



PUBLIC
HEALTH
FOUNDATION
OF INDIA

PUBLIC HEALTH FOUNDATION OF INDIA

Working Towards A Healthier India



Annual Report
2018-19



TABLE OF CONTENTS

Chairman's Message	03
From the President's Pen	05
The Year Gone By	11
Academic Programmes	17
Research	41
Centres of Excellence	71
Health Technologies at PHFI	85
Health Promotion	93
Training & Capacity Building	99
Programmes	
Health System Support	113
and Technical Assistance	
Research Publications	125

CHAIRMAN'S MESSAGE



“It is Health that is real Wealth and not pieces of gold and silver”

– Mahatma Gandhi

The Public Health Foundation of India (PHFI) has been playing a seminal role in improving public health by living up to its motto—“Knowledge to action”—as it replicates the virtuous cycle from research to impact. As our nation commemorates the 150th birth anniversary of Mahatma Gandhi this year, I am proud to state that PHFI has followed the path shown by the Mahatma, as its work in public health ameliorates the lives of individuals, households and communities, the faceless, nameless and marginalized amongst them.

Over a decade of its existence, PHFI as a public-private initiative has rendered yeoman's service in strengthening India's public health institutional and systems capability, augmenting public health workforce and developing healthcare technologies. With its demonstrated track record in education, research, training and capacity building, its programmes have been adopted not only in our neighbourhood by South Asian countries but also by African countries. In line with Gandhi's spirit, PHFI collaborates with, provides assistance to and works in tandem with a multitude of stakeholders ranging from academia, state governments, civil society, NGOs and communities at large.

Its various courses, programmes, research and implementation projects include a focus on maternal and child health, disability inclusive development, water sanitation and hygiene, areas which Gandhi considered essential for growth of a country like India. Understanding the need for access to affordable and quality healthcare, PHFI has come out with various innovative technologies, a few of which have been deployed across the country and have had a significant impact on health outcomes.

While accomplishing its mission, PHFI's journey has not been a smooth ride but it has overcome numerous hurdles, with its 'never give up' spirit. Despite the various challenges, I am confident PHFI with its indomitable spirit will continue to march ahead in fulfilling its mission and achieving its vision in public health.

S. Ramadorai

Chairman, Public Health Foundation of India

FROM THE PRESIDENT'S PEN



As an organisation still in its early teens, PHFI experienced both the promise and problems of rapid growth last year. Even as its performance in many areas of its planned progress kept pace with the aspirations, restricted financial resources also inflicted some growth pains. The year demonstrated that PHFI had added resilience to its profile of relevance, excellence and scale as it continued its dedication to the mission of strengthening India's health systems.

All five of our Indian Institutes of Public Health (IIPHS) are now offering on-campus Masters programmes in public health. Diploma and PhD programmes are also being conducted at different IIPHS, covering a diversity of public health and health system management domains. A wide variety of training programmes and distance learning programmes are offered to meet the learning needs of public health researchers and practitioners. A MOOC on global public health, previously developed by PHFI and delivered through the UN Sustainable Solutions Network, has completed the production of its updated offering this year. We have commenced the process to connect our IIPHS to the National Knowledge Network to which we received entry.

The research portfolio of PHFI and its IIPHS continues to be rich and rewarding in terms of projects, publications and impact, despite some constraints in receiving international funding. The four Centres of Excellence have delivered research of quality relevant to national health programmes. The Health Technologies division has developed and tested products which have high potential and promise for transforming primary healthcare. The training of primary care physicians in a range of chronic diseases is now extending to 13 states, with global partnerships opening up for extending these programmes to several countries in South Asia and Africa.

Several state governments sought technical support from PHFI and its IIPHS in many areas of health system strengthening. The North Eastern region has been the focus of the Swasth Uttar Poorv project which received an excellent external evaluation and generous appreciation from regional leaders. Implementation projects in maternal and child health, nutrition, Tuberculosis and HIV prevention and control were effectively delivered, as were health promotion activities in diverse settings.

In a year where the PHFI family worked collectively to overcome challenges and deliver on our mandate with dedication and diligence, we were privileged to receive excellent support and guidance from the Executive Committee (Board) and the General Body. Their collective wisdom provided us the illumination to journey forward to our goals even when clouds gathered. We have been especially privileged to have Shri S. Ramadorai as Chairman. Readily available for consultation,

proactive in providing his problem solving skills, extremely generous in allowing us to access his sagacious counsel on a wide range of matters, building valuable partnerships national and international for PHFI, Mr Ramadorai has been a caring father and trusted friend to the PHFI family.

The Ministry of Health and Family Welfare (MoHFW) which initiated and supported the establishment of PHFI in 2006 has been our anchor, ensuring stable moorings even when the waters became turbulent. PHFI has been privileged to assist MoHFW in several health system strengthening efforts of the National Health Mission and has signed a Memorandum of Understanding with the National Health Authority to partner in advancing the implementation and evaluation of Ayushman Bharat.

As a new year begins, we feel blessed that we will be carrying our mission in to the 150th birth anniversary of Mahatma Gandhi. As we rededicate ourselves to the mission of serving humanity through public health, we are constantly reminded of the Mahatma's talisman through the framed message which greets our staff and students as they enter PHFI's central office:



Professor K Srinath Reddy

WHO ARE WE

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

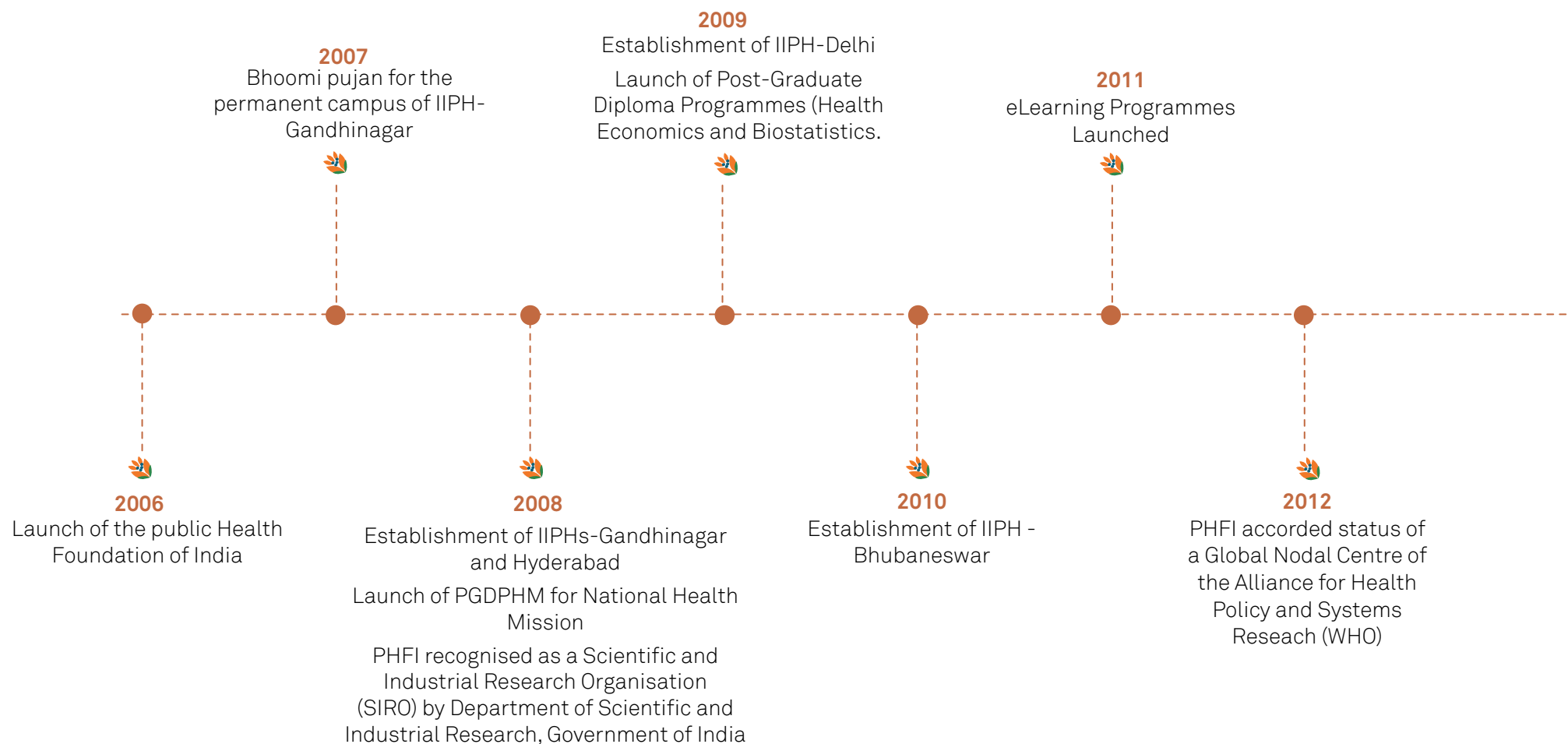
Independence

- 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



2013

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



2015

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



2017

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



2019

PHFI and IIPHs are part of National Knowledge Network
Launch of MPH programmes at IIPH Shillong through affiliation with Martin Luther Christian University, Shillong



