Mumbai and the State of Maharashtra. This project also included analyses and documentation of vulnerability assessment for urban slums in Mumbai, as well as analyses and documentation of the urban healthcare facilities in Mumbai and adjacent areas.

Key findings summary: The COE plan has been developed and submitted to UNICEF for inputs. Documentation of vulnerability assessment for Mumbai slums has been completed and submitted to UNICEF. Manuscript for the same is being developed. In parallel, the healthcare facility report has also been drafted and shared with UNICEF for inputs.

Expected impact on public health in India: These reports are expected to be used to guide policy decisions for Mumbai, and subsequently for Maharashtra, to strengthen the urban health program.

Control of thalassemia and sickle cell disease in Odisha

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by Indian Institute of Public Health Gandhinagar and is now completed

Project summary: This is a research study which will be conducted across districts of Odisha. Our The objective was to evaluate the implementation of specific interventions in the area of prevention and control of hemoglobinopathies such as sickle cell disease and thalassemia, specifically the screening component. Districts included Koraput, Cuttack, Kalahandi, Gajapati and Bhadrak.

Key findings summary: A baseline evaluation was conducted to understand the knowledge and practices of pregnant women across the districts of Odisha, some of which were part of the intervention while others were considered as the non-intervention comparison group.

Revised draft of indicator monitoring framework for SRMNCAH and HA with GER narrative

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by World Health Organization (WHO) SEARO and is now completed

Project summary:

1. Identify relevant GER indicators for inclusion in the forthcoming SRMNCAH report
2. Update monitoring report tables
3. Draft and revise report narrative text
4. Incorporate comments from HQ on main document

Key findings summary: The SRMNCAH report was finalized with GER narrative incorporated as required, as well as with incorporation of comments shared by WHO HQ, Geneva

Expected impact on public health in India: The final report is expected to guide the development of a monitoring framework for SEAR countries in the areas of SRMNCAH, GER and Healthy Ageing

Assessment Of Integration Of AYUSH Into The Public health System For Combating Covid-19

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by CCRAS (Central Council of Research in Ayurvedic Sciences) and is now completed

Project summary: This research study was conducted across 10 States in India to understand how AYUSH systems of medicine have harmonized with modern medicine within the public health delivery system in the COVID-19 pandemic. For this, a mixed-methods study was conducted - qualitative interviews among health workers from the Allopathic and AYUSH streams of medicines, quantitative survey among urban and rural beneficiaries and willingness to pay for AYUSH services.

Developing health equity profile of India and 5 States – Assam, Chhattisgarh, Maharashtra, Odisha and UP

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by WHO India Country office and is now completed

Project summary: NFHS-3 and NFHS-4 data, and data from two rounds of NSSO were used to conduct equity analyses for status of indicators across various themes – nutrition, RCH, WASH, communicable and non-communicable diseases, and health financing. The analyses were conducted at national level and for the 5 States.

Key findings summary: The report for national health equity profile and for the 5 States was prepared and submitted to WHO India. The results were presented in the form of tables and graphs for various socio-economic-demographic equity stratifiers.

Expected impact on public health in India: The results of the equity analyses could aid in guiding policies and programs for specific population groups across the country and in the 5 States with respect to many relevant and critical health indicators.

Short-term training for health and nutrition managers on RMNCHA, leadership, project management and SBCC

Principal Investigator: Dr. Preeti Himanshu Negandhi

This project was funded by PCI Bihar and is now completed

Project summary: Health and Nutrition managers of all districts of Bihar plus the employees of PCI were trained over a period of 5 days on technical aspects of leadership, RMNCH+A, SBCC and project management.

Key findings summary: Health and Nutrition managers of all districts of Bihar plus the employees of PCI were trained over a period of 5 days on technical aspects of leadership, RMNCH+A, SBCC and project management.

Expected impact on public health in India: The health and nutrition managers are expected to use these learnings in the field across districts of Bihar.

Strengthening Primary Healthcare and Human Resources for Health

Principal Investigator: Prof. .K Srinath Reddy

This is an ongoing project and is funded by Infosys Foundation

Project summary: The project aims to improve the capacity of various functionaries within the urban governance system in Gurgaon, Haryana

to deliver quality services that have an impact on urban public health. The project will look to achieve the above goal by meeting the following objectives:

1. Development and Delivery of Certificate Programme on Primary Health Care for Nursing Professionals
2. Capacity Building of Municipal Corporation of Gurgaon (MCG)
3. Capacity building of community Groups

Key findings summary:

1. The Certificate programme for Public Health nurses has been launched.
2. Preparation of teaching modules is currently being done.
3. An event had been organised to commemorate World Health Day in Municipal schools in collaboration with Municipal Corporation of Gurgaon.
4. A training programme on Project Management has been completed with NGOs working in Gurgaon.
5. Capacity Building Needs Assessments with various level workers of Municipal Corporation of Gurgaon will be completed in September 2022.
6. Eleven topics for capacity building for Sanitary Supervisors of Municipal Corporation of Gurgaon has been identified in discussion with Sanitary Inspectors.

Expected impact on public health in India:

1. Improved capacities in service delivery in urban health within nursing professionals of the Ministry of Health and Family Welfare in Gurgaon
2. Improved capacities in service delivery in urban health within various cadres of workers in Municipal Corporation of Gurgaon
3. Improved Knowledge Management systems within the two institutions.
4. Improved capacities within CBOs in Gurgaon for better delivery of urban health services.
5. Archive of training material and tested capacity building system for scale up and replication

INDIAN INSTITUTE OF PUBLIC HEALTH, HYDERABAD

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

Principal Investigator: Dr. Gowri Krovi Iyer

The study is ongoing and funded by the Medical Research Council, UK, and co-ordinated jointly by the National Institute of Nutrition, India, the London School of Hygiene & Tropical Medicine, UK, and the Indian Institute of Public Health, Hyderabad, India

Project summary: Study goal is to capitalise 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, we need to conduct considerable preliminary research, which constitute the specific objectives for the current seed-proposal:

1. To conduct preliminary analyses on lifecourse and environmental risk factors of prevalent multimorbidity using existing APCAPs data (N=6,972)
2. To collect pilot data on the parental generation of the APCAPs cohort to identify common clusters of multimorbidity and their incidence (N=~2,000)
3. To conduct qualitative research with community members (with and without multimorbidity) and other stakeholders to establish priorities and design of the proposed research platform
4. To explore the feasibility of establishing a low-cost disease surveillance system
5. To use the above findings to develop proposal for a multimorbidity research platform

Key findings summary: The aim of the study is to recruit 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. 1500 participants have been screened during this project for socio demographic condition, diet, physical activity, medical conditions both diagnosed and symptomatic, disability including depression, anxiety, dementia, hearing, vision, dental health, voice and 6m walk, cardiovascular measures including ECG, 2D Echo, Central Blood pressure, diabetic neuropathy, anthropometry and grip strength and DXA scan (sub sample), healthcare management. Data collection is still ongoing.

Expected impact on public health in India: Getting a deeper and a more comprehensive understanding of the epidemiology of multimorbidity and its corresponding burden and healthcare use, which could ultimately be used to develop and test interventions.

Community Eye Health Journal, South Asia edition

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by Tijssen Foundation and Mission for Vision, India

Project summary: The Community Eye Health Journal South Asia Edition is a quarterly publication, aimed to ensure that up-to-date and relevant information reaches eye care workers of all levels in the countries where the burden of eye disease and blindness is greatest. An Advisory Committee and Editorial Board have been constituted to guide the development of the South Asia edition. The South Asia edition is sent to subscribers in 7 countries namely- India, Sri Lanka, Bhutan, Nepal, Pakistan, Myanmar, and Bangladesh. The Community Eye Health Journal International Edition is sent free to over 22,000 healthcare providers worldwide, mainly in low and middle-income countries. Our total subscribers for South Asia alone are approximately 10,000 and readership is 35,000 when our French, Chinese, and Spanish editions are included.

Key findings summary: Our 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.

Expected impact on public health in India: The journal aims to provide up-to-date and relevant information/articles intended for eye care workers of all levels he countries where the burden of eye disease and blindness is greatest. Also, the journal seeks to refresh skills learnt many years previously, share good practices and motivate people to reach beyond the eye clinic and into communities – thereby improving the eye care and health outcomes of people throughout the developing world.

Preventing Childhood Blindness and Visual Impairment: Strengthening Health Systems for low vision care

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by The United States Agency for International Development (USAID) through Integrative Sciences LLC

Project summary: The main objectives of the CBP Program to be implemented by PHFI over the life of the program are 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 5 districts of Telangana State, building capacity (skills for assessment, management and follow up) 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 low vision care, 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 State (Tele-consultation linkage will be established between the low vision care services at district and sub-district level with a dedicated facility at the Pushpagiri Vitreo Retina Institute (PVRI), Hyderabad- a partner institution of PHFI), creating a pool of community-based volunteers and parent support groups for community empowerment and assessing the potential for scaling up and long term sustainability through a robust monitoring and evaluation matrix. Sustainability would refer to the continuation of the program at government public health system facilities with the resources available in the government sector or government's collaborators, and program ownership being absorbed by the government

Key findings summary: Low vision screening among children below 10 years, under the project, is going on in 5 districts of Telangana (Sangareddy, Rangareddy, Vikarabad, Medchal-Malkajgiri, and Nalgonda). In the last one year, around 8500 children were screened and over 150 children were treated for refractive errors and other eye conditions. Over 100 children received free spectacles and low-vision aids under the project. 10 eye surgeries were conducted free of cost under the project. Over 2000 frontline health workers including ASHAs, ANMs, Physicians, Optometrists, and Paramedical Ophthalmic Assistants were trained for low vision screening and management. The involvement of current government public health staff in the project has assured building capacity and sustainability.

Expected impact on public health in India: Low vision screening in children below 10 (including pre-school age group) years assures to cover the vulnerable age group that may not be reached out through the current school eye health program. Early vision screening assures early treatment and improved quality of life. The project will definitely help to prevent overall childhood blindness.

A Public Private Partnership (PPP) Model for Integrating Services for Prevention, Screening and Management of Retinopathy of Prematurity

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by The United States Agency for International Development (USAID) through Integrative Sciences LLC

Project summary: A Public Private Partnership Model for integrating services of prevention, screening and management of Retinopathy of Prematurity (ROP) in special new born care units at five District hospitals in two states, i.e, in Telangana and Andhra Pradesh: Build capacity of neonatal care teams for QI. Establish ROP screening program in selected SNCU. Integrate ROP follow-up and low vision rehabilitation services with District early prevention centre. Create awareness among general population and parents of new born about risk of ROP and screening in preterm child.

1. Capacity building: Building capacity of the nurses in SNCU using planned PDSA cycles to provide quality of care in SNCU/NICU. Sensitization workshop for ASHAs and ANMs to increase awareness among parents and expectant mothers about ROP. Optometrist will be trained in low vision care.
2. Screening: One wide angle retinal camera will be provided for each site for the early identification of ROP by the neonatal nurses (ROP Nurse). The SNCU database will be used for identifying all eligible babies based on the eligibility criteria as per national RBSK guidelines. A grading centre will be established at PVRI to provide detailed image interpretation and management decision by trained graders and a retinal specialist with a maximum turnaround time of 1 hour to facilitate real time reporting.
3. Referral and treatment: PVRI will be the treatment centre for ROP as it has specialized services for management of ROP including LASER and VR surgery at Hyderabad and Vizianagaram.
4. Follow-up: A tertiary eye care centre will be developed as an advanced centre for paediatric low vision assessment and low vision care. All eligible infants' details will be entered in a ROP database using a web based application.
5. Monitoring: Quarterly audit of all key activities will be done, using a pre-designed audit form.

Key findings summary: Neonatal eye examinations under the CBP ROP project are currently being conducted in Sanga Reddy, Vikarabad, and Janagoam districts of Telangana and Visakhapatnam and Vizianagaram districts of Andhra Pradesh. All District Hospital SNCUs have been installed with Neonatal Retina Cameras (NEOCAMS) to enable SNCU nurses to image eligible infants. A total of 2997 people benefited under the USAID project, out of which 2837 children aged 0-14 years were screened for eye diseases, refractive errors, and other eye disease. 158 service providers were trained to detect or treat vision impairment under the project. A total of 44 children have been provided free medical treatment under this scheme. The involvement of existing government public health personnel in the project ensured capacity building and sustainability

Expected impact on public health in India: This current project supports screening for ROP for eligible children. Early screening guarantees vision improvement with early treatment and quality of life. The present project will definitely help to prevent total childhood blindness.

Study of the impact of Environmental factors (air quality and exposure to Ultra Violet Radiation, UVR) - Phase II

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

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

Project summary: The study objectives are to study the effect of environmental factors and global warming (i.e UV-B radiation, suspended particles) on the prevalence and/or exacerbation of eye diseases like cataract, dry eye, Pterygium and vernal keratoconjunctivitis in coastal South India and further to correlate and compare the existing data on prevalence of eye diseases with available measurements of UVR, ozone coloumn and suspended particles in this coastal area. Three core activities involved in this study

are: Household enumeration - Urban and Rural clusters approximately 4000 individuals more than 40 years will be included in the study;Risk assessment of the sun exposure- Using verbal questionnaire; Clinical Assessment - In detail examination for ocular morbidities of all individuals more than 40 years; Environmental parameters data collection using CERES satellites based measurements in the selected study sites that is mainly in Vishakapatnam and Hyderabad. Expected Outcomes: Current Burden of Ocular morbidities in the Selected study sites; Burden of Dry eye, Pterygium and cataract which are key proxies for Environmental risk fators on Eye; Estimation of the change in the stratospheric ozone and corresponding UVR change in the coastal areas, Causal association, plausibility and correlation of the environmental factors on Eye health.

Expected impact on public health in India: Burden of ocular morbidities are assessed in different study sites. Comparison of the change in the stratospheric ozone and corresponding UVR change in the coastal areas, Causal association, plausibility and correlation of the environmental factors on Eye health.

A Comprehensive Cancer Care Plan Development and Advocacy Engagement - for the State of Andhra Pradesh.

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

The project was funded by Roche India HealthCare Institute and is now completed.