2014

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



2016

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



2018

IPHS, sponsored by PHFI shortlisted for Institute of Eminence (IOE)



GOVERNANCE

Executive Committee

Mr. S Ramadorai
Mr. Lav Agarwal
Prof. K. Srinath Reddy
Mr. KRS Jamwal
Mr. J.V.R. Prasada Rao
Dr. Rati Godrej
Dr. Abraham Joseph
Dr. Abhay Bang
Dr. Maharaj K Bhan
Dr. Sunil Kaul
Dr. Muzaffar Ahmad

General Body

Mr. S Ramadorai	Mr. Harpal Singh
Dr. Balram Bhargava	Dr. Jaime Sepulveda
Mr. Lav Agarwal	Mr. Raman Sharma
Dr. Sanjay Tyagi	Mr. Michel Sidibé
Dr. Narayana Murthy	Mr. Prashanth Vasu
Dr. Abhay Bang	Dr. Abraham Joseph
Dr. Lincoln Chen	Dr. Partha Pratim Chakrabarti
Dr. James W. Curran	Dr. AK Shiva Kumar
Mr. Ved Kumar Jain	Dr. Shalini Bharat
Dr. Sunil Kaul	Dr. Shiv Vishwanathan
Mr. Gautam Kumra	Dr. Rati Godrej
Mr.T.N Manoharan	Mr. KRS Jamwal
Mr.Raj Mitta	Dr. K. Madhu Mohan
Dr. Peter Piot	Mr. Ashok Jaipuria
Dr.S Venkatesh	Dr. Montek Singh Ahluwallia
Mr. J.V.R. Prasada Rao	Dr. Mirai Chattterjee
Prof.K. Srinath Reddy	Mr. Uday Khemka
Dr. Amartya Sen	

YEAR GONE BY



The State Government of Punjab signed a Memorandum of Understanding with Public Health Foundation of India (PHFI) on 7 September 2019 to undertake collaborative programs in the areas of environmental health among other areas through the Mission Tandrast and Mission Innovate Punjab

PHFI has signed an MoU with Indian Institute of Science, Bangalore (IISc), Association of Health Care Providers (India) (AHPI), and Indian Institute of Space Science and Technology, Trivandrum (IIST), to develop and implement a Certificate Program in Healthcare Technology.



PHFI participated in the RIS organized Delhi Process V South-South and triangular Cooperation Conference, at India Habitat Centre, New Delhi. Honourable Minister Shri Piyush Goyal, Minister of Railways and Commerce & Industry, Government of India visited the PHFI stall.



Ms Preeti Sudan, Health Secretary MOHFW visits the PHFI stall at International Digital Health Symposium at Delhi



Shri. Ramadorai, Chairman PHFI visits the IIPH Gandhinagar Campus



Prof. Vinod Paul, Member NITI Aayog Chief Guest at the IIPH G Convocation



PHFI signed an MoU to be a technical partner to the National Health Authority (NHA)

Meghalaya Chief Minister Conrad K Sangma inaugurates the Centre for the Study of Complex Malaria in India (CSCMI) Malaria Research Laboratory and Master of Public Health Programme at the Indian Institute of Public Health (IIPH), Shillong



The DRROP India programme (Diabetic Retinopathy, DR and Retinopathy of Prematurity, ROP) is a six-year initiative to address avoidable blindness from Diabetic Retinopathy and Retinopathy of Prematurity. Implemented by IIPH-Hyderabad and funded by The Queen Elizabeth Diamond Jubilee Trust



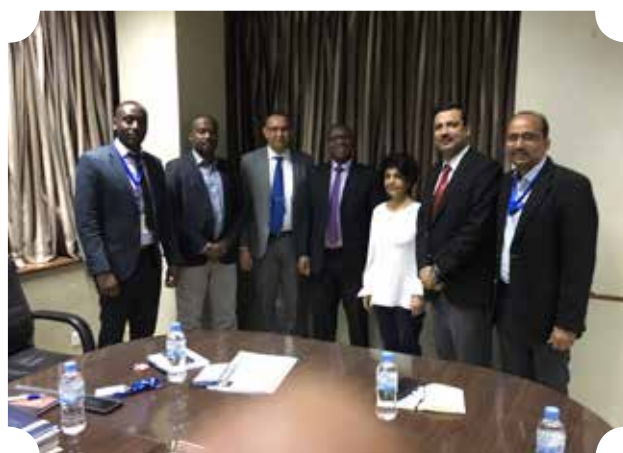
Professor Dileep Mavalankar, Director IIPHG participated in the UNCCD COP14



PHFI Won FICCI - Healthcare Excellence Awards 2018 (10th Edition) for Skill Development



PHFI Won the Best NGO/Education award in CII's National Excellence Practice Competition 2018



Meeting with Honourable Minister of Public Health, Rwanda Dr Patrick with the PHFI team



India Health & Wellness Award 2018

Training Division, PHFI won India Health & Wellness Award 2018 Health Skilling Brand – Gold Category



FICCI HEAL 2019

PHFI as second runner up of Poster Presentation on the theme “Enabling Universal Healthcare through Digital Health”



National Health Conclave 2019: Climate Change & Role Of The Health Sector

A one-day conclave organized by Centre for Environmental Health (CEH), Public Health Foundation of India (PHFI) & Association of Healthcare Providers of India (AHPI) about health impacts of climate change in India & appropriate risk mitigation & adaptation strategies.

“LET US LIVE...” featuring Grammy® Winner Ricky Kej-Music Maestro, UNESCO mgiep’s Ambassador, UNICEF Celebrity Supporter & United Nations Humanitarian Artist was organized to raise awareness about harmful effects of climate change and health and the need to preserve & save our beautiful planet



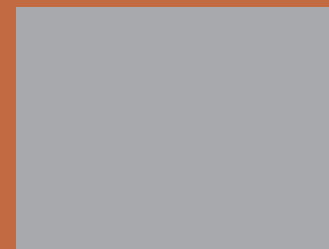


Release of Souvenir by Dr. Vinod K. Paul (Member, NITI Aayog) at National Health Conclave 2019 Climate Change and Role of Health Sector

*Launch event for the 2018 Report of the Lancet Countdown and the 2018 Lancet Countdown Briefing for Indian Policymakers
Date: 18 December 2018*



ACADEMIC PROGRAMS





Convocation at IIPH Gandhinagar



Convocation at SCTIMST for MPH, IIPH-Delhi



Convocation at IIPH-Hyderabad



Convocation of IIPH -Bhubneshwar



INDIAN
INSTITUTE OF
PUBLIC HEALTH
HYDERABAD

INDIAN INSTITUTE OF PUBLIC HEALTH – BENGALURU CAMPUS POST GRADUATE DIPLOMA IN PUBLIC HEALTH MANAGEMENT 2015-16



BACK ROW : DR. RAJENDRA BHAIKAR, DR. ANKAPPA C, DR. LAKSHMI KANTH B M, MR. B B ISHWARAPPAQOL, DR. HETNALLI PARASHURAMA, DR. SHIVA KUMAR D L, DR. RAMANAGOUDA S PATIL, DR. UMESH ADYANTHAYA B, DR. BHADAR A G.

MIDDLE ROW: DR. BABU T R, DR. PRASANNA KUMAR, DR. R LAKSHMI CHARITHA, DR. MANJU PRASAD M S, DR. JYOTHSNA REDDY S, DR. S PRAMILA, DR. SHOBHA P, DR. SIDDANAGOWDA B PATIL, DR. SHAILAJA N, DR. SAVITHA T J, DR. PRIYANKA Y N, DR. ARCHANA G KULKARNI, DR. BALAKRISHNA RATIHOD.