Project summary:

A.1. Aim: To develop a sustainable comprehensive cancer care model which could be replicated in other regions/ states of the country and resonates with the needs of other low and middle income countries;

A.2. Specific Objectives: To develop Telangana State's own cancer plan contextualized to local priorities and learnings from global best practices / models; To co-create tangible interventions for implementation at the state level; To develop a robust advocacy plan and engage with policy makers / decision makers;

Key findings summary: The state has only one hospital-based registry at Rural Development Trust (RDT hospital) Bathalapalli, Anantapur district, and it is not representative of the cancer status of the state. Reported screening rates for cancer among both males and females are < 5% for different cancers. It was estimated that magnitude of the cancer survivors would increase from 1,31,048 in 2021 to 3,04,037 by 2030 which is a 132% increase in absolute numbers. More than 50% of the patients from baseline survey stated the reasons for out-of-pocket-expenditure are travelling, escort and accommodation costs. Loss of employment, travel costs and outstanding debts are major financial implications of cancer. The need for a decentralized district cancer plan was suggested as an important input to dismantle barriers. Lack of skills among primary care providers for effective screening, counselling and referrals were also perceived as barriers. Periodic training of ANMs was suggested as a modality to improve skills.

Expected impact on public health in India: This model can be replicated in other states of India having similar demographics to augment and improve cancer care services in India

A Comprehensive Cancer Care Plan Development And Advocacy Engagement - For The State Of Telangana

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

The project was funded by Roche India HealthCare Institute and is now completed

Project summary: The aim of the project is to identify modalities to augment the Telangana State Cancer Control Plan to implement a sustainable comprehensive cancer care model for Telangana, which could also be replicated in other regions/ states of the country. The primary objectives of this work were identification of measures that can add value to the existing robust government cancer care continuum and to see how different sectors of the health system

can work together to co-create tangible shared interventions.

Key findings summary: Available data from Telangana is not truly representative of the cancer status as there is only 1 population-based and 1 hospital-based registry in the State, both being located at Hyderabad; Reported screening rates for cancer among both males and females are < 5% for different cancers; Despite being the being the youngest State in the country, Telangana has committed strong support to comprehensive cancer care; Technology has been used to developed applications that can tag NCD outputs of ASHAs using a community assessment checklist; The State Aarogyasri project caters to the needs of cancer patients, Especially those from low socio-economic strata; Diagnostic, cancer care and palliation services are being strengthened at the district level; Mobile vans also support the palliative care component; The State has committed funds for mammography units and video colposcopy units, district hubs for cancer care and school awareness programs for reducing the risk of tobacco consumption;
The State has also established district level coordination committees

Expected impact on public health in India: Explore different strategies to involve private players to invest in equipment/devices for cancer care; Develop modalities for linking data from nodal officers at the districts with the population-based registry; Conduct assessments (cost-benefit/ cost-effectiveness analyses) of innovative cancer care interventions; Strengthen district NCD cell and nodal office for collating all cancer-related data (including screening); Develop standardized checklists to identify at-risk population (for early detection); Include diagnosis, follow-up and palliative care services in all health insurance packages for the duration advised; Design and implement standardized protocols for patient-referrals; Ensure regular availability of essential opioids at the district level for pain management; Establish a monitoring mechanism to assess providers compliance with the standardized guidelines (WHO, NCG); Operationalize electronic medical records to track patients across the cancer care pathways (from screening to survivorship and beyond); Develop a state-wide tech-enabled network for expansion of the population-based cancer registry to cover the entire state; Implement uniform guidelines for cancer care (i.e., NCG, ASCO, ESMO, NCCN etc.) and adopting/contextualizing them to Telangana State Supervise/closely monitor and inspect the scheme empanelled hospitals; Have designated trained palliative care staff at every public healthcare facility

- Converge the AB-PMJAY Aarogyasri with ESIS and other schemes to enable easy access to all healthcare providers and free
- Treatment in empanelled hospitals under either scheme in the state.
- Introduce HPV vaccine in Telangana as part of universal immunization programme (age group 9-14years)

Operational Research Capacity Building

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

This is an ongoing project and is funded by Seva Foundation

Project summary:

1. Build research capacity, particularly operational research capacity, within Seva partner programs so that over time Guides can share these skills with partner hospitals.
2. Support the current research teams with guide partner group meetings until completion of scientific report writing.
3. Participate/support in review of the data (demographics of patients, health staff, and cataract and other surgeries data, data on spectacles etc.) of the past 2 years that is present in Seva repository. Seva staff will be largely involved in this activity.
4. Participate in building the plan for calendar year 2022 ORCB activities: project activities and timelines. Implement the agreed upon activities to support research development among Seva partner hospitals

Key findings summary: The academic diversity of the participants' pool and the current job handled made us realize that the course offered should be stratified in to introductory, intermediate and advanced.

Expected impact on public health in India: Operational research for evidence based practice enables the enables the health service providers to deliver efficient and quality care that is cost effective

Centre for public Health Outcomes Research and Economics

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

The project was funded by The DBT/Wellcome Trust India Alliance and is now completed

Project summary: LV Prasad Eye Institute (LVPEI), Indian Institute of Management, Ahmedabad and Indian Institute of Public Health, Hyderabad proposed to develop a Centre for Health Outcomes Research and Economics with following objectives:

- to develop a self-sustainable Centre of knowledge creation and dissemination for clinical and public Health research through Big data,
- attract and train the best talent in the country for outcomes Research and health economics to develop them as clinician scientists
- and influence health policy in India based on new knowledge.

IIPHH was responsible for developing public health training and mentorship. The five-year project was aimed at skilling nearly 125 eye care professionals in population and clinical research.

Expected impact on public health in India:

1. To improve public health and clinical research practice
2. Population-based research to identify magnitude, determinants of visually impairing eye conditions and interventions to reduce visual impairment.

AP insecticide related mortality project/ Eluru Convulsions of Unknown Origin 2020-21

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

The project was funded by Department of Health, Medical & Family Welfare, Government of Andhra Pradesh and is now completed

Project summary: The project was aimed to form a Special Technical Support Team (STST) to investigate the disease outbreaks/epidemics which occurred recently in West Godavari District of Andhra Pradesh and any future outbreaks that may arise. To conduct extensive field study for the Government of AP, highlighting the causes for the disease outbreak and also to guide on various public health measures to prevent this type of outbreaks.

Key findings summary: A majority of the total cases reported (94%) were from Eluru urban municipality and the rest of the cases were from the nearby rural areas. Medical evaluation by the healthcare providers in the region were conclusive that a majority of the cases were convulsive episodes with a spectrum of observed illness includes loss of consciousness, syncopal episodes, tongue bites, head and limb injuries, etc during and after the episodes. Clinical presentations ruled out mass hysteria or types of pseudo-seizures and an infectious aetiology. Testing of water, biological and food samples during the epidemic by research agencies detected the presence of organophosphate pesticides and traces of other agro-chemicals in the vegetables. Therefore, it was concluded that the epidemic was the result of a common source, single exposure outbreak of acute neurological symptoms which was likely caused by chemical toxicity possibly from exposure to organophosphates (OP) and/ or other unknown chemicals. It is to be noted that analysis of the biological samples from the affected individuals and food and water samples collected during the field visit of IIPHH-PHFI team presented only trace levels of OPs.

Expected impact on public health in India:

1. Community based safe food initiatives have to be designed to sensitise the people about proper cooking, food and drinking water storage. Simple harm reduction practices such as proper washing of raw vegetables and fruits can be promoted.
2. To mitigate the potential for drinking water contamination it is essential to overhaul the water supply and sewage systems in the region. Systems and protocols for monitoring water quality at various levels have to be strengthened.
3. Community based mitigation strategies have to be developed for minimizing the exposure of pesticides and agrochemicals. Farmer sensitization is essential to ensure appropriate use and disposal of agrochemicals. Skill improvement training for farmers should be designed and implemented to encourage rational use of agrochemicals
4. Establish a state-of-the-art lab at the state level in collaboration with existing central institutes will strengthen capacity and improve outbreak response across varying departments
5. Strengthen surveillance systems and outbreak preparedness from a One Health perspective is required.
6. Constitute a state level interdisciplinary team that facilitates inter sectoral coordination with existing health response teams at state and district levels.
7. Strengthen the existing public health cadre- with health communication, and basic epidemiological training for all the existing public health and primary care staff.

Cervical Cancer Vaccination Project (CCVP) – Hyderabad

Principal Investigator: Prof. Gudlavalleti Venkata Satyanarayana Murthy

The project was funded by MNJ Cancer Hospital Hyderabad and is now completed

Project summary:

1. The aim was to evaluate and implement cancer prevention and control strategies by enhancing the implementation of cancer prevention and control programmes.
2. Cervical cancer is a major cause of morbidity ,mortality and premature death among middle -aged women in developing countries.
3. The funds were used to contact the eligible women for long term follow-up, to facilitate collection of blood for assessing the anti-HPV immunological status and T cell/B cell assays ,collection of cervical cells to establish the presence or absence of HPV infection after their becoming sexually active, for screening sexually active women aged 25 years or more, follow-up care of study subjects, to co-ordinate the study inputs/ outcome evaluations with IARC and for all project related costs.

Key findings summary: During this extended 5-year period, many of the vaccinated and unvaccinated participants in the present study reached 25 years of age and will be eligible for screening. They are screened by HPV testing (HC2) for the evidence of any precancerous lesions.

Expected impact on public health in India: Screening of these post HPV vaccinated women with HPV testing will allow us to evaluate the performance of HPV screening in the vaccinated women, regarding which very little information is available in the literature.

Adolescent Violence And Injury Detection System (AVID)

Principal Investigator: Dr. Shailaja Tetali

This project was funded by John Hopkins School of Public Health, USA and is now completed

Project Summary: The overall goal of this project was to develop a tool using Artificial Intelligence (AI) to detect adolescents at-risk of experiencing violence and injuries. The tool was based on local socio-economic and cultural norms of India, to guide and target coordinated, multisectoral,

contextually appropriate prevention approaches. The specific objectives were:

1. To identify the main predictors of injuries and violence in the literature
2. To develop an AI prediction model to detect adolescents at-risk of violence and injuries and compare its performance with a logistic model
3. To conduct formative qualitative work (interviews and FGDs) to understand key contextual issues around adolescent injury and violence and inform development of a mobile and web-based platform, including the review of regulatory and built capacity for integration and sustainability

Expected impact on public health in India: The project would allow us to determine key factors relevant for early detection of at-risk adolescents (by schools, health workers, parents, or community organizations) and thereby provide opportunities for early intervention. This will be in keeping with local socio economic and cultural norms and ethics of the Indian context.

A Randomized Controlled Trial to Evaluate the Effectiveness of the `Care for Stroke? Intervention in India, a Smartphone-enabled, Carer-supported, Educational Intervention for Management of Disabilities following Stroke (Early Career Fellowship)

Principal Investigator: Dr. Sureshkumar Kamalakannan

This project was funded by The DBT/ Wellcome Trust India Alliance and is now completed

Project summary: Stroke or cerebro-vascular accident has been the second leading cause of death and disability globally for the past two decades. The number of people experiencing stroke and stroke-related disability is rising steadily over the past two decades. This increase in the burden of stroke may cause an overwhelming demand for stroke rehabilitation services. This situation is of concern for low and middle income countries (LMIC) like India where the resources for rehabilitation are often very limited. The objective of the randomized controlled trial was to evaluate whether the 'Care for Stroke' intervention is effective for the reduction of dependency in activities of daily living among stroke survivors compared with people receiving the standard treatment in an Indian setting. The primary outcome of the study was disability measured by the modified Rankin Scale (MRS). This trial was a pragmatic, randomized, outcome assessor-blinded trial to quantify the effectiveness of the Care for Stroke intervention on reducing dependency in activities of daily living following stroke. A total of 266 adult stroke survivors with eligibility criteria were randomized to receive either 'Care for Stroke' intervention or standard treatment and was followed for 6 weeks.

Key findings summary: The preliminary analysis has not found any statistically significant difference between the intervention and control groups. However, the intervention is found to be non-inferior to the existing intervention for stroke care in India. Participants had recommended that this intervention need to be improvised and made comprehensive to help them connect to therapists and specialists to achieve a continuum of care.

Expected impact on public health in India: This intervention has the potential to revolutionize access to rehabilitation and management of disability in a resource-constrained setting like India. The intervention could help in addressing the growing burden of rehabilitation and stroke disability in India and in similar countries.

Knowledge, Attitudes and Practices of ECD (parenting and play practices of 0-6 year old children) in Telangana

Principal Investigator: Dr. 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 was proposed 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. This study is hoped to serve as a basis for designing appropriate intervention for caregivers and front-line health workers to deliver nurturing care for ECD as proposed by AKF India.

Key findings summary: Most primary and secondary caregivers practice routine stimulation activities but do not associate it with overall child development and specifically, brain development, due to lack of knowledge. Most parents engage in stimulation activities only after children begin to respond i.e. after 1 year of age, which should ideally be initiated earlier to improve children's emotional and cognitive development. While fathers understand the importance of their role in their children's upbringing and discipline and seem to engage their children well in play and learning activities, many still believe child rearing, daily routine and nutrition is primarily the responsibility of the mother in the first few years of life. Element of fear was main stay of discipline used by fathers. Use of negative disciplining methods (hitting or scolding the child) are more prevalent. It is important to raise awareness on negative impact of inducing fear/ hitting/ scolding/shouting at the child and to promote positive rule-based disciplining methods. Anganwadi workers play a crucial role in disseminating information regarding nutrition, health and child development. However, though ASHAs involve in community mobilization and motivating beneficiaries for availing services, they are not aware of developmental milestones or early stimulation activities. Sarpanches and Gram Panchayat members were found to be reliable sources of information regarding social welfare (developmental) schemes, while Anganwadi workers and Government hospitals were relied upon for Health related information. Social media platforms like WhatsApp and YouTube were not considered by beneficiaries as accurate or trustworthy sources of information. But many AWWs felt short online videos were convenient for quick reference and sharing information with beneficiaries.It should be noted that such videos were found to be very beneficial when shared by AWWs as they had the trust of the community compared to other online sources of information.

Expected impact on public health in India: The findings will feed into designing IEC campaign for Early childhood development. ECD will be the convergence point for Panchayats, SHGs, WCD and Health department to empower families for healthy child growth and development.

Extended follow-up (2021-2026) of the 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: Dr Usha Rani Poli

This is an ongoing project and is funded by International Agency for Research on Cancer (IARC/ WHO), France

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

Expected impact on public health in India: The overall goal of the research study is to assess the long-term clinical efficacy of two doses and a single dose of the HPV vaccine. Proof of the efficacy against long-term clinical outcomes will strengthen the evidence base for the current recommendation of two doses for adolescent girls and will contribute to the evidence base if one dose may be used for cervical cancer prevention in pre-adolescent and adolescent girls. The public health implication of either of the findings will be immense, as this will allow many of the resource-limited countries to introduce the vaccination program at a substantially lower cost and improve compliance and access to vaccination. Given the real possibility that many developing countries

may not adequately invest in organizing cervical screening services, HPV vaccination is the most potentially useful and effective intervention in the long-term. This study will also address the important issues related to the screening of the vaccinated women. During this extended 5-year period, many of the participants in the present study will reach 25 years of age and will be eligible for screening. Screening of these women with HPV testing will allow us to evaluate the performance of HPV screening in the vaccinated women, regarding which very little information is available in the literature.

Recommendations by SAGE/WHO based on this study -11April 2022: SAGE reviewed new evidence on the efficacy of a single dose HPV vaccine schedule. Based on all available evidence, SAGE advised that countries may now choose between a one- or two-dose schedule for 9–14-year-old girls. This off-label single-dose option for routine and multi-age cohort catch-up vaccination was considered because it provides comparable and high levels of individual protection while from a public health perspective being more efficient (fewer doses per cancer case prevented), less resource-intensive and is easier to implement than a two-dose schedule. This advice applies to those HPV vaccines for which corresponding 1-dose data have been collected.

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: Dr. Usha Rani Poli

This project was funded by ASCO and is now completed

Project Summary: Screening by visual inspection of the cervix with an acetic acid application (VIA) followed by immediate ablative treatment by nurses as a screen and treat approach is the currently recommended option for a resource-limited health care system. The health worker performing VIA rates the cervical appearance as normal or abnormal with particular attention to possible invasive cancer. New tools to triage and guide the health workers to detect the eligibility for ablative treatment are required. This research aims to develop a novel tool that could be used for this purpose, i.e., an emerging computer-assisted visual evaluation technology where Artificial Intelligence (AI) can be applied for triaging VIA test-positive women to assist the nurses in assessing their eligibility for ablative treatment. This would help minimize unnecessary treatment at the primary care level. Thus AI-based tools have the potential to overcome the above-mentioned limitations. The objectives of this research are:

i) To develop a novel tool based on the emerging computer-assisted visual evaluation technology where Artificial Intelligence (AI) can be applied for triaging VIA test positive women to assist the nurses in assessing their eligibility for treatment.

ii) To assess and understand the efficacy of the AI tool in guiding the nurses to decide on treatment eligibility in the screen and treat cervical screening program.

Key findings and summary: Artificial Intelligence is revolutionizing medical imaging and has demonstrated considerable potential in computer-assisted diagnosis. Our prospective study was conducted in a community based screening and the algorithm was tested in a real-life screening and diagnosis process. The promising results of this trial showed that such technology can be successfully integrated in a screening program especially in low resource settings while maintaining the highest standards of quality. This study showed that the AI tool allows a reliable automation of cervical precancer and cancer detection meeting the needs and means of LMICs. It is an affordable screening tool allowing an intuitive and user-friendly use by midlevel health care providers requiring only minimal training.

Expected impact on public health in India: This AI algorithm will be a simple, rapid, non-invasive, easy to use and cost effective tool to guide the midlevel health care providers in rural and

remote areas in providing quality assured care without the direct supervision of physicians as point of care clinical decision and would reduce the unnecessary treatments and its associated financial burden.

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

Principal Investigator: Dr. Gudlavalleti Anirudh Gaurang

This is an ongoing project and is funded by Department of Science & Technology (DST)

Project summary:

1) Training of ASHA and ANM workers across 15 chosen health and wellness centres in the Type 2 diabetes mellitus(T2DM);
2) Training of ASHA and ANM workers in conducting Peer support groups and using the telemedicine app being created.
3) Development of Telemedicine application for video consultation from the village centres with specialists.
4) Assimilating existing resources and copiling a standard module for T2DM training for the ASHA & ANM.
5) Conducting Telemedicine consultations and peer support groups for identifid rural patients/residents.
6) Evaluating the competence level chages in the trained health workers
7) Evaluating the intervention for improvement in T2DM management of identified rural patients

Key findings summary:

1. 275 health workers- ASHAs and ANMs trained across;
2. Health workers across 46 health & wellness centres covered and across 8 primary health centres covered.
3. Telemedicine application -EzDoc developed;
4. Training module for health worker training in T2DM developed. Done by assimilating existing resources.
5. Evaluation of competence levels of health workers carried out. There has been an increase in the competence levels of the health workers, which is statistically significant (almost 80% improvement).

Expected impact on public health in India: With increased competence, the health workers will be able to screen patients at risk of developing T2DM and refer them to the nearest centre for T2DM diagnosis and subsequent Diabetic Retinopathy screening and diagnosis. These health workers will be better able to conduct peer support trainings,tele-consultations using the mobile application.

INDIAN INSTITUE OF PUBLIC HEALTH, BANGALORE

Nutritional, psychosocial and environmental determinants of neurodevelopment and child mental health (COINCIDE): an integrated assessment approach using a developmental framework perspective

Principal Investigator: Prof. Giridhar Rathnaiah Babu

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

Project summary: The specific objectives of the research program are to:

1. To determine the independent, cumulative and interaction effects of nutritional, psychosocial and environmental pollutant exposure on concurrent and prospective measures of neurodevelopment and child mental health across the 0-9 years in two diverse birth cohorts in India
2. To identify processes through which these determinants interact with specific axes of social inequalities (caste, socioeconomic position, gender and other social vulnerabilities) at the household and neighborhood levels in these two diverse settings. We intend to conduct the proposed study in the ongoing MAASTHI cohort at Bangalore and the SPRING cohort in Rewari, India. Exposures of interest will be measured in pregnant women and during the early, mid and late childhood periods. The outcome of interest is neurodevelopment and child mental health.

Key findings summary: Project tools have been developed and entered in RedCap. Training of Master trainers completed by CEH, SJRI, and Sangath trainers. Training and certification in anthropometry assessment of field staff done in Bangalore and Rewari. Practice assessments have been completed. Pilot testing at both sites have begun in September. One doctoral fellow (Eunice Lobo) has registered with Maastricht University for her thesis in Responsive caregiving in urban poor neighborhoods in Bangalore.

Expected impact on public health in India: The COINCIDE research infrastructure will be a valuable resource for global health research. These include stored serum samples, representative cohort data from India, validated measures of nutritional, psychosocial and environmental risk-factors. COINCIDE team has established strong linkages with nutrition and health programs in India; working with these will strengthen the system and eventually enable integration of actionable findings with national (eg-Rashtriya Bal Swasthya Karyakram) or international health organization tools and policy. Most importantly, the proposed study evidence will uncover the biological, social, and economic origins of childhood neurocognitive and mental health impairment in India.

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

Principal Investigator: Prof. Dorairaj Prabhakaran

This project was funded by 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;

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

The results will inform development of models to strengthen primary care in Karnataka and support the continued implementation of national and state guidelines for NCD screening, diagnosis, and management.

Key findings summary: In this novel assessment of users' preferences for hypertension care services in Karnataka, we found distinct preferences between urban and rural settings, prioritizing shorter wait times among urban residents and competent care and doctor-led care among rural respondents. Availability of free medication was a key priority across both settings. Our analysis further identified heterogeneity in preferences within each study location, some related to characteristics such as lack of formal education. Given these findings, a single model of service delivery will not fully meet the range of population preferences. Models including fast-track care for established patients, particularly in urban areas, and doctor-led care for rural residents, can effectively complement the existing policy initiative to roll out Health and Wellness Centers. Addressing supply chain issues that contribute to inconsistent availability of medications will be critical in all models of care.

Expected impact on public health in India: The study findings help to propose a cluster-randomized trial of health system strengthening on population CVD outcomes to reduce blood pressure in the population, increase utilization of primary care, and demonstrate cost effectiveness for future large-scale implementation.

Explaining the differential severity of COVID-19 between Indians in India and the UK (DiSeCT)

Principal Investigator: Prof. Giridhara Rathnaiah Babu

This is an ongoing project and is funded by Department of Biotechnology (DBT)

Project summary: The overall aim of the study is to determine whether the rate of severe COVID-19 (requiring hospitalisation and death) differs between Indian populations in India and the UK and the extent to which this is explained by differences in age structure, co-morbidities, and cross-immunity with other infections. This project will comprise two work packages:

1) an epidemiological study comparing the population prevalence of severe COVID-19 (hospitalization and death) in India and the UK. Using anonymised longitudinal electronic health record data for 400,000 people of Indian ethnicity in the UK, we will quantify the age-sex standardized prevalence of severe COVID-19 and determine the extent to which risk of severe COVID-19 is explained by obesity, cardio-metabolic co-morbidities, and previous infections. A parallel analysis will be conducted in India using COVID-19 data collected from people and their surrounding areas participating in two prospective cohort studies.
2) A mechanistic study in the Indian cohort only. In-depth biomarker and phenotypic data will be used to identify determinants of progression to severe COVID-19 and the causal pathways linking COVID-19 to obesity, cardio-metabolic disease, and immune function.

Key findings summary: Requisites for data collection such as necessary approvals from the respective authority, development, and finalization of study tools, redcap entry of study questionnaires and recruitment and training to the field team are complete. Study proposal review by Health Ministry Screening Committee (HMSC) is under process. Data collection is initiated for assessing the severity of Covid 19 in terms of hospitalization and deaths through verbal autopsy questionnaires.

Expected impact on public health in India: Study findings will be used to triangulate evidence on the differential severity of COVID-19 in Indian populations in India and the UK. The findings will be translated into recommendations for clinical practice and policy aimed at reducing the risk of severe COVID-19 in Indian populations globally.

Team from LSHTM UK, NIN, Hyderabad, NIMHANS Bangalore, and IIPH Bangalore discussing on implementation of study activities

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

Principal Investigator: Prof. Giridhar Rathnaiah Babu

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

Project summary: We aim to understand the association of alterations in maternal glucose metabolism with childhood obesity. We will further assess the contribution of shared neighbourhood, familial, and behavioural factors. Objectives:

1. To 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.
2. To estimate the contribution of behavioural and environmental factors in the development of childhood obesity and glucose intolerance. a. We will newly characterise individual behaviours in children (diet, physical activity, sleep, stress), including dynamic lifestyles measured using wearable technologies and quantify their role in the development of obesity. b. We will newly measure environmental (family and neighbourhood) factors and quantify their role in the development of childhood obesity.
3. To identify phenotypic clusters of childhood obesity and explore their correlates (behavioural, environmental, and biological).
4. To integrate the contribution of behavioural and environmental factors in the development of childhood obesity into a theoretical framework for context-specific interventions

Key findings summary: So far, the study has completed questionnaire development for the exposure and the outcome assessment. Field action plan developed and basic training is completed for certain components of data collection. Geocode tracking for the environmental assessment of the participants' location is done.

Expected impact on public health in India: This study will help in understanding how overweight/ obesity (OW/OB) might result in the final common outcome from several events and mechanisms. This model will integrate empirically-based paths and relationships, allowing assessments of diverse mechanisms and interactions between different factors that contribute to childhood OW/OB. This theory will help in identifying risk and protective factors at different levels from the fetal stage to the adolescent years. Thereby, mechanisms within and between children and the relation to the environment can be well understood and can be used as the evidence-base for health promotion.

Effect of meal supplementation during antenatal period on the improvement in maternal and birth weight.

Principal Investigator: Prof. Giridhar Rathnaiah Babu

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

Project summary: This systematic review addresses one of the research priorities listed by Health Technology Assessment India initiative of the Department of Health Research. This review will work on 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, we propose to synthesize evidence from both intervention trials and prospective cohort studies. The objectives include summarising evidence of effectiveness of interventions rigorously to minimise bias, addressing questions raised by our lay stakeholders and highlighting research priorities.

Key findings summary: We have used the search string and finalized 2979 articles, after going through the abstract and full text screening and as of now 9 articles were finalized and data has been extracted. The analysis is ongoing and report writing yet to start. The interim finding shows that there is a linkage between the nutritional supplementation and reduction in stillbirths, small for gestational age births and improvement in birth weight.

Expected impact on public health in India: These results have significant policy ramifications for India, which experiences the dual burden of malnutrition—undernutrition, which causes stunting in young children and contributes to short maternal stature combined with overweight as a result of the nutrition transition—as well as the double burden of overweight and obesity. Further, these findings will help in designing early and an appropriate intervention for the prevention and management of malnutrition.

Gestational diabetes in Uganda and India: Design and Evaluation of video-based interventions for screening and management (GUIDES)

Principal Investigator: Prof. Giridhar Rathnaiah Babu

This project was jointly funded by DBT, India, and Medical Research Council (MRC), UK

Project summary: We proposed to develop and evaluate a package of three interconnected educational / behavioural interventions addressing gestational diabetes mellitus (GDM) delivered through the medium of film. The overall aim of our study was to assess whether an educational/behavioural intervention delivered through a package of culturally tailored films for pregnant women, their family members, and health providers can improve timely detection, glycaemic control and clinical outcomes of women with GDM. The specific project objectives were:

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

Key findings summary: Through a qualitative study, found factors related to women for late GDM screening, Healthcare provider (HCP) factors that are barriers to the effective management of GDM, Woman-level barriers at macro and micro level to effective management of GDM and other barriers. Developed video-based educational interventions to pregnant women and their family members and also to the health care professionals and showed them as per the study protocol. Under the quantitative study, 11151 pregnant women have been recruited, 10600 (95.1%) of the women have been followed up at 32 weeks to record GDM screening, 358 women reported to be diagnosed with GDM, further 261 participants were

contacted for the 34week followup and among them, 130 women with GDM have been tested to assess their glycaemic level and 9464(84.9%) women have completed postnatal follow up to know about adverse perinatal outcomes.