FRONT ROW : DR. VIVEK U PADVETNAYA, DR. GIRIDHARA R BABU, DR. SURESH S SHAPETI, DR. G V S MURTHY, DR. M K SUDARSHAN, DR. T N SATHYANARAYANA, DR. ANITHA NATH.



Meghalaya Chief Minister Conrad K Sangma inaugurates the Master of Public Health Programme at the Indian Institute of Public Health (IIPH), Shillong

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 Bhubaneswar. 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.

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 53.3% of our on-campus students; while government nominations constitute 30.9% of our total intake. For the current academic batch, the mean age for government nominated students is 44 years (range: 29 to 57 years) while it is 26 years (range: 19 to 51) for self-sponsored students.

Our academic journey

- 10 on-campus programs & 21 eLearning programs [2019-20]
- 2896 enrolments for on-campus programs & 5688 enrolments for eL programs till date
- 287 scholarships awarded for on-campus students
- 92% placements since inception for on-campus graduates
- 18068 participants trained through 729 short-term trainings till date
- Rich pool of 62 full time faculty members, 108 adjunct faculty members
- Multiple national and international academic collaborations
- Regular participant feedback solicited as part of a quality improvement loop
- Academic systems and processes in place to offer state-of-the-art learning experience

On-campus Programs

1. **PhD (Full time) in Health Sciences/ Public Health** [at IIPH-Delhi in affiliation with Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum (An Institute of National Importance under Govt. of India)]
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; IIPH-Delhi in affiliation with Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST), Trivandrum (An Institute of National Importance under Govt. of India); 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. **Certificate Course in Public Health for Senior Government Officers (CCPHM)** [offered in collaboration with Department of Health & Family Welfare, Odisha]

Table 1: New on-campus certificate courses launched in 2019

Name of program	Offered at	Background	Eligibility	Duration
Certificate Course on Geriatric Health Caregiving	IIPH-Gandhinagar	IIPH-Gandhinagar has launched four months onsite certificate course to equip prospective health aides with knowledge and skills to deal with health care needs of geriatric age group at home and in institutional set ups. The course includes two months theory orientation through classroom learning and two month of internship	Those interested to work in healthcare Must be minimum 18 years of age Minimum 10 th Standard Pass Must know Gujarati language	Four (04) Months
Certificate Course in Community Health (CCCH)	IIPH-Gandhinagar	This Course is developed as per the guidelines of Ministry of Health and Family Welfare, Government of India. The programme aims at improving the knowledge, skills and competencies of GNM, BSc Nursing and Ayurveda graduates (BAMS) to enable them to serve as competent human resource essential for strengthening the primary health care services at peripheral level. In Gujarat the course is run by IIPHG University in collaboration with State Institute of Health and Family Welfare, Government of Gujarat.	Diploma in General Nursing /Registered Nurse & Registered Midwife (RNRN) Bachelor of Ayurvedic Medicine and Surgery (BAMS) Age Limit: 35 Years and below for General category. 40 Years and below SC and ST Work Experience: 2 Years	Six (06) Months (5.5 months at program study centre + 15 days at IIPH-Gandhinagar University)
Certificate Course in Public Health for Senior Government Officers (CCPHM)	IIPH-Bhubaneswar	This uniquely designed course will develop the capacity of future CDMOs to execute and monitor health policies and programs, supervise the public health workforce, fully assess the dimensions of public health issues and devise appropriate strategies to meet emerging challenges. This short course will impart the skills required to tackle the existing and emerging public health challenges and enhance the capacity of the public health managerial workforce.	The senior officers of Additional Directors – II (AD-II) level which will be selected by the DoH&FW and deputed for the course	Three (03) Months

Figure 1: Our journey so far

On-Campus Programs	eLearning Programs	Short-term Training
<ul style="list-style-type: none"> • 10 on-campus programs • 2896 enrolments • 1705 graduates • 92% placements since inception • 287 scholarship awarded 	<ul style="list-style-type: none"> • 21 eLearning programs • 5688 enrolments • 3997 graduates 	<ul style="list-style-type: none"> • 729 short-term trainings conducted • Over 18068 participants

- 62 full time faculty members
- 108 adjunct faculty members
- Multiple national and international collaborations
- Peer-reviewed articles on public health education
- Regular feedback solicited
- Systems and processes in place

As on 31st August 2019

Figure 2: Scale-up of eL programs

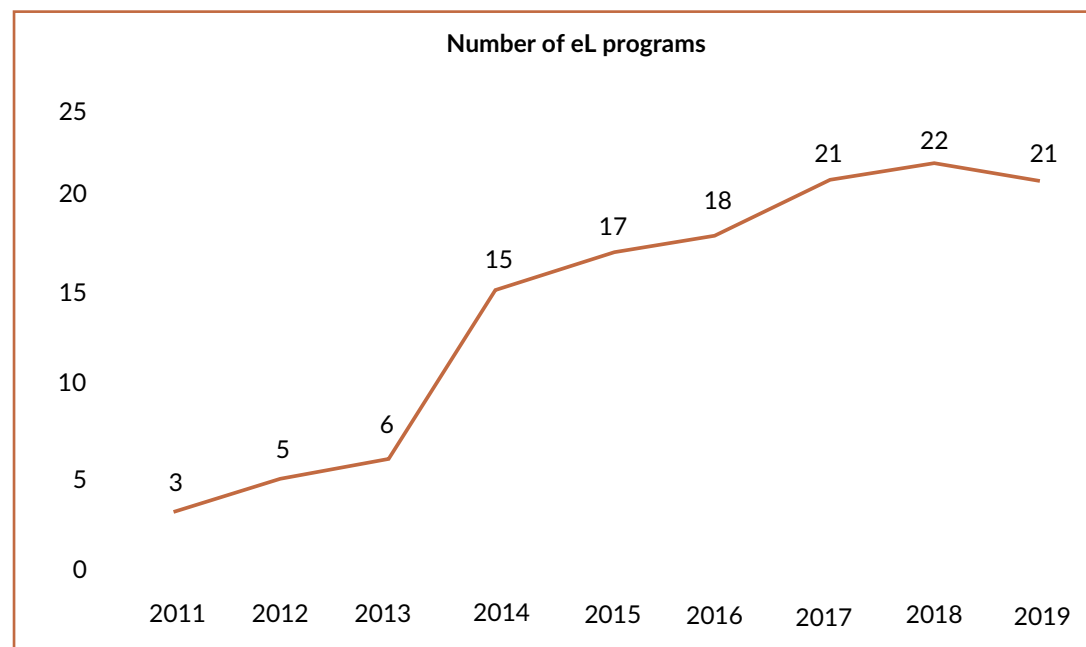
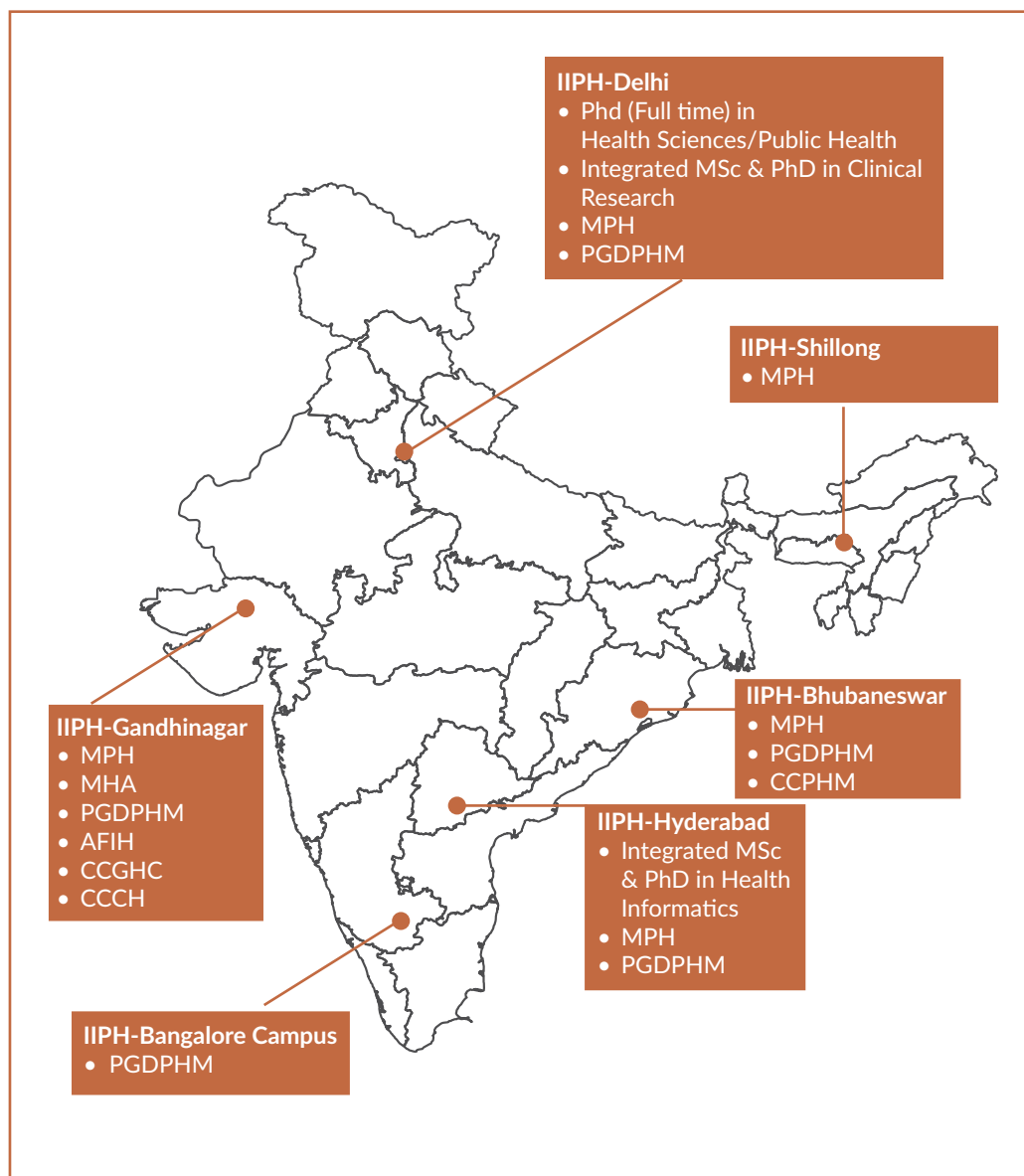


Figure 3: On-Campus Academic Programmes at Indian Institutes of Public Health



eLearning Programs

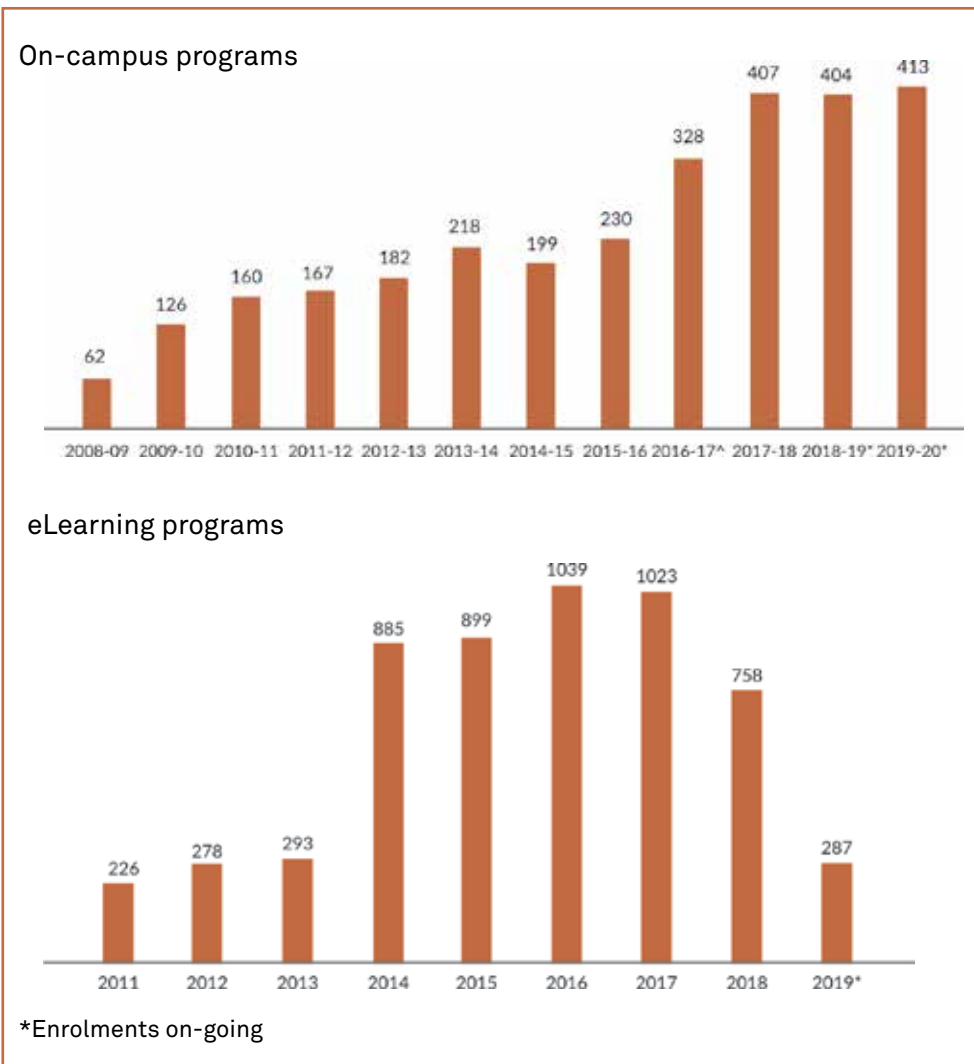
ePost Graduate Programs (1 year)

- Public Health Nutrition
- Health Promotion
- Epidemiology
- Management of RCH Programs
- Public Health and Hospital Management for Nursing and Allied Health Professionals
- Public Health Services Management
- Health Economics, Health Care Financing and Policy
- Executive Post Graduate Diploma in Public Health Nutrition-Afghanistan
- Diploma Program on Infectious Disease Surveillance - Afghanistan

eCourses (3-6 months)

- Research Methodology
- STI & HIV/ AIDS
- Monitoring and Evaluation of Health Programs
- GIS Application in Public Health
- Public Health Surveillance
- Health, Safety and Environment Management
- Tobacco Control
- Good Public Health and Clinical Laboratory Practice
- Research Ethics
- Effective Grant Writing in Public Health
- Public Health Development for ICDS Officials
- Advanced Program in Hospital Management

Figure 5: Growth in on-campus and eLearning program enrolments



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

We have launched a Massive Open Online Course (MOOC) on Global Public Health in the year 2015 in collaboration with the Sustainable Development Solutions Network.

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.

Since inception, we have completed nine 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 have undertaken over 30 initiatives related to program development over the last eleven years. 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

- PGDPHM: 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 Rural 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
- PGDBDM: Paucity of competent bio-statisticians in a specialized domain of statistics
- PGDHEP: Shortage of trained health economists. The need for this program emerged out of discussions with the Planning Commission. PGDHEP was the first long term program in health economics, healthcare financing and health policy in the country.
- MSc Clinical Research/ PGDCR: 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 transdisciplinary 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.

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.

Model course curriculum of Masters in Public Health (MPH)

A Joint Working Group from UK and India embarked on the Master of Public Health (MPH) curriculum under the direction of Joint Secretary (Medical Education and Training). It was decided to form a Taskforce on Public Health Education (PHE) under the Sub-group on Health Education and Training with expert members from the two countries. PHFI provided technical support to this important initiative. Prof Sanjay Zodpey, Vice-President (Academics) and Dr Himanshu Negandhi, Additional Professor were members of this taskforce.