Expected impact on public health in India: The study has the potential to have widespread and positive impacts in terms of improving the health of women, particularly in terms of reducing the prevalence of subsequent type 2 diabetes, which will impact on economic productivity. Improving the care of women with GDM will help to address gender inequalities, and as the risk of GDM-associated complications is highest among women from more disadvantaged communities, our intervention will also have impact on and socioeconomic inequalities. One key aspect of the study is the potential for encouraging and supporting film industry involvement in public health.

Nurse led peer group session for pregnant women with Gestational Diabetes Mellitus using educational based video intervention for study intervention group

Emergency information products on COVID-19 pandemic intelligence and analytics to inform risk assessment and response of WHO and the Member States in the WHO South-East Asia Region

Principal Investigator: Prof. Giridhar Rathnaiah Babu

This project was funded by World Health Organization (WHO) and is now completed

Project summary: The project was aimed at developing emergency information products on COVID-19 pandemic intelligence and analytics to inform risk assessment and response of WHO and the Member States in the WHO SEAR in light of the recent detection of Omicron variant.

Description of work under this Agreement:

Output 1: Carry out epidemic intelligence activities on regular basis (using EIOS and other search engines) on COVID-19;

Output 2: Maintain and regularly update and analyze SARS CoV-2 seroprevalence studies published in SEAR countries;

Output 3: Contribute in production of information products related to COVID-19 epidemic intelligence and analytics;

Output 4: Overall coordination of the contract activities and submission of monthly, final technical and financial Reports.

Expected impact on public health in India: The government can improve the epidemic prevention mechanism based on the data analysis; The government can further improve its epidemic response mechanism based on the data analytics. This can be used for disaster identification, decision support, coordination and communication, and technical support. The report provides insights about public health social measure issues that may help public health officials to mitigate the impact of the current pandemic; Policy and resource allocation is needed to support the desired public health social measures; Promote information dissemination.

Centre for Training, Research and Innovation in Tribal Health (CTRITH)

Principal Investigator: Dr. Suresh S Shapeti

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

Project summary: In the proposed Centre for Training, Research and Innovation in Tribal Health (CTRITH), a team of researchers from two public health research organizations and two medical colleges shall partner with a local non-governmental organization, community-based organizations and government health departments to

a) use state-of-the-art implementation research and theory-driven approaches to design, implement and evaluate innovative community health interventions for neglected health problems including hemoglobinopathies and substance (tobacco and alcohol) use among tribal populations

b) set up a birth cohort (including family members) among tribal populations in and around forested areas to characterize individual, household and population-level effects of tobacco and alcohol use,

c) create a field-practice area for physician-researcher and community medicine training in southern Karnataka.

Key findings summary:

1. Realist Implementation Research Action Lab; RIAL: Four intervention components have been conceptualized based on interactions within the research team and a broad-based range of community engagement activities.

2. Preparatory activities for the cohort establishment such as the development of study protocol, SOP for data collection and study tool development have been done. The training activities for the field-level data collectors and pilot testing of the study tool have been done.

3. Also for better coordination across institutions, we have developed a Google intranet for the use of staff where all the documents, activities, protocols, tools, and outcomes will be stored safely and shared with the staff to help in the smooth functioning of the project.

4. Annual PI & Collaborator workshops were completed at JSS Medical College, Mysore on December 2021 and Project launch activity was done during the month of June 2022 at Chamarajanagar with all the PI & Co-PI's and collaborating institutions in attendance

Expected impact on public health in India: The interdisciplinary project will enable long-term study on tobacco, alcohol, and other drug use as well as related elements of NCDs and associated morbidities by establishing a tribal family cohort. The study also intends to create a comprehensive Population-based Haemoglobinopathy Registry for the three most prevalent hemoglobinopathies in order to provide and monitor appropriate and accessible services for hemoglobinopathy care to the community. The project will identify evidence-based group interventions for tribal households impacted by hemoglobinopathies and harmful substance use and implement them using participatory methods to deal with harmful substance use among tribal communities

Field level data collectors in tribal hamlet during pilot testing of study tool

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

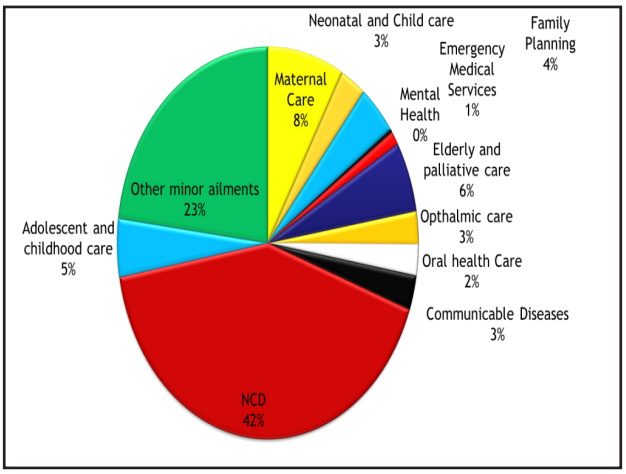
Principal Investigator: Dr. Suresh S Shapeti

This is an ongoing project and is funded by Directorate of Health & Family Welfare Services, Government of Karnataka

Project summary: The Indian Institute of Public Health, Bengaluru- Public Health Foundation of India is providing 'Technical Support' to Government of Karnataka (GOK) since 2013 and later in May 2017 PHFI was formally declared to be Technical Innovation and Learning Centre. PHFI along with GOK initiated and pioneered the concept of CPHC across Karnataka, based on the studies conducted on Out of Pocket expenditure in health, Accessibility to health care facilities and Health care utilization behaviour. These studies helped PHFI to support GOK in planning and implementing the strategies for CPHC. This program was first piloted in two districts namely Mysore and Raichur, wherein one taluka from each district was chosen for the implementation of the programme. In the pilot phase, PHFI along-with GOK has operationalized 105 HWCs in terms of infrastructure, Human Resource-its Capacity Building, planning of- equipment, drugs and diagnostics etc. Based on the learnings of it, in FY 2017-18, TILC has supported GOK technically to scale up the programme across 11 talukas in six districts of Hyderabad-Karnataka region and recently TILC-GOK have operationalized 466 HWCs across Karnataka in FY 2017-18. The Overall Objective of TILC is to ensure that the concept of CPHC/HWC reaches the concerned stakeholders and support the GOK in planning and implementing the programme across the entire state.

Key findings summary:

1. Increase in Average Footfall at SC HWCs: The average footfall per month at SC HWC, over the years, has increased from 14 (2016-17) to 25 (2021-22). Increased access.
2. Increase in Enrolment & Screening of population under NCD services: The early screening at SC HWCs (NCD Enrolment 69.2 %, NCD Screening 35.40%) has contributed to the reduction of burden of diseases (in NCD) in the rural areas.
3. Improved accessibility of expanded care services: The improved accessibility of CPHC Services in rural areas has increased the utilisation of expanded services packages provided by the SC HWCs. It also reduces the burden of screening at higher facilities.
4. Progress towards digitalisation of Health related information: The health screening profile of the population is updated in the NCD Portal by HWC Team. As on 31.08.22, 4.7 Crore out of 6.4 Crore population of Karnataka are enrolled, amongst that 88.4 Lakhs have the screening details captured in the NCD Portal



Expected impact on public health in India:

1. Risk factor mitigation: The increased accessibility of health care services through HWCs, early screening of the population for various diseases and provision of expanded care services is expected to contribute to the reduced burden of diseases, reduction of morbidity and mortality along with improved coverage of national health programmes.
2. Reduced out of pocket expenditure and catastrophic health expenditure: Improved access to expanded services closer to the community, assured availability of medicines and diagnostic services and linkages for care coordination with Medical Officers/ specialists across levels of care will reduce financial hardships faced by community. This will also put fewer burdens on the health infrastructure and on constrained human resource.
3. Thus contributing towards achieving Universal Health Coverage (SDG goal 3)

INSTITUTE OF PUBLIC HEALTH, BHUBANESWAR(IIPHB)

Regional Resource Hub for Health Technology Assessment in India

Principal Investigator: Dr. Lipika Nanda

This is an ongoing project and is funded by Department of Health Research, Ministry of Health & Family Welfare (MoHFW)

Project summary:

- To develop a repository of high-quality evidence in the field of public health and healthcare – undertake systematic reviews and meta-analysis of existing evidence with all the rigors of science, so that it would facilitate evidence-based decision-making at the policy, strategy and healthcare delivery level.
- Assess health technologies, interventions, programs and policies – with economic efficiency and effectiveness lens to facilitate decision-making and efficient resource-allocation.
- Improve methodologies and develop innovative customized evaluation designs – suited to the local needs of the public health and healthcare delivery communities; a value addition to the high quality evidence generation paradigm.
- To inform the population and clients about public health and health care delivery system, especially about various aspects of different operations, innovations, induction of new interventions and new policies - adding value to the regulatory framework of these instruments. .
- Building the capacity of the personnel of the proposed hub for undertaking such rigorous exercises – forging collaboration with various centers of excellence

Key findings summary:

- An extensive research was undertaken to determine if Total knee replacement (TKR) is clinically and cost effective in patients with osteoarthriti (OA) knee.
- Systematic reviews were conducted to establish the cost effectiveness of TKR. A cost-utility analysis was done based on the Indian context to determine whether TKR is cost-effective compared to non-surgical management. Systematic literature review showed that TKR is clinically effective as compared to non-surgical management in patients with knee OA. Determinants such as age, gender, post-operative complications, depression and comorbidities may influence the quality of life post-TKR.
- It was observed from our cost-utility analysis that TKR is cost-effective compared to non-surgical management in patients with OA knee above 50 years of age.

Expected impact on public health in India: The findings of HTA projects are likely to be translated into policies which are then incorporated into the healthcare system. As India aims to achieve Universal Health Coverage, there is a need to introduce public-funded health insurance and assurance schemes to finance healthcare. PMJAY, being one of the insurance choices in the public exchange place, cost-effectiveness of important disability-alleviating procedures like 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.

Assessment of vulnerability and threshold of heat-related health hazards in four cities of India

Principal Investigator: Dr. Lipika Nanda

This project was funded by National Disaster Management Authority and is now completed

Project summary:

1. To conduct vulnerability assessment for heat wave in four cities of India through household survey.
2. To explore opportunities and challenges of heat wave adaptation and document innovations on heat wave mitigation during summers.

3. To determine temperature thresholds of heat-related health hazards in four cities of India through scientific analysis of multi-sectoral data on morbidities & mortalities.

Expected impact on public health in India: As this study considered four different cities of the country, the findings may allow policymakers to answer the questions about the severity of the vulnerability and threshold of heat-related health hazards and to develop strategies for coping mechanism.

Improving Primary Health Care Services through Competency Development of Primary Health Care Workers, Odisha

Principal Investigator: Dr. Shridhar Murlidharrao Kadam

This is an ongoing project and is funded by ACCESS Health International, Inc

Project summary: In Odisha, there is a chronic shortage of health staff at all levels. In addition, the competency level of primary Care health workers in place is not up to the mark. One key potential area for intervention includes strengthening primary healthcare services by strategies aimed at improving the competence of the primary healthcare providers for clinical care and for handling management and administrative/financial responsibilities. This study aims at answering the following research question in context to the CPHC in the state of Odisha: What is the package of services and competencies required for providing primary health care services?; What are the existing competencies of medical doctors, staff nurses, pharmacists, and lab technicians over a period of their length of service?; What are the existing mechanisms for developing, monitoring, and evaluating competencies by the health systems?; What can be the interventions and strategies to develop and maintain competencies of the health staff (doctors, nurses, pharmacists, and lab technicians) to improve the delivery of primary healthcare services?

This study will be undertaken in four districts of Odisha, namely, Balasore, Rayagada, Jharsuguda and Angul. These districts are chosen randomly so as to represent the eastern region (coastal), southern region (tribal), western region and central region districts of Odisha, respectively.

Expected impact on public health in India: This study will yield: Condensed information on competency framework including evidence-based strategies for assessment and development of competencies of primary healthcare providers; Specific information on existing levels of competency of health staff providing primary health care services; Policy inputs to develop task shifting and task sharing strategies for primary health care provider team; Policy inputs to develop alternative models of delivering primary healthcare of using a mix of competencies.

A Rapid Assessment of COVID19 management in Odisha

Principal Investigator: Dr. Shridhar Murlidharrao Kadam

This project was funded by Odisha State Disaster Management Authority, Government of Odisha and is now completed

Project summary: Over last two decades, Government of Odisha has gained profound experience in managing natural disasters effectively leading to minimum loss of human and physical resources. Taking cue from its earlier experiences of managing disasters, Government of Odisha introduced several innovative measures to fight COVID -19 pandemic. This "Rapid Assessment of COVID-19 Management in Odisha" project was udertaken to inform public policy regarding various strategies adopted, what worked and to what extent it benefitted to the people of Odisha. The research team had undertaken a systematic analysis of COVID-19 management plans, strategies and their reach to the people using both quantitative and qualitative research methods.

Key findings summary: Government of Odisha introduced several innovative measures to fight COVID -19 pandemic and adopted a decentralized management approach which resulted in lower deaths and fewer incident cases per million

population compared to the national average and average of some of the advanced states of India. Besides the preventive and curative strategies, the assured social and economic support to the most vulnerable population of the state including returning migrant labor force was also noteworthy.

Expected impact on public health in India: This project is expected to provide meaningful insights and learning to future policy making in regards to emergency, disaster and pandemic management. The comprehensive reports with short video films will support visual and verbatim evidence from various levels of stakeholders and would serve as a knowledge repository for the reference of policy makers, managers and administrators.

Assessment of the impact of COVID-19 Pandemic on the National Kala-azar Elimination Programme (NKEP) in India with regards to its elimination goals

Principal Investigator: Dr. Ambarish Dutta

This project was funded by World Health Organization (WHO) and is now completed

Project summary: Kala-azar, a neglected tropical disease (NTD), is on the verge of being eliminated as a public health problem from India. The elimination campaign is led by the National Kala-azar Elimination Programme (NKEP) operating under the aegis of the umbrella of National Vector-borne Disease Control Programme (NVBDCP). An assessment by national and international experts in the end of 2019 opined that India has to intensify it efforts eliminate Kala-azar as this NTD now is restricted to few blocks and village of mainly two states of the country, namely Bihar and Jharkhand, with few sporadic cases emerging in some other states as well. Meanwhile the COVID-19 pandemic hit the nation in 2020, like almost everywhere in the globe, and had derailed routine activities of health programmes in various scale and magnitude for the next two years. How was the Kala-azar elimination drive disrupted by COVID-19 was the moot question?

Key findings summary: The findings showed that the Kala-azar elimination activities, such as Indoor Residual Spraying against the vector and case-finding (testing), though disrupted for few months, bounced back quickly, especially after the unlocking following the first wave of the pandemic in 2020. The time trends show the case incidence is on the decline and the country may meet its elimination goal soon as planned.

Expected impact on public health in India: A sever NTD will be eliminated from the country soon, despite the elimination efforts getting temporarily derailed by the COVID-19 pandemic

Menstrual Hygiene Management in Odisha - Situation Analysis and Strategic Roadmap

Principal Investigator: Dr. Bhuputra Panda

This is an ongoing project and is funded by United Nations Children's Fund (UNICEF)

Project summary: The main deliverables under the project are:

i) Menstrual hygiene management policy for State of Odisha developed and shared with government of Odisha;

ii) Frontline workers have increased knowledge and skills on MHM to address the immediate gaps of access, use and practices of menstrual hygiene for adolescent and young girls, particularly in rural areas of Odisha.

iii) Situation analysis of MHM practices undertaken with special reference to linkage to Adolescent empowerment and KHUSHI scheme of government of Odisha conducted

Key findings summary: A systematic review paper on the subject is being published in peer reviewed journal. A household survey will be conducted to assess the knowledge and practices related to menstrual hygiene in three districts of Odisha. Exploratory techniques will be used to understand the barriers in implementation of KHUSHI Scheme of government of Odisha. A draft policy for the state on MHM is being developed through multi-stakeholder consultation.

Expected impact on public health in India: We are hopeful a state policy on MHM developed and implemented in Odisha. Resource materials

will be developed for training of frontline health workers on MHM and improved menstrual hygiene will be ensured in the State leading to good quality of life for women and adolescent girls.

Strengthening of Special VHND-RI Intervention under the SAMPURNA Scheme in Odisha

Principal Investigator: Dr. Bhuputra Panda

This project was funded by United Nations Children's Fund (UNICEF) and is now completed

Project summary: The main objectives of the study were:

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

Key findings summary: We conducted

1. Household Survey
2. Interview of the service providers
3. In-depth Interview of stakeholders and key Informants.

Key findings are: The overall technical knowledge of ANMs and ASHA workers with regard to immunization and ANC care were found to be good, but skills on BCC, IPC and community counselling needed further improvement. Systemic bottlenecks in terms of poor rood and mobile connectivity, reimbursement of incentives, weak reporting system and erratic supply of vaccines and other logistics continued to pose challenges to the programme managers and service providers and supervisors. From the point of view of beneficiaries, their knowledge on pregnancy, child feeding and danger signs was encouraging. However, poor level of preparedness at the referral hospitals, bad experiences and hidden cost of seeking public health care services acted as barriers from accessing government facilities. Though most of the beneficiaries reposed trust and confidence on the local health workers, they were still reluctant to approach the referral hospitals.

Expected impact on public health in India: The SAMPurNA 2.0 strategy was revised on the basis of findings of this study.

Assessment of Comprehensive Primary Healthcare Services through Health and Wellness Centres in Odisha

Principal Investigator: Dr. Bhuputra Panda

This project was funded by National Health Mission, Government of Odisha and is now completed

Project summary: The main objectives of this study were:

1. To conduct a rapid assessment of comprehensive primary health care services being offered under HWCs (SC and PHC) in Odisha;
2. To document best practices and challenges in implementing the HWC initiative;
3. To recommend actionable scaling up strategies to the state government

Key findings summary: With respect to patients' awareness on HWCs, it was found that only about 61% of the respondent had ever heard about HWC. On utilization of various services, it was found about 40% of the respondents utilized health services related to screening, prevention, control and management of NCD - more than patients availing services related to management of communicable diseases (29.6%). More than 90% of the patients reported that they had observed some or other changes in HWC during last 2 years. However, only 11% mentioned about the changes in the ambulance services and referral services (13.2%) and the least changes were

seen on screening for mental illnesses (0.5%). Only about one-fifth of the respondents were aware of yoga sessions being held in the HWC. The average distance travelled by the health care workers to reach HWC was 12 kms. About 30% of them were working with same designation for >10 years. Only about 30% service providers reported screening and basic management of mental illnesses. Out of the 37 respondents, very surprisingly not a single one reported of providing telemedicine services in their respective HWC.

Expected impact on public health in India: Components on mental health, diagnostic services and utility services in the HWCs need to be strengthened. We are hopeful that the NHM focuses on the weaknesses to improve the quality of services under HWCs in Odisha.

TRAINING DIVISION PROGRAMS

The Training Division at PHFI focuses on implementing various capacity-building initiatives to upgrade the knowledge, skills, and core competencies of healthcare professionals in clinical conditions and various public health domains. It has trained over 38,500 healthcare professionals of which 12,000+ are affiliated with the government sector, through a pool of 108 National Experts, 624 Faculty, 173 Observers, and 600+ Training Centres in 127 cities, and 28 States & UTs across India. It has collaborated with 12 state governments and professional bodies/govt. across 10 countries in South Asia and Africa. The division is implementing 27 training programs with a robust modular curriculum, strong monitoring mechanism, and certification process to ensure quality.

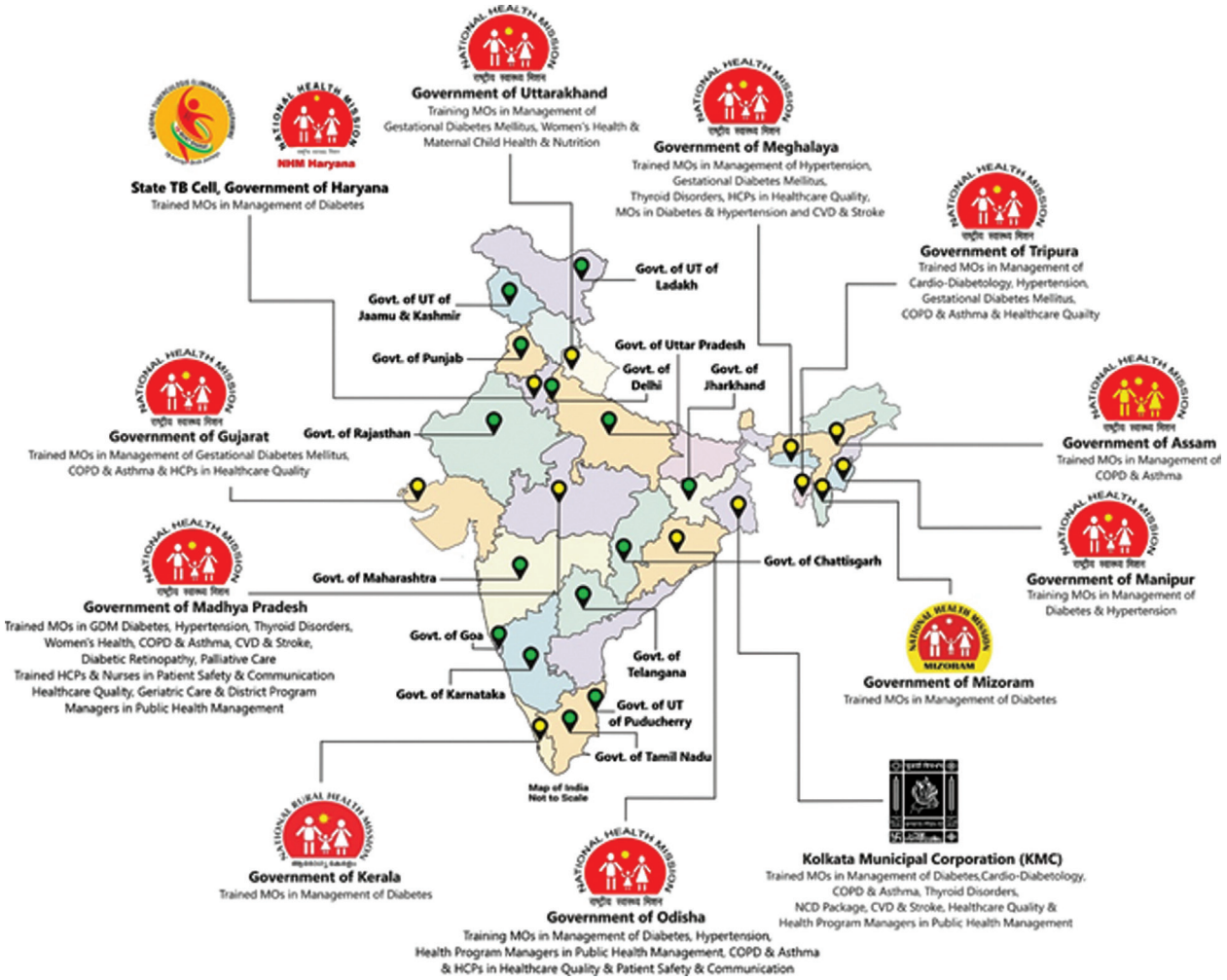
TRAINING DIVISION: CAPACITY BUILDING INITIATIVES

For Doctors	For Healthcare Professional
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	Barefoot Counselling
Obesity Prevention and Management	Covid-19
Diabetic Foot Management	
Anti -Microbial stewardship	
Occupational Safety & Health	
Medical ethics and Medico-legal issues	
Comprehensive immunization	

MoU/ Approval Letters (Aug 2021 to Sept 2022)

1. MoU with State TB cell Govt. of Haryana for the training of 25 medical officers at Panchkula in CCEBDM
2. Sanction letter received from NHM, Govt. Manipur for training 30 medical officers in CCEBDM.
3. Approval letter received from Ministry of Tribal Affairs and National Education Society for Tribal Students (NESTS) for the training of teachers on Nutrition and Mental Health
4. MoU with Primary Care Diabetes Group (PCDG), Sri Lanka for the training of doctors in CCEBDM.
5. Training Division signed a MoU with USV Private Limited for 4 ½ years for CCEBDM to train 7,800 doctors across 130 centres across India till Feb 2026. The new batch has been launched and enrolled 2324 doctors at 103 centres under the guidance of 122 faculty.
6. Approval from WHO country office for Development of Digital Version of IMNCI Package for Health Workers
7. In an endeavour to strengthen the health systems, the HRH-HPIP Division at the NHSRC in partnership with PHFI is developing a model 'Induction Training for Medical Officers' who are appointed in the States/UTs
8. Training Division, PHFI extended its MoU with NHM, Tripura for another year as a skill-building/ training partner for the healthcare professionals of the state.

Government Collaborations



NHM Govt. of Madhya Pradesh and Govt. of Tripura are the skill building partner of PHFI Training Division

Project Activities (Aug 2021 to Sept 2022)

1. **Certificate Course in Evidence Based Diabetes Management (CCEBDM):** CCEBDM is a nationwide capacity-building program in collaboration with Dr. Mohan's Diabetes Education Academy (DMDEA), to provide training on evidence-based diabetes management, by enhancing knowledge, skills, and core competencies of PCPs. 2422 Primary Care Physicians were trained in the last cycle at 137 centres pan India (Cycle 6 of CCEBDM) which completed in June 2021. The new batch of the course was announced in September 2021 and enrolled 2324 doctors at 103 centres under the guidance of 122 faculty and 15 national experts. The course has received educational support from USV Private Ltd for the next 3 batches with the aim of training 7800 doctors across the country.

2. **Certificate Course in Gestational Diabetes Mellitus (CCGDM) Cycle VIII:** CCGDM is a flagship joint certificate program designed and delivered by PHFI and academic partner Dr. Mohan's Diabetes Education Academy (DMDEA), Chennai. The seventh cycle of CCGDM has trained 147 primary care physicians from 17 states, 2 UTs, 75 cities in 8 regional centers across the country. In the current eighth cycle, the program is being implemented in the self-sustainable mode in collaboration with DMDEA and has enrolled 130 physicians.

3. **Certificate Course in Common Mental Disorders (CCCMD):** CCCMD is a joint program conceptualized, developed, and implemented by the Public Health Foundation of India (PHFI) and the Association of Healthcare Providers (India) (AHPI) in the field of common mental disorders in India. The second cycle of the program has trained 140 primary care physicians across Bengaluru, Delhi, Kolkata and Mumbai in 2021 from June to October, 2021. Third cycle of the course has started in August 2021 with enrolment of 114 Primary Care Physicians at 5 centres in a self-sustainable mode. The programme has revamped to a six modular course with a new centre in Chennai.

4. **Certificate Course in Antimicrobial Stewardship (CCAMS):** PHFI and Delhi Society for Promotion of Rational Use of Drugs (DSPRUD), an NGO actively working in the field of rational use of drugs for the last 25 years partnered together to deliver this unique 5 modular certification program. After its launch in December 2020, 217 PCPs have been trained across 4 batches. In last one year, 40 and 64 doctors have been trained in third and fourth batch. Fifth batch of this course to be conducted in Sept 2022 has seen 40 enrolments till date.

5. **Certificate Course in Integrated Geriatric Care (CCIGC):** It is a six-modular online certification program designed, implemented, and delivered by PHFI in collaboration with six eminent experts in the field of Geriatric Medicine. The fundamental objective of the course is to enhance the skills of PCPs in Geriatric care and to develop a network among the specialists. A total of 493 Healthcare Professionals have been trained in this program over 6 batches. The 6th cycle was conducted from Feb 2022 to March 2022 has trained 43 PCPs. The program has also been adopted by NHM Madhya Pradesh for the training of their 200 Medical Officers and Nurses.

6. **Certificate Course in Palliative Care (CCPC):** CCPC is a 6 modular online certification program designed, implemented, and delivered by the Public Health Foundation of India in collaboration with an academic partner; Trivandrum Institute of Palliative Sciences (TIPS), a WHO Collaborative Centre for Training and Policy on Access to Pain Relief, Pallium India. A total of 98 participants in 2 batches were trained. The second batch of CCPC from August - September 2021 trained 30 primary care physicians from 14 states across the country.