The PHFI graduates are placed in both public and private health 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 92% of our self-sponsored students from on-campus programs within 3 months of their graduation. 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 4.92 lakh rupees

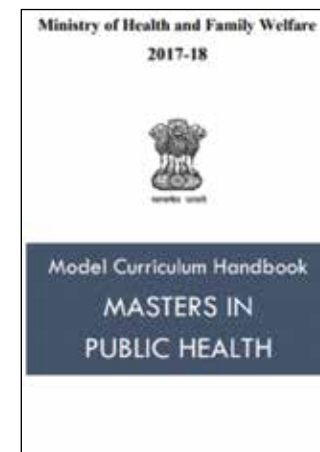
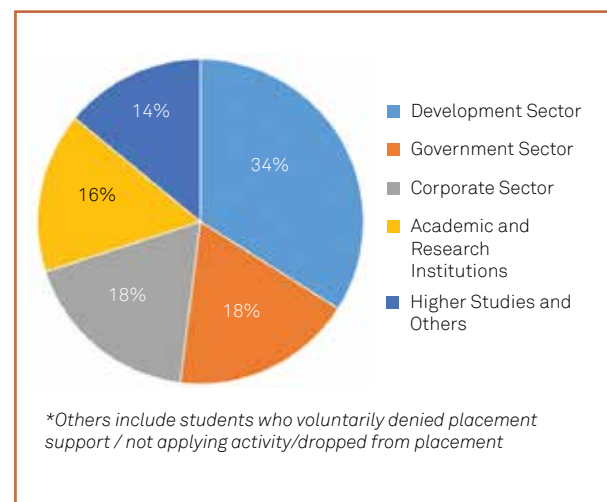


Figure 6: Sector wise placement of self-sponsored graduates (2008-09 to 2018-19)



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 1705 graduates from on-campus programs and 3997 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.

Student Testimonials

Our academic team seeks feedback from current students (module feedback, annual program experience, quotes), alumni (case studies, quotes), faculty, visiting faculty, employers of our alumni and visitors. The details of the quality assurance processes and stakeholders at each stage of the program cycle have been outlined in quality assurance SOP for use by each IIPH.

Figure 6: Sector wise placement of self-sponsored graduates (2008-09 to 2018-19)



On-Campus programs

"As a part of academics, we have a beautiful phase, commonly known as internship where there is no count to us err and unapologetically, we can learn so much that they become our life learning lessons. The facts and figures are obviously the learning phenomenon for a fresher as me but what we learn out of the box is truly incredible."

– Master of Public Health (MPH)

"The journey so far has been wonderful. I had joined the course MSc Clinical Research as a new and inexperienced student, but I have learnt a lot not in terms of only studies but also experiences regarding real life situation a person may face in future."

– Integrated MSc & PhD in Clinical Research

eLearning programs

"The course was very enthralling and up to date with evidence-based research. It has shaped my ontological perspective as far as social research is concerned. Further, it has enabled me to sharpen my abilities on health promotion skills, which will be useful in Zambia where there is a high disease burden."

–ePost Graduate program in Health Promotion (PGPHP)

"This course opened my thoughts to look at all health issues from public health prospective and enabled me to be a good Public Health specialist. The background knowledge of management, social science, Health economics and method of conducting research and analysis made me more efficient in controlling epidemic, effective task force and of health programme management."

–ePost Graduate Program in Public Health Services Management (PGDPHSM)

Special mentions

- Dr. Kabak Tamar, PGDPHM 2014-15 batch awarded for best PHC Kayakalp Awards FY **2018-19** in the state of Arunachal Pradesh.
- Dr. Arwanlang Phanbuh, PGDPHM batch 2015-16 awarded for best CHC Kayakalp Awards in the state of Meghalaya. His CHC has been awarded by the Hon'ble Governor of Meghalaya and Hon'ble Minister of Health & Family Welfare, Government of India in year 2017 and **2018** respectively.



Glimpses of Dr Arwanlang and his team receiving award from Hon'ble Minister of Health & Family Welfare, Government of India in 2018

- Md. Abdul Halim, PGDPHM 2016 Batch published a paper in the year **2018** titled as 'Financial Interpretation of Integrated Child Protection Scheme (ICPS) on Nutrition for Children' in the International Journal of Education and Management.

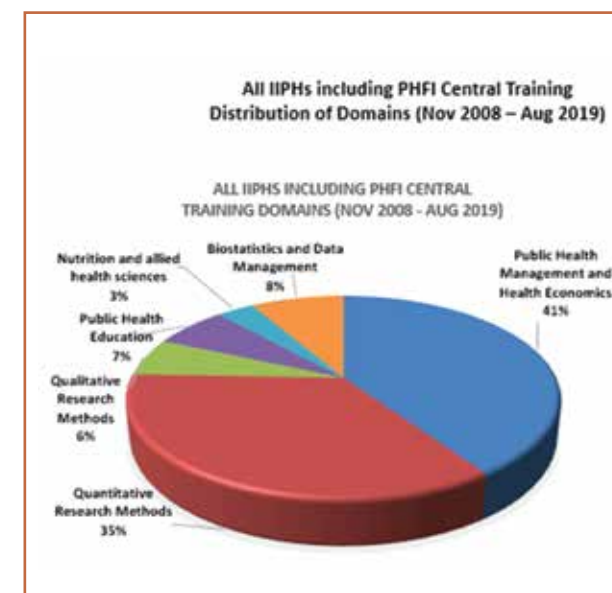


Short Term Training Programs

Each year we organise a series of short term trainings for self-sponsored candidates. 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.

Figure 8: Trainings offered at IIPhs including PHFI Central Training

Training Domains	IIPH-D	IIPH-G	IIPH-H	IIPH (BLR)	IIPH-B	IIPH-Shillong	PHFI	Total PDPs in all IIPhs including PHFI Central
Public Health Management and Health Economics	133	31	63	9	24	2	33	295
Quantitative Research Methods	164	12	60	2	17	1	-	256
Qualitative Research Methods	24	14	-	3	-	3	-	44
Public Health Education	31	9	-	3	2	-	3	48
Nutrition and allied health sciences	19	-	-	-	6	-	-	25
Biostatistics and Data Management	24	3	28	-	6	-	-	61
Total	395	69	151	17	55	6	36	729



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.



Dr. Kabak Tamar (PGDPHM Batch of 2014-15 batch at IIPH- Delhi) Medical Officer In charge has been awarded for Best PHC under kayakalp Awards FY 2018-19 in the state of Arunachal Pradesh

Scholarships and Fellowships

The Public Health Foundation of India (PHFI) offers limited number of scholarships to the deserving and meritorious students enrolling for the regular programs. A total of 287 students across the four Indian Institutes of Public Health (IIPHS) have been benefitted through the scholarships offered during the last eleven academic years (from 2008-09 to 2018-19), of which 99 were full scholarships and 188 were partial scholarships. The full scholarships cover complete expenses of tuition fee and the boarding and lodging fee, as applicable. Partial scholarships cover a part of the tuition fee of candidate.

In the year 2018-19, a total of 45 students across the IIPHS were benefitted through the scholarships, as given in the below table. No. of scholarship beneficiaries at IIPHS

Year	Name of the Program	IIPH, Delhi	IIPH, Hyderabad	IIPH, Gandhinagar
2018-19	MPH	10	22	13
Total		10	22	12

INFOSYS Fellowships in Public Health

INFOSYS Foundation in association with PHFI, instituted 'INFOSYS Fellowships in Public Health' to benefit 25 students from two batches of the MPH program (2016-18 and 2017-19). The Fellowship aims to identify and train a cohort of bright public health students at IIPHS, who could meaningfully engage with NGOs, working to improve population health in India. The Fellowship aimed at not only strengthening and supporting the organisations the graduates were placed but also contribute towards community development. Selected through a highly competitive and rigorous selection process, the selected fellows are provided (i) tuition fee waiver for the entire MPH programme for 2 years at the IIPH and (ii) placement in the identified NGO working for public health in India for a period of two years after completion of the MPH programme with salary support of INR 50,000/- per month.