7. **Certificate Course in Healthcare Technology (CCHT):** CCHT is a collaborative effort of the Public Health Foundation of India (PHFI), New

Delhi, Association of Healthcare Providers (India) (AHPI), Indian Institute of Science, (IISc), Bengaluru and Indian Institute of Space Science & Technology (IIST), Bengaluru. This program comprises online flexible learning on the Learning management system (LMS) with recorded sessions by renowned faculty. The course comprises 5 modules with each module having 4 sub-topics. The course was launched in July 2021 and so far, 48 participants have been trained in the course.

8. **Certificate Course in Obesity prevention and management (CCOPM):** It is developed by PHFI and Chellaram Diabetes Institute (CDI). CCOPM is a 6-modular course on LMS aimed to develop the knowledge and skills of primary care physicians and playing a crucial role in helping patients achieve sustainable weight loss. This course is endorsed by the World Obesity Federation. 124 doctors have completed this course.

9. **Certificate Course in Diabetic Foot management (CCDFM):** Another initiative with Chellaram Diabetes Institute (CDI), Pune. The course has been endorsed by the Leicester Diabetes Centre, UK. This course has been divided into six modules and is presented in video format for easy learning. The course was announced in December 2020 and to date 44 doctors have been trained in the course.

10. **Certificate Course in Comprehensive Immunization (CCCIM):** It is a 4 modular online certification program designed, implemented, and delivered by the Public Health Foundation of India for training on immunization and vaccination. This weekly online program started on 5th September 2021. 15 doctors have been trained in this particular course.

11. **E-Learning Certificate Course in Evidence-Based Management of Diabetic Retinopathy (CCDR):** It is a 4 modular online certification program designed, implemented, and delivered by PHFI in collaboration with its academic partners; Dr. Mohan's Diabetes Education Academy (DMDEA), Aravind Eye Care System. This program comprises online flexible learning on the Learning management system (LMS) with recorded sessions by renowned faculty. The last module on hands-on training delivers in webinar mode by retina specialists and Diabetologist. To date, 83 participants were trained in the course.

12. **Certificate Course in Barefoot Counselling:** Certificate Course in Barefoot Counselling is a 3-modular training program developed and Implemented by MIND India in collaboration with the Public Health Foundation of India (PHFI) for the purpose of improving access to trained manpower to provide the basic psychological first aid in resource-constrained settings. Total 73 participants were trained.

13. **Training initiatives for NHM, Govt of Madhya Pradesh:**

- Certificate Course in Evidence-Based Management of Diabetic Retinopathy (CCDR), starting from 16th Aug 2021(module 1) at Bhopal center. A total of 100 medical officers (eye specialists) will be trained in approved 4 divisional centers (Bhopal, Indore, Gwalior, and Jabalpur), course is ongoing.
- PHFI has successfully completed 3 batches of Training Workshop on Patient Safety & Communication for Nursing Personnel held at SIHMC, Gwalior. A total of 120 participants successfully completed the workshop.

14. **Training initiatives for NHM, Odisha:**

- NHM, Govt. of Odisha has adopted COPD & Asthma program for the training of 28 Medical Officers in two batches. Total 10 participants trained in second batch till December 2021
- PHFI in collaboration with Govt. of Odisha successfully completed four batches of Certificate Course in Patient Safety & Communication (CCPSC) for Medical Officers, Staff Nurse & Lab Technicians. The 3-day training was delivered in a workshop mode at the State Institute of Health and Family Welfare (SIHFW), Bhubaneswar. A total of 95 participants from 22 districts across Odisha have been trained so far in the four batches.
- Regional Medical Research center, Bhubaneshwar (RMRCBB) is undertaking the project, Catalysing multimorbidity research

in Low- and Middle-Income Countries through a 'community of practice' approach where PHFI is the academic partner along with Kalinga Institute of Medical Sciences (KIMS) and SIHFW, Bhubaneshwar from India. Curriculum has been prepared and submitted for the Pilot phase. This capacity building program involves developing curriculum, training materials and a state level orientation workshop on multimorbidity for the Community Health Officers (CHOs) working with the state government.

15. **Training Initiatives with NHM, Govt. of Tripura:**

- Certificate Course in Management of COPD and Asthma (CCCA) is a joint certificate program designed, implemented, and delivered by Public Health Foundation of India (PHFI), Delhi; Chest Research Foundation (CRF), Pune; Narayana Health, Bengaluru. National Health Mission, Govt, of Tripura has adopted the CCCA training model for training their 40 Medical Officers from March 2021 to December 2021.

16. **Development of e-Learning IMNCI package of Health Workers:** Training Division in collaboration with Health Promotion Division at PHFI and has developed the E-learning training package on Integrated Management of Neonatal and Childhood Illness (IMNCI) for training of health workers. The training package is to be used by the Ministry of Health & Family Welfare, Govt of India for training of health workers in various states. This has been finalised and uploaded on the eSwasthya Gurukal portal of WHO India.

17. **KNOW COVID- NO COVID:** Training Division, PHFI won a global grant from Pfizer Inc., for implementing the COVID trainings for Healthcare professionals and community. Under this project, Training Division developed and implemented 9 e-workshops series "KNOW COVID-NO COVID" to provide credible information on the COVID-19 pandemic to various groups. A total of 1888 participants were trained that include doctors, HCWs and community members from various state governments, PSUs and private sector were trained in prevention and management of various aspects of COVID-19 pandemic.

18. **Induction Training program for newly inducted Medical Officers:** In an endeavour to strengthen the health systems, the HRH-HPIP Division at the National Health System Resource Centre (NHSRC) in partnership with PHFI is developing a model 'Induction Training for Medical Officers who are appointed in the States/UTs. Through this training, capacities of newly recruited MOs are to be built in understanding the national health programs, and their administrative and financial roles, thereby improving the overall functioning of the health system. The curriculum and training materials are being prepared for rollout of the induction training to be organised in coming months in two phases of one week duration each.

19. Training Division of PHFI has also contributed significantly as a part of the expert group towards preparing a training manual and modular handbook for Mental Health on building capacities and training of teachers for Early Detection and Intervention for Teachers and Allied Stakeholders for addressing mental health problems in school children. These guidelines on mental health in schools has been issued by the Ministry of Education in the 1st week of September, 2022.

20. State TB Cell, Haryana adopted CCEBDM for the training of their 25 medical officers. The course will commence from 18th September at Panchkula.

21. National Health Mission, Manipur has also adopted CCEBDM and the course will start from October 2022 onwards at Imphal and 30 medical officers will receive the training.

MoU between Training Division, PHFI and State TB cell, Government of Haryana was signed on 6th September for implementation of CCEBDM. Dr Rajesh Raju (STO), Government of Haryana and Dr Pushkar kumar (PHFI) signed the MoU

MoU signing with Primary Care Diabetes Group (PCDG), Sri Lanka for CCEBDM

Dr. Vivek Som (Faculty), Dr. Hemant Sinha (JD & Nodal NBCP), Dr. Amrit Lal Marawi (RJD Bhopal), Dr. Pushkar Kumar (Project Director- Training Division PHFI) and Dr. Sachin Chittawar (Faculty) during launch of CCDR program at Madhya Pradesh

Certificate Course in Patient Safety & Communication (CCPSC) for Medical Officers, Staff Nurse & Lab Technicians, Govt. of Odisha

COPD & Asthma session at NHM, Tripura

PUBLICATIONS (2021-2022)

Year wise distribution of published articles in Journals

Year	Total	Average IF	Average IF
2007	24	18.58	Avg. Impact Factor calculated as per the old Journal Citation Reports(JCR)
2008	42	5.92	
2009	85	6.17	
2010	128	5.49	
2011	272	7.77	
2012	310	6.94	
2013	365	7.54	
2014	395	6.20	
2015	331	6.12	
2016	385	8.89	
2017	310	11.92	
2018	343	8.73	
2019	305	6.90	
2020	345	6.44	
2021	324	16.99*	Avg. Impact Factor as per JCR 2021
Till Sep' 22	251	13.51*	
Total	**4125**	**9.72**	

** Due to COVID publications the Impact Factor(IF) has gone up worldwide*

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PHFI IN THE MEDIA

Governments and global health agencies turned a blind eye to the threat of noncommunicable diseases as they thought that these were problems of the rich countries

A PUBLIC HEALTH EMERGENCY IN SLOW MOTION

DR K SRINATH REDDY

Cardiologist, epidemiologist and President, Public Health Foundation of India

SOUMYADIP SINHA

About 15 years ago, speaking at a global health conference, I described the rising threat of non-communicable diseases (NCDs) as a public health emergency in slow motion. Relaxation of patent protection rules was permitted for responding to a public health emergency (PHE) under the Doha Declaration of the World Trade Organisation. I argued for its extension to medicines and technologies needed to provide essential healthcare for NCDs.

The Secretary-General of the United Nations later described a PHE when a high-level global leadership meeting was convened in 2011 to adopt a political declaration on the prevention and control of NCDs. The declaration acknowledged NCDs as the leading cause of death and disability the world over. While low and middle-income countries (LMICs) contributed to 70% of the global deaths due to NCDs, 90% of those deaths occurred below 70 years of age.

NCDs were not listed in the Millennium Development Goals of 2000, despite being the leading causes of death. International aid agencies declined to consider them while providing development assistance to LMICs, as did the World Bank. Governments of LMICs, too, did not accord priority to NCDs, guided as they were by the funding priorities of donor countries.

NCDs encompass many 'non-infectious' conditions affecting the heart, blood vessels, nervous system, lungs, kidneys, liver and gastrointestinal system, bones and joints, eyes, ears and oral health. They include cancers and diabetes. Despite the name, some of the conditions classed as NCDs have an infectious aetiology, like cancers of the cervix, stomach and liver, and rheumatic heart disease. The term 'chronic diseases' is preferred by so... but acute heart attacks and brain str... that description.

WHO identified four majo... vascular disease, cancer... chronic respiratory disea... in 2011. It also listed unhe... cal inactivity, tobacco ar... common risk factors li... major NCDs ('4 by 4'). ... added mental health ... NCDs and air pollutio... ('5 by 5') to expand the ... health action.

Why did governme... agencies turn a blin... NCDs for so long? R...

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America among the rich who had the means to avidly consume new tobacco products, fat, sugar and salt-rich foods, and adopt la... saving devices. However, mass produc... ...ators of risk led to other ...cumbing to

care. They do get heart attacks but less often than the poor, suffer them at a later age, and die much older. The poor have limited access to health and nutrition literacy, are deterred by the high cost of healthy foods, and get addicted to mass-marketed ultra-processed foods, tobacco and alcohol. They find necessary healthcare inaccessible or unaffordable and are devastated by disease, disability and lost income.

In rich countries, NCD epidemics evolved over the course of the twentieth century, with shifts to older age groups and poorer sections manifesting after the 1970s. Health transition operations were telescoped in LMICs. Delayed industrialisation and growing urbanisation propelled the NCD epidemics in LMICs and they gained speed from globalisation which constituted the tailwind of the 20th century. By the beginning of the 21st century, there was sufficient evidence that the poor in LMICs were suffering in large numbers.

This recognition led the World Bank to partially course correct in 2007, acknowledging that NCDs were indeed a problem of the poor and their chronic nature impoverished people. A 2011 study by Harvard and the World Economic Forum stated that the staggering cost of NCDs to the global economy was estimated to be $47 trillion for the period of 2011–30. This study greatly influenced the UN meeting on NCDs in the same year.

Finally, NCDs were recognised as a threat to global development. Prevention and control of NCDs became part of the UN Sustainable Development Goals (SDGs). Covid-19 reminded us that the distinction between infectious diseases and NCDs is flimsy. The majority of people who became seriously ill or died from Covid-19 were those who had NCDs as co-morbidities.

In India, NCDs accounted for 66% of deaths in 2019. Many of those occurred in the productive prime of midlife. Till recently, our primary healthcare systems were exclusively focused on the MDG agenda. Recently, NCDs and mental health have been included under the rubric of 'comprehensive primary healthcare'. Secondary and tertiary care capacity for the treatment of ... Prevention of NCDs re... ...tions directed at the ...nds to

Wait For The Winter

If mild Omicron is all there is in cold months, the pandemic's tempest may reduce to a trickle

K Srinath Reddy

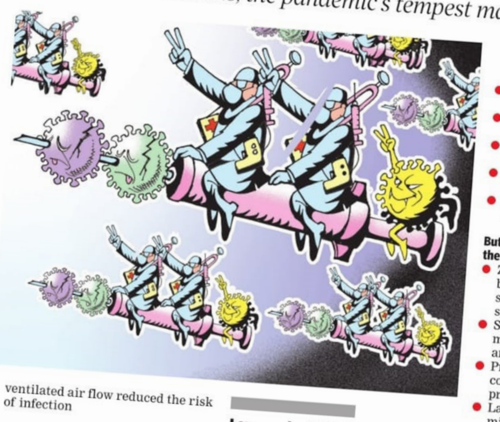
WHO's director general recently offered his view that the end of the pandemic is in sight. He based this on the observation that weekly count of deaths from Covid was now the lowest since March 2020. In a much awaited and widely applauded burst of optimism, Dr Tedros declared "We have never been in a better position to end the pandemic – we are not there yet, but the end is in sight."

It appears ironic that this sigh of relief came when the reported weekly global death toll on September 5 was 11,118 on WHO's website. However, when the total death toll is around 6.5 million according to WHO, and much higher according to other estimates, this decline in death rates does bring hope that the pandemic is entering the slow lane.

WHO tempered this optimistic pronouncement with a caution that the virus still poses a threat, constituting an "acute global emergency" which warrants continued vigil. That is timely, so that we do not immediately abandon all elements of Covid-appropriate behaviour. Even as the train is slowing down while approaching the station, jumping down while it is still in motion can cause serious injury.

What has changed since 2020?

- The spread of immunity, evolution of variants and greater adoption of protective public health practices
- In 2020, the novel virus found the whole of humanity to be potentially susceptible
- Natural immunity protected some, many others acquired immunity after surviving an infection and several others gained protection through vaccines
- Even though acquired immunity through infection or vaccines may show a decline in antibody levels after a few months, cellular immunity and the memory cells of our immune system appear to extend a longer period of protection
- While acquired immunity does not fully protect against fresh infection, it has been effective in preventing severe illness and death
- Masks, physical distancing and ventilated air flow reduced the risk of infection



The virus too changed.

- Infectivity has increased but virulence has decreased
- The ancestral virus was a briskly scoring opening batter
- Delta was the devastating big hitter in the middle order
- Omicron sub-variants, as tail enders, now race fast between the wickets but score only in singles
- Omicron variants are still at the crease though

This transformation is propelled by the evolutionary biology of the virus, as it adapts to survive amidst us without racing to its own disappearance by decimating the human host population. The resistance offered by growing number of persons who are immune or follow Covid-appropriate behaviours reduces the number of susceptible humans it can infect. It has to be gentler to those it does infect. So, it changes its behaviour in accordance with ours.

Mistakes were made.

- Some scientists too early on promoted the seductive slogan of herd immunity, which proved to be a misleading mirage

Low- and middle-income countries should be no longer subjected to inequity. If they are, the microbe will avenge that insult by striking back at rich countries. The lesson of Covid is clear. A global threat must be countered by a global effort

- Pandemic deniers, fake news peddlers, vacillating policymakers, vaccine nationalism and repetitive booster dose marketers in rich countries created an environment where a globally concerted public health response was thwarted
- Such a response might not have greatly shortened the pandemic but would have surely reduced the death toll

Will a dangerous new variant emerge or will Covid start receding?

- A lethal variant can emerge if the virus changes form by passing through animals and infecting humans thereafter
- It can also happen if it stays long in the body of an immunocompromised person to have multiple mutations, some of which may pose a threat of serious disease
- But these are low-probability events, at this stage of the pandemic
- More probable is that we may learn to live with the less-threatening Omicron
- The coming winter will tell us if this comforting companionship is lasting
- If Omicron stays on, the tempest may abate to a trickle
- Long Covid will, however, be the damage that a tempest leaves behind

But even if the pandemic recedes, let's learn the lessons.

- Zoonotic spillovers across species are best prevented by respecting the sanctity of natural barriers, by respecting nature's ecological balance
- Surveillance of emerging pathogens must stretch across wildlife, veterinary animals and human populations
- Primary care health services and communities must be trained to provide early alerts
- Laboratory services, for detecting the microbe and genomic analysis for spotting variants, must be developed across the country
- Hospital capacity for critical care must be scaled up
- The capacity of the health system to provide all other needed health services, even while delivering an efficient and equitable pandemic response, must be strengthened

At the global level, WHO has initiated international negotiations for the development and adoption of a global treaty on pandemic prevention, preparedness and response. A financial intermediary fund for pandemic prevention, preparedness and response was launched in early September this year.

The global community has to ensure that scientific expertise is developed in all countries and production capacity for vaccines, drugs and technologies is globally distributed. Low- and middle-income countries should be no longer subjected to inequity. If they are, the microbe will avenge that insult by striking back at rich countries. The lesson of Covid is clear. A global threat must be countered by a global effort.

The writer, a cardiologist and epidemiologist, is President, Public Health Foundation of India (PHFI). Views are personal

EVERYDAY HEALTH

How not to be a sitting duck for illness: get up, walk around from time to time

EXPERT EXPLAINS

DR K SRINATH REDDY

From The Indian Express panel of specialists, exclusive insight

IN 1953, British epidemiologist Jeremy Morris published a study of London's transport workers. It revealed that drivers of double decker buses had a 42 per cent higher risk of fatal or non-fatal heart attacks when compared to bus conductors. This was despite a similar socio-economic background and age. The uniform size of sedentary drivers was larger than that of the conductors who went up and down 500-750 steps in the bus each day. This finding was reinforced by a study that showed that sedentary telephone operators had a higher rate of heart attacks than postmen who biked and walked to deliver letters.

There have been many studies subsequently that show that physical activity is good for health and longevity. However, the question that needs to be answered is whether physical activity for some periods of the day can counter the effects of prolonged sedentariness and sitting most of the time. Emma G Wilmot from the University of Leicester's Department of Cardiovascular Sciences provided clarity on this in a 2012 study that pooled data from 18 studies involving 7,94,577 participants.

She reported that an increase in sedentary time raised the risk of several adverse health outcomes: 147 per cent increase in cardiovascular disease; 112 per cent increase in diabetes; 90 per cent increase in cardiovascular deaths and a 47 per cent increase in the risk of death from all causes combined.

Wilmot's study also showed that these associations of increased health risks with sedentariness were mostly independent of the moderate or vigorous activity performed during parts of the day.

Getty Images

Sitting for long hours at a stretch increases your risk of developing a host of health problems — from heart and blood vessel diseases to diabetes and even cancer.

Long hours sitting vs short periods of exercise

So, there is a need to avoid sitting for long periods of the day even if one practises routine exercise for short periods.

Otherwise, sedentariness will cause a host of health problems: heart and blood vessel diseases (such as heart attacks, brain strokes, deep vein thrombosis and varicose veins); diabetes; obesity (general and abdominal); cancers (of the colon, uterus, lung, and breast); back and other joint problems; bone loss; anxiety, depression, and even dementia. Sedentariness makes you literally a sitting duck for illness to strike.

THE EXPERT

PROF K SRINATH REDDY, a cardiologist and epidemiologist, is President, Public Health Foundation of India

How sitting hurts your health

Sitting raises blood glucose, blood fats, blood pressure, body weight and fat in the abdomen. Blood circulation also becomes sluggish, with pooling in the lower half of the body.

When skeletal muscles are inactive, membranes of the muscle cells develop insulin resistance. A contracting muscle requires more sugar to provide needed energy (calories) and insulin pushes sugar into those cells from the blood. A slumbering muscle shuts the door to the entry of sugar it no longer needs, by becoming resistant to the action of insulin. This raises blood sugar levels. Blood fat levels rise too as they are no longer consumed for energy expenditure. Insulin resistance is also related to high levels of blood pressure, abdominal fat, inflammation and increased clotting tendency of the blood.

Physical activity enhances muscle strength and stimulates calcium deposition in the bones. Sedentariness leads to loss of muscle and depletes bone calcium. It also leads to slowing of bowel movement and constipation, with the prolonged stay of toxins in the large bowel, leading to colon cancer.

Inflammation damages blood vessels while sluggish blood circulation allows clots to form and grow on the injured surface. Blood fats too get deposited on areas of injury to the endothelium (inner lining) of blood vessels. The risk of heart attacks and brain strokes increases over time due to such damage.

Sluggish flow of blood in the deep veins of the legs and pelvis leads to clots, which can get dislodged and travel to the lungs, causing the highly dangerous condition of pulmonary embolism. That is why immobility is kept to the minimum even in patients requiring bed rest, with active or passive leg exercises. The danger of deep vein thrombosis with long-distance air travel is well established.

With prolonged sitting, even breathing becomes shallow (as the oxygen demand of muscles goes down) and many air sacs of the lung close. So, if a disease like Covid hits the lungs, there is decreased respiratory reserve.

Sitting for long also leads to unhealthy eating habits

Prolonged sitting also encourages unhealthy eating behaviours. A study of teenagers showed that those watching television were likely to gain more weight than those using a desktop computer, because the latter had their hands busy on the keyboard. A modern teenager, however, can easily reach for chips or cola while operating a smartphone. Those used to sitting for long snack at will, or lack the will power to desist.

What is the way forward?

There are several solutions that have been suggested, from intermittently standing and stretching to taking short walks. That may not be possible in long flights, desultory meetings or cinema halls. However, some movement of legs and even a bit of squirming in the seat may be justified. Some offices are already using standing desks. While that liberates and elevates the bottom, the legs still need exercise. Why not walk to a colleague to sort out a matter, instead of inflaming your arteries by shooting off terse emails from your seat? As the drillmaster at school used to order, "stand at ease", "attention", and "quick march" is a good sequence to follow.

(The views expressed are personal)

Road to public health has more miles to travel

AS INDIA CELEBRATES 75 YEARS of freedom from foreign rule, there is much to cheer for the health gains achieved during this period. There are also many concerns to be addressed and promises yet to be fulfilled. It would be useful to take stock in terms of key health indicators and identify continuing, emerging and escalating health challenges.

India's life expectancy at birth has grown to 70.8 years, from 32 years in 1947. It is a remarkable achievement, when we consider the current global average of 73.3 years. However, our neighbours like Bangladesh and Nepal have achieved higher life expectancy, while Sri Lanka is even further ahead and is at a level matched only by Kerala in India. What is of greater concern is that healthy life expectancy (years lived in good health) is only 60.3 years in India, according to the World Health Statistics Report of 2021. This places India last in WHO's grouping of Southeast Asian countries, in that measure of population health. This is a reminder that our health system must not only treat advanced disease but prioritise health promotion, disease prevention and early care of illness.

India could have achieved more, if there was greater and more balanced investment in health. For several decades, public financing of health stagnated around 0.9-1% of GDP and only in recent years it has moved to 1.35%. While this is short of the 2.5% target set in the National Health Policy of 2017, the economic survey of 2022 computes that the Covid-19 response has raised the share of government spending to 2.1% of GDP. Recent health budgets have included water, sanitation, nutrition and air pollution under the budget head for health, accounting for part of the rise in government health expenditure. Apart from increased capital expenditure on healthcare infrastructure, we must also spend on improving the operational outreach and efficiency of delivering all essential health services.

As India's life expectancy rose, it has experienced a marked health transition, wherein the epidemiological profile of major public health challenges has changed over the past three decades. Between 1990 and 2019, India's health transition has been marked, pushing non-communicable diseases (NCDs) to the top, with doubling of attributable disease burden. NCDs now account for 65% of deaths. Nearly two-thirds of those occur below 70 years of age. The pre-transitional disorders declined steeply, with halving of attributable disease burden. Mental health disorders and injuries too presently contribute to high levels of disability.

Eradication of small pox, yaws and polio have been signal successes for India's public health. Other infectious diseases like HIV-AIDS and malaria are responding to control programmes, though they remain an active threat. Tuberculosis, with drug resistant strains, is a worrisome challenge. The government's avowed intent to eliminate tuberculosis by 2025 has been hindered by the Covid-19 pandemic which has heavily consumed the health system's attention and resources since 2020. We must aim to achieve the elimination of TB by the global timeline of 2030, if not by 2025. A variety of vector borne diseases will grow in menace with global warming, while extreme climatic events will increase the threat of water borne infections. There will be continued need for attention to communicable diseases, even as NCDs are on the ascendant.

K SRINATH REDDY

PRESIDENT, PUBLIC HEALTH FOUNDATION OF INDIA

INDIA IS PLACED LAST IN WHO'S GROUPING OF SOUTHEAST ASIAN COUNTRIES, IN HEALTHY LIFE EXPECTANCY

'32% of those in hosp during lst & 2nd waves cardiovascular patients'

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Nearly one-third (32%) of the Covid-19 patients who required hospitalisation during the first and the second wave of the pandemic had a history of cardiovascular diseases, a study published in Global Heart, the official journal of World Heart Federation, has confirmed.

The most common CVD was coronary artery disease —afflicting 10.9% of all patients—followed by heart failure (5.5%), stroke (3.7%), arrhythmia (3.0%) and other CVDs, the study says. It is based on a prospective analysis of 5,313 patients in 23 countries, including 843 in India, from June 6, 2020 to Sept 15, 2021.

▶Higher death rates, P 5

13% DIED IN HOSP

- 25% of those hospitalised with Covid were overweight (BMI 25–29 Kg/m2) and 15.6% obese (BMI≥30)
- 12.9% of the patients surveyed died in hospital & 2.6% within 30 days after discharge, the study says
- In-hosp death rate during the 1st & 2nd waves was 4% in high-income nations and 10% in low-income ones

Test 2% of int'l flyers, Centre tells states

As Covid-19 cases soar, the Centre has advised all states to conduct random screening of 2% of passengers in each incoming flight into India for the virus. P5

virus.

Some experts also point out that people are not forthcoming with their symptoms, making it harder to diagnose them. There is an inertia in getting tested in those who are affected and suffering from fever, said Ambarish Dutta, an epidemiologist at the Public Health Foundation of India (PHFI).

Disabled suffered multiple blows of Covid: Study

KAVITA BAJELI-DATT @ New Delhi

PERSONS with disability (PwD) not only faced difficulties in accessing emergency medical and rehabilitation services but underwent deep psychological traumas, disruption in their daily lives and loss of livelihood, said a first national-level study which evaluated the impact of Covid-19 and resulting lockdown on persons with disabilities (PwD) in India.

The study, carried out in 14 Indian states, was conducted by South Asia Centre for Disability and Inclusive Development and Research (SACDIR), Indian Institute of Public Health (IIPH), Hyderabad, said that parents with children were significantly impacted due to lockdown in the areas of medical, rehabilitation, education and mental health services.

"COVID-19 and the associated lockdown restrictions have negatively impacted persons with disabilities during the first wave in India. [illegible] Murthy, director of the institute and the report's author[illegible] ic, not only in [illegible] ness and depression to fear of infection. "This led to a feeling of stigma, discrimination, and isolation, combined with issues in relationships, abandonment, and violence," the report added.

The study found that about 60 percent of the PwDs found it challenging to access emergency medical services during the lockdown, and 4.6 percent post lockdown.

Nearly 50 per cent had problems getting health services, while more than 25 percent could not get regular medicines, hospital appointments and surgical procedures.

Over 70 per cent had no access to Covid-related information, which was worse for visually and deaf people.

"Most had no access to Covid information in the absence of communication and messages available in Barielle, sign language or lip reading. They didn't [illegible]

Victims of pandemic

Study found that 60 per cent of People with Disability (PwD) found it difficult to access emergency medical services during the lockdown, and 4.6 per cent post lockdown

- Nearly 50 per cent couldn't get access to health services
- **25 per cent** couldn't get regular medicines, hospital appointments and surgical procedures
- Over **70 per cent** had no access to Covid-related information
- Over **90 per cent** of people with either physical, speech, hearing, or visual impairment were impacted by the lockdown in receiving rehabilitation services
- **76 per cent** were apprehensive of the risk of infection during the lockdown, and this increased to **92 per cent** post lockdown
- Parents with children were hugely impacted in getting access to medical, rehabilitation, education and mental health services
- None of the pandemic mitigation plans and services was specific or inclusive of PwDs
- PwDs faced psychological reactions to Covid-19, which ranged from fear, anxiety, panic, hopelessness and depression to fear of infection
- Most were dependent on their caregivers
- Many had to borrow money as government disability pensions were impacted

A heart attack while exercising — why it happens and who is at risk

EXPRESS NEWS SERVICE
NEW DELHI, AUGUST 17

COMEDIAN RAJU Srivastava suffered a heart attack on August 10 while working out in a gym. Over the years, there have been reports linking strenuous physical activity to sudden cardiac death. Does high-intensity exercise raise the risk of a heart attack?