From Round I:

- 10 Fellows selected from IIPH – Gandhinagar, Delhi, and Hyderabad. Three fellows opted out after signing the Agreement
- Seven Fellows from Round I are currently assigned to the NGO's

From Round II:

- Additional 18 Fellows selected from the Class of 2019
- Fourteen Fellows have joined placements (4 will join in Sept 2019)
- MoU documents signed with NGOs and students for Round I & Round II



Dr Sonali Randhawa interacting with the Tribal community in Majuli, Assam

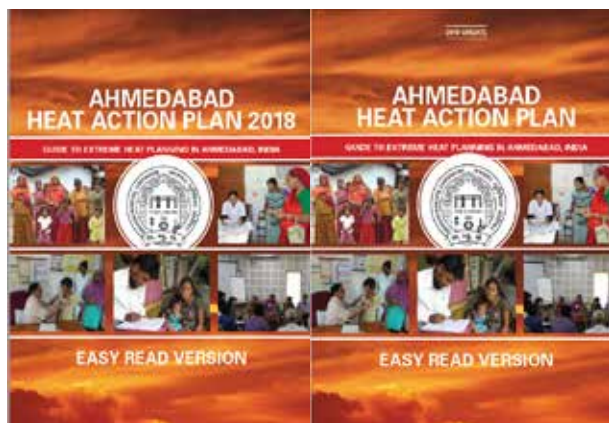
“ The Infosys fellowship has given me a good platform to critically analyse public health literature, create innovative solutions and present views clearly to a range of audiences. The fellowship’s main benefit came in form of covering my full tuition fees and making it easier for fresh public health graduates to learn from one of the best in the areas. I am thankful of the INFOSYS and PHFI for designing this program and giving students opportunity and confidence to work and become much clearer of the public health field. I would like to also express my gratitude to Piramal Swasthya for giving me a platform to apply my academic skills at the community level ”

Dr. Sonali Randhawa (BDS, MPH)

*Infosys Fellow, Piramal Swasthya
Management and Research
Institute*

IIPHG

IIPH Gandhinagar and NRDC supported Ahmedabad Municipal Corporation to develop South Asia's first city based heat action plan in 2013 to protect citizens against heat waves related mortality and morbidity. This plan has shown great success in reducing mortality in the city during subsequent heat waves. NDMA has helped replicate this plan with inputs from IIPHG, in many cities and states in the country. IIPHG also provided training to officers from SAARC countries to develop their own heat action plans. IIPHG is helping develop such plans in other cities with help of Dept of Science and Technology, Government of India.



HAP 2018 and 2019



HAP 2018 release



Shri. Gautam Shah, Mayor of Ahmedabad paints the first cool roof coating in the city, May 2017

IIPH Delhi

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

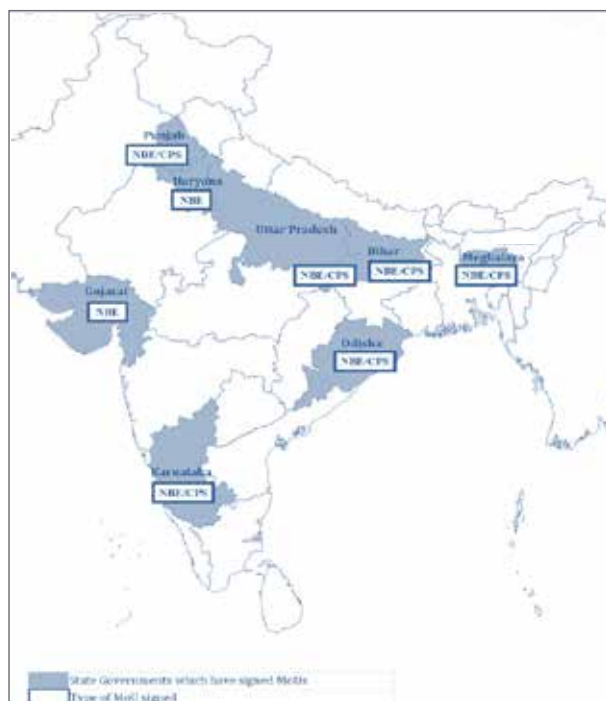
About the ADARSH project

- Medical specialists scarce in India and numbers are lower in the public sector
- Aligned with National Health Policy 2017
- “The National Health Policy’s 2017 section 11.3 - Specialist Attraction and Retention states that - Proposed policy measures include - recognition of educational options linked with National Board of Examination (NBE) & College of Physicians and Surgeons (CPS)”
- Project attempts to design and facilitate the adoption of alternate model(s): District Hospital Model of the NBE and CPS model are two alternative models
- Stakeholders: Government of India, State Governments, the NBE & CPS, and NHSRC
- MoUs have been signed with: NBE and CPS. Till September 2019 MoUs have been signed with following State Govts: Uttar Pradesh, Haryana, Odisha, Punjab, Meghalaya, Karnataka, Bihar, Gujarat

Snapshots of MoUs



Project Progress (September 2019)



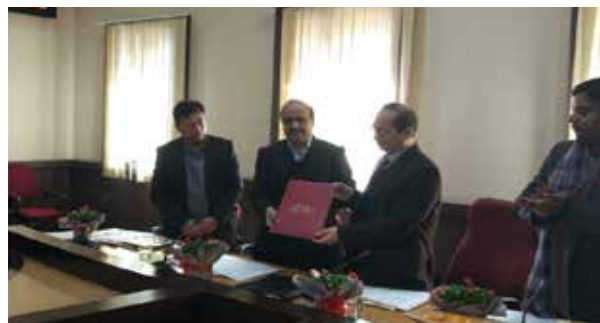
MoU Signings of ADARSH project



Signed by Dr. Shalini Pandit, MD, NHM, Odisha, in the presence of the honorable Chief Minister Odisha, Shri Naveen Patnaik



Signed by Dr. Padmakar Singh, Director General (Medical & Health), Uttar Pradesh



Signed by Shri. Pravin Bakshi, Secretary Health MD, NHM, Meghalaya



Signed by Shri. Sanjay Kumar, Principal Secretary Health & Family Welfare, Bihar

IIPH Hyderabad

The DRROP India programme (Diabetic Retinopathy and Retinopathy of Prematurity, ROP) is a six-year initiative, implemented by IIPH –Hyderabad to address avoidable blindness from Diabetic Retinopathy and Retinopathy of Prematurity. Both cases are on the rise in India

The DRROP initiative works with National and State governments, district health officials, and private and public service providers. The initiative brings together health professionals at all levels in the health system, and is strengthening the Government of India's health system for the care of people with diabetes and eye care through capacity building. Models of sustainable and scalable services for the prevention, detection and treatment of both conditions have been established across India. Other key areas in the programme include advocacy and communication, monitoring and evaluation, and coordination.

The Government of India has established a National Task Force for each initiative, to guide and oversee implementation. Technical Expert Groups provide specific inputs to different aspects of each programme.



DRROP Pilot Initiatives Dissemination Summit 2019, Hyderabad, India



DR Screening at Project Centre at Tumkur, Karnataka

IIPH Bhubaneswar

Certificate Course in Public Health Management (CCPHM)

The Department of Health and Family Welfare, Government of Odisha has developed clinical and public health cadres of doctors in the state. Indian Institute of Public Health, Bhubaneswar (IIPHB) is assisting state government for building capacity of in-service doctors in public health management through one year Post Graduate Diploma in Public Health Management as a long-term strategy for last nine years. The state has felt acute need to equip potential Chief District Medical and Public Health Officers as well as State Directorate Senior Health Officials in public health management skills.

On August 27, 2019, Dr Pramod Kumar Meherda, Commissioner-cum-Secretary, Department of Health and Family Welfare, Government of Odisha; Prof K Srinath Reddy, President, Public Health Foundation of India and Dr Subhash Salunke, Senior Advisor-PHFI and Director-IIPHB addressed and interacted with the participants of PGDPHM and CCPHM.

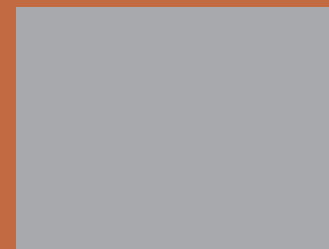


IIPH Shillong



Meghalaya Chief Minister Conrad K Sangma inaugurates the Centre for the Study of Complex Malaria in India (CSCMI) Malaria Research Laboratory and Master of Public Health Programme at the Indian Institute of Public Health (IIPH), Shillong

RESEARCH



PHFI has also built up an impressive portfolio of research and implementation projects, funded by reputed national and international agencies through competitive grants. With over 3198 publications in scientific journals and impact factor of 7.31, PHFI has established a creditable track record in research and has been so recognised by the Department of Scientific and Industrial Research. More important, the research is providing useful inputs to India's health policy and programmes in many areas of public health importance. Four funded centres of excellence in chronic diseases, disabilities, equity and social determinants and environmental health are leading applied research projects and capacity development in those areas. The publications include those in the world's top most journals such as the NEJM, JAMA Nature and Lancet and India's top journals such as Indian Journal of Medical Research and the National Medical Journal of India. In the year 2018 PHFI researchers published 548 articles published with an average impact factor of 7.63. Domainwise publications are given below. Research publications have wide impact including changes in policy and introduction of our research findings into the health system.