What causes a heart attack?

Heart attacks are caused when there is a sudden blockage in the coronary arteries supplying blood to the heart muscle.

"Chronic obstruction of 70 per cent or more in a coronary artery produces angina or chest pain on exertion, since available blood supply does not meet the increased oxygen demand during exercise. However, a heart attack (acute myocardial infarction) can also occur when soft plaques that form in the coronary arteries rupture and cause a large clot to form. This may come without any prior warning symptoms. Even plaques of 30 per cent can rupture and lead to the formation of a large obstructive clot," said Prof K Srinath Reddy, a cardiologist, epidemiologist, and president, Public Health Foundation of India (PHFI).

A common misconception is that a blockage results from deposits of fat (lipids, cholesterol) and cells on the artery wall — similar to blocks in household plumbing. This is incorrect, according to Dr Tushar Gore, managing director, Resonance Laboratories.

"The blockages are a result of cells and cholesterol particles breaking through the barrier of endothelial cells and infiltrating the lining of the artery. As a result, there is a bump in the artery wall — like a pimple. This is known as plaque or stenosis. The plaque need not bulge into the artery but could protrude outwards as well... Break-up and disruption of such blockages inside the coronary artery initiates blood clotting mechanisms to 'repair' the injury from plaque disruption," he says.

According to Dr Reddy, "Plaques form in the coronary arteries due to injury caused to the blood vessel lining by factors causing inflammation." Fats circulating in blood can then deposit at the site of injury to grow the plaque, says Dr Reddy.

Raju Srivastava recently suffered a heart attack. Express

What causes cardiac death during exercise?

High blood pressure, smoking, diabetes, unhealthy diets, stress, inadequate sleep or recent infection are factors that can cause such inflammation.

"Each of those chronic causes of inflammation can also acutely precipitate a plaque rupture leading to a heart attack, if there is a sudden or severe rise in one or more of those factors," Dr Reddy added.

Sudden cardiac death during strenuous physical activity occurs more often in cases where blockages are undiagnosed, and sometimes in the background of a known diagnosis.

Vigorous exercise can also cause plaque rupture or trigger electrical disturbances in the heart leading to cardiac arrest, Dr Reddy said.

Dr Suman Bhandari, Visiting Consultant, Interventional Cardiology, Fortis Escorts Heart Institute, says: "If a patient is revived in such a situation, he or she stands a better chance as compared to sudden cardiac arrest at rest where the heart is usually weak (heart failure)."

This does not mean exercise is bad for the heart. "It is essential to detect and control the risk factors which build and rupture plaques in the coronary arteries. Care and caution are all the more needed in Indians who have an ethnic susceptibility to experiencing a heart attack at younger ages than other population groups," says Dr Reddy.

Can diagnostic testing help?

To identify risk, three things need to be detected: presence of small plaque; likelihood of plaque disruption (known as vulnerability); and the clotting intensity of blood. Reliable non-invasive diagnostic tests are available only for the first — detection of small plaque. Nevertheless, testing (even if it were to be available) for each of these will not offer a guaranteed window into the future because all the three factors change depending on lifestyle and environmental conditions.

Higher Covid death rates in low-income nations

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New Delhi: A research, led by Dr D Prabhakaran from the Public Health Foundation of India (PHFI), shows 47% of the patients hospitalised due to Covid-19 during the first and second waves had hypertension and 32% had diabetes mellitus – two of the most common cardiovascular risk factors.

"Those who succumbed to the disease within 30 days of being hospitalised more often presented with significantly higher heart rate, lower diastolic blood pressures, shortness of breath and more frequently had hypertension, diabetes, coronary heart disease, atrial fibrillation, rheumatic heart disease, Chagas disease, valvular disease, and chronic kidney disease," the study published in Global Heart, the official journal of the World Heart Federation points out.

Of the 5,313 patients who were hospitalised, the study found, 683 (12.9%) individuals died in hospital, and 118 (2.6%) died post-discharge up to 30-days follow-up. Overall, mean age (SD) was 57 years, 59% were men. The mean BMI (Body Mass Index) was 26.9 (5.3) Kg/m2, and 25% of the participants were overweight (BMI 25–29) and 15.6% were obese (BMI30 Kg/m2).

Compared to high income countries (HIC) where in-hospital death rate stood at 4%, Covid-19 patients recruited from low-income countries had a higher in-hospital death rate of 10%. The in-hospital death rate in lower-middle income countries (LMIC) and upper-middle-income countries (UMIC) stood at 15% and 19% respectively.

"The World Heart Federation and PHFI study was conducted to better understand outcomes among hospitalized patients with the infection. This study aimed to bridge the Covid-19 research gap from LMICs and make a comparison with High income countries. The study demonstrated that patients were relatively younger as compared to previous publications (average age of 57 years), predominantly middle aged men, with high prevalence of cardiovascular risk factors such as hypertension diabetes and high mortality up to 30 days. Patients of Asian, Hispanic or Black ethnicities had higher death rates both within the hospital and after discharge as compared to white Caucasians," Dr Prabhakaran said.

He added that the analysis with regards to the Indian population has shown that South Asians (Indians) in the middle-aged to elderly group died more frequently than other regions due to Covid hospitalizations, and had significantly greater background prevalence of diabetes and hypertension. "Indians have a greater prevalence of Diabetes and Hypertension and this may be driving the higher mortality in South Asians," Dr Prabhakaran, who is vice-president (research and policy) at PHFI, said.

"It is important to note that 20 % of the deaths up to 30 days after covid were sudden cardiac deaths and can be attributed to arrhythmias and heart attacks. This emphasises the need for cardiac precautions and surveillance even after discharge from the hospital," Dr Ashok Seth, chairman of Fortis Escorts Heart Institute, said while commenting on the study findings.

In a study, which was published in the European Heart Journal (EHJ) recently, medical researchers from University of Oxford, University of Zurich and the University of Wisconsin School of Medicine and Public Health advised that persons who are at high risk to develop heart diseases, for example those with diabetes and hypertension or a history of heart ailments, should undergo a thorough screening to assess heart health in 8-12 weeks of recovery from Covid-19.

"If there is any abnormality, such persons may also require additional testing," they said. The researchers said Covid-19 can cause both acute and chronic injury to the heart by various mechanisms including direct damage to the cells, the formation of clot and inflammation in blood vessels and the triggering of an autoimmune response.

Women more prone to heart trouble: Study

KAVITA BAJELI-DATT @ New Delhi

WOMEN in their 50s are more prone to hypertension than men in the same age group, said a new study by the Public Health Foundation of India (PHFI), busting the myth that cardiovascular diseases are "men's problem."

The study, which was published in BMC Public Health journal, said that even more worrying is that physicians swayed by the myth tend to under-test and under-treat women for hypertension and other cardiovascular pathologies.

The report, Gender difference in the prevalence of hypertension among Indians across various age groups: information from multiple nationally representative samples, said that men had a higher prevalence of hypertension up to 50 years; after that, females had higher rates.

The PHFI study, perhaps the first to comprehensively demonstrate that cardio-metabolic risk in Indian women surpasses men after 50 years of age, and thus helped in "busting the myth" that Indian women are always at much lower risk than males, said, "this evidence should inform healthcare system to prioritise older women for screening and treatment of hypertension."

According to the data shared by the Union Health Ministry

percent of them have their blood pressure under control.

Speaking with this newspaper about the study PHFI

overweight and obesity compared to men after the age of 40 years. As they are unaware of hypertension, they rarely seek medical attention.

"Overweight, obesity and visceral fat levels predict hypertension, diabetes and cardiovascular risk. With menopause, protective hormonal influences abate and iron levels increase as menstruation ceases, resulting in increased blood viscosity," he said.

Dr Reddy said even in western countries, cardiovascular disease in women remained an area of neglect for many decades. But they were able to create more awareness and bring more attention to women's heart health.

"Untreated hypertension can lead to heart attacks, brain strokes, and heart and kidney failure. There is a need for early detection and effective control in women and men. Such awareness needs to be built up in India too, among the public and healthcare providers at different levels of the health system," Dr Reddy said.

He said the best solution is ould remain e, keep their r control and ess levels.

Time has come to prioritise women's cardiovascular health

"Untreated hypertension can lead to heart attacks, brain strokes, and heart and kidney failure. There is a need for early detection and effective control in women and men. Such awareness needs to be built up in India too, among the public and healthcare providers at different levels of the health system,"

Prof K Srinath Reddy, PHFI

EXPRESS ILLUSTRATION

The PHFI study on cardiovascular diseases is perhaps the first to comprehensively demonstrate this phenomenon

Post 50 years of age — cardio-metabolic risk in Indian women surpasses men

Dr Reddy said even in western countries, cardiovascular disease in women remained an area of neglect for many decades

Maintaining that this "busts the myth" that Indian women are always at much lower risk than males,the study said, "this evidence should inform the healthcare system to prioritise older women for screening and treatment of hypertension."

Another virus alert

Monkeypox outbreak reinforces urgency of framing strategies to check zoonotic diseases

GIRIDHARA R BABU

A VIRUS BELONGING to the poxviruses family causes a rare contagious rash illness known as monkeypox. This zoonotic viral disease (a disease transmitted from animals to humans) has hosts that include rodents and primates. What was previously limited to the disease's local spread in central and west Africa, close to tropical rainforests, has recently been seen in various urban areas and now in more than 50 countries. The good news is that most infected people will have minor illnesses and recover on their own.

It is a self-limiting disease with symptoms lasting two to four weeks and a case fatality rate of 3-6 per cent. A skin rash on any part of the body (even if only 1 or 2 spots) should raise suspicion because it could be the only presenting symptom. Swollen lymph nodes are another distinguishing feature. Aside from these, other symptoms of a viral illness include fever, chills, headache, muscle or back aches, and weakness. Touching skin lesions, bodily fluids, or clothing or linens that have been in contact with an infected person can result in transmission. Prolonged face-to-face contact can also result in the spread. So far, evidence suggests that sexual or intimate contact are the most common modes of transmission. It can also be spread by sharing a bed, towel, or unwashed clothes. It's also worth noting that monkeypox does not spread from person to person through everyday activities like walking next to or having a casual conversation with an infected person. Because symptoms usually appear 5–21 days after exposure, people with rashes, sores in the mouth, rash, eye irritation or redness, or swollen lymph nodes should be monitored. What begins as a rash progresses through several stages, including macule, papule, or vesicle, pustule, and crust.

When symptoms appear, it is critical to isolate the infected from other people and pets, cover their lesions, and contact the nearest healthcare provider, preferably by phone if possible. It is also critical to avoid close physical contact with others until instructed to do so by our healthcare provider. Because most people know the importance of isolation and quarantine during Covid outbreaks, it is preferable to use home isolation whenever possible. In addition to the precautions taken during Covid-19 (mask, washing, and distance), people should avoid contact with sick or dead wild animals and thoroughly cook animal meat. Priority should be given to educating grassroots workers about symptoms, specimen collection, disease detection, acquiring sample collection equipment, and maintaining cold storage of specimens.

Public awareness of disease transmission should be prioritised to reduce the stigma associated with the diagnosis. Increased surveillance and detection of monkeypox cases are critical for controlling the disease's spread and understanding the changing epidemiology of this resurging disease.

Most people will recover completely. Preventive health measures, such as avoiding infected animal or human contact and practising good hand hygiene, are the best option. Monkeypox is mostly treated by managing symptoms and preventing complications if it is diagnosed. In the minor proportion who are immunocompromised, complications can occur; pulmonary failure was the most common complication with a high mortality rate. In the US, pre exposure vaccination with JYNNEOS® is available to healthcare workers and lab workers exposed to this group of poxviruses. The smallpox vaccine is 85 percent effective against the disease. Another vaccine, ACAM2000, is a live vaccinia virus vaccine that is otherwise recommended for smallpox immunisation and can also be used for high-risk individuals during monkeypox outbreaks. In addition, Tecovirimat, an antiviral drug used to treat smallpox, is recommended for monkeypox.

Despite mild illness and a low transmission rate, the WHO has declared monkeypox, a public health emergency of international concern (PHEIC) to contain the disease. The increase in monkeypox cases in a short span of time in many countries necessitated the declaration of PHEIC and additional research studies. It is unclear whether the recent sudden outbreaks in multiple countries result from genotypic mutations that alter virus transmissibility. SARS-CoV-2 and monkeypox virus co-infection can alter infectivity patterns, severity, management, and response to vaccination against either or both diseases. As a result, there is a need to improve diagnostic test efficiency. We also need to examine if a newer variant of concern (VOC) of SARS-CoV-2 can emerge due to their interaction. It's also unclear whether the Covid-19 pandemic is exacerbating the current monkeypox outbreaks.

Smallpox vaccination programmes have been discontinued for the past 50 years, resulting in a scarcity of effective vaccines. There are approved drugs and vaccines, but they are not widely available to scale up controlling monkeypox. This is not the last such difficulty we will face, as the world is still witnessing more such public health crises. Zoonotic diseases are caused by various factors, including unchecked deforestation, climate coupled with a failure to prioritise public health, poverty, and climate change. Instead, a robust plan for pandemic preparedness should be accelerated, guided by a single health agenda. Never before in history have three infectious diseases (poliomyelitis, Covid-19, and Monkeypox) been declared PHEIC at the same time. Regrettably, this will not be the last time. There will almost certainly be more of these occurrences in the future. The world is yet to recognise emerging and re-emerging infectious diseases as a genuine threat. The immediate priority is to strengthen the surveillance infrastructure, including hiring public health professionals and field workers who can participate in outbreak detection and response during many future PHEICs. Mechanisms for initiating contact tracing, quarantining exposed people, and isolating infected people should be institutionalised. Without prioritising public health strengthening, the threat of new and re-emerging infectious diseases, as well as the enormous social and economic challenges that accompany them, is real and grave.

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