Articles	Total	%	2018	Till Aug'19
Health Systems, Policy & Financing	125	22.81	81	44
Women & Child Health	50	9.12	30	20
Environmental & Occupational Health	29	5.29	19	10
Public Health Nutrition	35	6.39	20	15
Non Communicable Diseases & Injuries	222	40.51	132	90
Infectious Diseases	39	7.12	27	12
Mental & Behavioural Disorders	21	3.83	11	10
Social Determinants of Health & Disability	27	4.93	18	9
Total	548	100	338	210

At the global level too, faculty and researchers are actively contributing to many initiatives, expert groups and commissions such as Agriculture and Food Systems for Nutrition, Global Burden of Disease Study, WHO Commission on Ending Child Obesity, Lancet Commissions on Health Professional Education, Mental Health, Investing in Health, Palliative Care and Obesity as well global panels on Antibiotic Resistance. International conferences have been convened by PHFI on maternal health, antibiotic resistance, endgame for tobacco, global youth meet on health, health in sustainable development and new directions for public health education.

Thus over the last decade, PHFI has collaboratively evolved through consultations with multiple constituencies including Indian and international academia, state and central governments, multi & bi-lateral agencies and civil society groups. PHFI has been able to address the limited institutional capacity in India for strengthening training, research and policy development in the area of public health, by building a strong knowledge base and expertise in research and a cadre of public health professionals.

The strong network which has evolved through this grant has helped to address the dearth of public health research and academic expertise in India.

7th Annual Research Symposium 2018

The 7th Annual Research Symposium was held from 29-31 October at ISID, Vasant Kunj, New Delhi. Keynote talks by eminent dignitaries and public health luminaries were organized during the symposium, specifically the keynote address by Mr. Thomas Abraham on Lessons learnt from Polio Eradication Program in India.

Various panel sessions and workshops on key public health areas were conducted during the symposium. The findings from India state-level burden of diseases initiative were presented for major non-communicable diseases including diabetes, COPD and injuries. The update for various affordable health technologies being developed at PHFI were also presented in a break out session to discuss their scale-up and uptake in national programs. The other panel sessions included adolescent health, research dissemination, climate change and health system research around Ayushman Bharat. Sessions of research administration including research management and central research data repository (CRDR) were also held during the symposium. The post symposium workshops were also organized on grant writing, research ethics and exploring photograph through photography, that were attended by young researchers in large numbers.



We received an overwhelming response for the abstract submission, out of which 20 abstracts were presented orally in different sessions by senior and young researchers from the PHFI extended family. Moderated e-poster sessions were organized for the first time that was the highlight of the event and received appreciation. 80 abstracts were presented in the poster



sessions over first two days of the symposiums. The major programs and activities from different Centers of Excellence and IIPHs were showcased during the symposium.

The human resource department also organized the cultural event which included performances by IIPH students and members from different operational and research teams.

Environment and Occupational Health

The Problem

India faces a high burden of diseases due to lack of environmental awareness and degradation with issues like air pollution, access to clean water, and occupational exposures featuring among the top ten risks to public health. Exposures to environmental pollution remain a major source of health risk throughout the world, though risks are generally higher in developing countries like India, where poverty, lack of infrastructure, and weak environmental legislation combine to cause high pollution levels. A significant proportion of the environmental disease burden is attributable to risks including poor ambient and indoor air quality, unsafe water, poor sanitation and hygiene, exposure to toxic chemicals, and climate change.

What are we doing

The Centre focuses on a portfolio of research activities across thematic areas of air pollution, water, sanitation and hygiene, chemical exposures and climate change. High-level

interactions on research and policy with key stakeholders to inform policy development through focussed and constructive dialogue; develop and disseminate programme and policy-relevant briefs forms an important part of our work. Strategic partnerships are established to work in collaboration with nodal ministries and organisations including National Centre for Disease Control (NCDC), Ministry of Health and Family Welfare, World Health Organization (WHO), United Nations Development Programme (UNDP) etc. CEH researchers and faculty members are also deeply engaged with the policy landscape on environmental health through membership of various government committees including those of the Ministry of Health and Family Welfare, Ministry of Environment and Forests and Climate Change, and National Disaster Management Agency at the central level. We also contribute to work with State governments such as the governments of Gujarat, Maharashtra, Karnataka, Odisha, Delhi, and others.

A. Ongoing Research and Implementation Projects

1. Air Pollution

(a) Air pollution and cardio-metabolic diseases

– The GEOHealth program funded by the US National Institutes of Health aims to advance the science of air pollution and cardio-metabolic disease in India, and to train the next generation of air pollution researchers.

(b) The Ambient and indoor air Pollution in Pregnancy on the risk of low birth weight and Ensuing effects in Infants (APPLE)

study funded by Department of Science and Technology aims to assess the impact of air pollution exposure on low birth weight in infants in Bengaluru.

(c) Health impact assessment near thermal power plants – In partnership with 4 reputed institutions, we are carrying out a health assessment to understand the health impacts of populations living near thermal power plants.

(d) Economic studies on air pollution: Air Pollution in India: Impacts on the Environmental Burden of Disease, the Economy and Human Capital- PHFI researchers are working with UNEP and Boston College in studying the

impacts of air pollution on health, economy and human capital.

(e) PHILAP study- uses mixed methods to study air pollution impacts on asthmatic adolescents in Delhi in collaboration with University of Edinburgh

2. Climate Change

(a) Heat Action Plan: The HAP evolved by researchers in IIPH, Gandhinagar is now being scaled up in several states. Teams in both Orissa and Gandhinagar along with CEH researchers will be enhancing work in vulnerability mapping at city-level.

(b) Climate-resilient health systems -

Using the previously established network of healthcare providers and institutions (HELP), our team will be advancing the work to develop climate –resilient health systems in India. This work will be enhanced by engagement with National Health Systems Resource Centre and the National Centre for Disease Control and the Ministry of Health and Family Welfare, Government of India.

(c) United Nations Development Programme Report on Climate Change and Human

Development: UNDP commissioned a report titled “Climate Change and Impacts on Human Development in India”. CEH team drafted a chapter on Climate Change and Health which describes the health impacts of climate change

in India and ways in which the health sector could contribute to mitigation, adaptation and resilience-building to address these impacts. The report also features case studies that draw from best practices, and highlights recommendations on the way forward for improved response measures. The second draft of the report has been submitted and is under review by UNDP team and other partner agencies.

3. Chemicals and Pesticides

(a) Health and Wellbeing among cottonseed girls in Telangana and Maharashtra – The aim of this project is to elicit cultural embedded meanings of wellbeing among cottonseed girls and develop tools to measure their wellbeing.

(b) Association of plasma lead (Pb) levels to hypertension in non-occupationally exposed participants of the CARRS Surveillance Study – This study will assess for the first time, the association of low-level Pb exposures to incident hypertension in a non-occupationally exposed population in New Delhi.

(c) Pesticides and breast cancer – A multi-centre case-control study to evaluate occupational exposure to pesticides and the association with breast cancer among female residents of Punjab.

(d) Arsenic and gall bladder cancer- This study in Assam and Bihar will assess environmental,

nutritional and sociodemographic risk factors for gall bladder cancer

4. WASH (Water, Sanitation and Hygiene)

(a) WASH and behaviour change – The aim of this pilot project is to enhance the evidence base for interventions to end open defecation and to establish what part demand creation can play in increasing latrine use among all family members of a household

(b) WASH practices in maternity units and maternal outcomes in Gujarat – The aim of this study is to reduce post-natal sepsis by integrating better hygiene practices among health workers and others at public health facilities in Gujarat. A toolbox for application in healthcare facilities was developed and tested in Gujarat, Rajasthan and Maharashtra. The work has now been recognised by UNICEF to be scaled up in Assam.

IMPACT

The **Ministry of Health and Family Welfare** has recognised the Centre for Environmental Health as “**Centre of Excellence**” for Climate Resilient Healthcare and green healthcare facilities. The centre will be drafting a framework and action plan for the **National Action Plan for Climate Change and Health (NAPCCH)** which will in turn feed into State Action Plans and assist in ground implementation.

At the international level, the Centre is forging academic and educational collaborations under the Israel Environmental Health Fund. Delegates from Israel visited PHFI in February 2019 headed by Prof. Henry Falk former Director of CDC, Atlanta, Consultant Global Environmental Issues and currently Chair of CEH Research Advisory Council. The three-day visit provided the visitors and researchers/faculty at PHFI/ IIPHs an opportunity to interact with each other and gave them the platform to explore and initiate discussions for collaborations. The possible areas of collaboration based on interactions were enlisted as follows-

- Monitoring and sensors:
- Calibration of instruments
- Exposure assessment tools (Vertical profiling, modelling)
- Indoor microenvironment
- Exposure science
- Agricultural and residential interfaces
- Burns and injuries with disaster management

Heat Stress Assessment of Bhubaneswar, Odisha

The project aims to conduct vulnerability assessment of marginalized population living in Bhubaneswar city, in terms of their health status, effect of getting exposed to extremes of heat and economic loss due to adverse climate situations. It will present the evidence gathered from this survey to the department for brining about heat stress mitigation programme for the city. We will be closely working with OSDMA and BMC on these issues. Once the draft plan is prepared, dissemination and capacity building efforts will be made for the key stakeholders workign in various departments of the government.

Cardiovascular Health Effects of Air Pollution in Andhra Pradesh, India

The aim of this project was to investigate the cardiovascular health effects of exposure to particulate air pollution from outdoor and household sources within the Andhra Pradesh Children and Parents Study (APCAPS) prospective cohort.

Health Systems, Policy and Financing

Health Policy and systems research helps includes policy and implementation research to achieve healthy indicators of a population. These studies are largely focussing on improving health care access, delivery, financing and policy advocacy for health care in India.

Some of the major projects are:

Change Health Behaviors and Improve Coverage of Health Services by Activating Social Platforms for the Poor in Uttar Pradesh (UPCBM) the Public Health Foundation of India is leading five-year initiative (2011-2016), funded by the Bill & Melinda Gates Foundation, that aims to develop and scale up evidence-based interventions to achieve the goal of improving RMNCHN health behaviours by an average of 10 percent points among marginalized population in the state of Uttar Pradesh, India. The project seeks to layer health programs on women's self-help-group platforms (SHGs) created around micro-finance to increase knowledge, enhance skills and promote improved behaviour and practices for safer pregnancies, new-born care & child health and thus reduce mortality outcomes in mother and children. The consortium consists of Rajeev Gandhi Charitable Trust, Boston University, and

Population council as partners. By the end of the project, it would have directly reached to approximately 1 million target women in SHG households through 75,000 SHG's in 5100 gram panchayats

Project goal: To change health behaviours among target women reached through SHG platform created by RGMVP and improve access to local health services

Objective

- a. To increase adoption of evidence-based high-impact family health behaviours and services by strengthening existing self-help groups in 100 blocks
- b. Scale up formation of self-help groups in order to build capacity for future health interventions
- c. To document and disseminate the approaches, strategy and results for wider application
- d. Scale up learning's through social platforms (e.g., NRLM, UPSRLM)

How Health and Wellness Centres can be used to improve the Comprehensive Primary Health Care (CPHC) Components?

Of the two critical pillars underlying Ayushman Bharat as its central goal of the program is

improving primary health care by providing people with comprehensive package of essential health services to be delivered by Health and Wellness Centres (currently called the sub-centres in TN and PHCs in UP). The aim of this study is to assess the performance of Health and Wellness Centres (HWC) involving Comprehensive Primary Health Care Services (CPHC) in two Indian states, Uttar Pradesh and Tamil Nadu, India. The assessment of the impact underlying a health service delivery is predicated on the performance of health system outputs and outcomes and hence, two sets of assessments would be carried out. One set of analysis will be based on comparisons between the current status of HWC against the criteria for setting up HWC. The evaluation will be made in respect to availability of health services, and health system components, including health workforce, medicines, equipment, infrastructure, etc. The second set of assessment will be based on benchmarking with a state counterpart that may have outperformed the former. We propose to compare evidence involving UP to that of Tamil Nadu.

Design and Scale Up of Alternate Models for Responding to the Critical Shortage of Medical Specialists in Selected States (Aadarsh Project)

This project is an attempt to design and facilitate the adoption of alternate model(s) for responding to the critical shortage of medical specialists in 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.

If successful, 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.

A National Investment Case for Adolescent Health and Well-being in India

An investment case for comprehensive intervention on adolescent health is critical, as this has been a neglected area for long in India. In order to make a strong case for investment by the government, a robust and a relevant evidence needs to be created for communicating among various stakeholders. Different interventions to address issues related to adolescents are already being run by different departments of government but at the same time it is also very important to assess cost to benefit ratio (CBR) of these interventions. Such an exercise has been carried out in two phases since early 2018 and is expected to be completed in late 2019: i) several models built including a combined one for projections and scenarios on the costs and benefits of interventions at the all-India level in the first phase; and ii) state-level models and projections to be carried out in the final phase

involving states such as, Uttar Pradesh, Madhya Pradesh, Assam and Tamil Nadu.

The Indian study estimated benefit-cost ratio (BCR) for 5 major intervention in adolescent namely health, education, accidents and injuries, child marriage and inmate partner violence. The interventions that were supposed to impact lives saved, disease, injuries and mortality averted, ability to control fertility, human capital and community and family relationships. Economic and social benefits associated with these impacts are increased labour supply, employment and labour productivity, job quality and capital stock, lives saved, and women position in family and society.

The all-India results were submitted to the funding agency in late 2018 and the state level results are being finalised and to be submitted to the funding agency. The dissemination event is likely to take place in October-November, 2019. Funding for project was provided by UNFPA, Country Office, India. The project is being collaboratively carried out in partnership with Victoria University, Australia.

Diagnostics for Health Systems Transformation

This project plans to gather evidence on access, quality and equity, difficult areas,

health financing, human resources for health, and provision and delivery of services in the health systems of Odisha. The evidence gathered in this process will be used to strengthen the existing health systems in the state. The major activities of the project include evidence generation, report writing, organising consultations and disseminating the findings. The assessment methods will broadly be divided into four parts – secondary data collection, qualitative interviews, case studies and consultations.

Secondary data collection will include review of published documents, research articles, case studies, unpublished reports, minutes of meetings (government), government websites, national and state level surveys and existing data sets. Similarly, qualitative data collection will involve in-depth interviews with government officials, program managers, consultants and other relevant stakeholders identified for specific research questions. In order to record the best practices and innovations in health, case studies will be developed. Further, consultations with national and local level experts will also be conducted to gather required information as per the need of the project. Evidences gathered will be disseminated through workshops, conferences and publication of reports and papers.”

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

“This study involves the evaluation of peer educator (PE) component of the Rashtriya Kishor Swasthya Karyakram (RKSK programme), using mixed methods, in high priority districts (HPDs) of two Indian states Madhya Pradesh and AP (now replaced with Kerala), selected in consultation with MoHFW (based on health indicators, population size, contextual diversity, and variance of socio-economic status of population). The three aims of this project are to: 1) Evaluate the Process (to understand implementation, causal mechanisms and context) of PE Programme (here on referred to as the intervention) under the RKSK, in two Indian states. 2) Evaluate the effect of the PE

intervention on primary outcomes at adolescent (knowledge, attitudes, life skills, practices) and parental levels (attitudes, communication skills) and impacts on PE (leadership and communication skills) and on AFHCs (trends in attendance numbers). 3) Provide specific guidance to MoHFW, GOI, and more generic guidance to other countries, on modifying, scaling up and sustaining the PE intervention.”

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Infectious Diseases

Although there is a transmission in epidemiological burden from communicable to non-communicable diseases in India, the burden of some of the infectious diseases still remains huge in some parts of India. Moreover, there is a growing concern around more recent seasonal viral diseases, like dengue, chicken guinea, etc, adding to the burden. PHFI's ongoing studies on infectious diseases are focused around:

- Cross-sector policy and local capacity for integrating public health and livestock health, urban health and local food protection
- Public health awareness for prevention of tuberculosis and role of private sector communication
- Burden of Malaria in eastern and central India and its threat on India's vision to eliminate malaria by 2030
- Geospatial analyses of pneumonia, malaria, diarrhea, HIV/AIDS and tuberculosis to
- Worksite lifestyle intervention to prevent communicable diseases along with non-communicable disorders

- Support WHO-SEARO regional action plan on latent TB infection management
- Identifying natural history of TB parameters in India through mathematical modelling
- Sickle cell diseases and thalassemia control in eastern India

Some of the major projects are:

Geospatial Analyses of Pneumonia, Diarrhea, Malaria, HIV/AIDS and Tuberculosis

This project will produce fine-grain geospatial mapping of major diseases and risk factors that are important for India, which include pneumonia, diarrheal disease, malaria, HIV/AIDS, tuberculosis and among other causes. Together, PHFI and IHME will work to identify and procure micro data, meta data, and spatial descriptors from multiple data sources, and continue to develop relationships with key Indian stakeholders to advance the objectives of the geospatial analysis work in India. The data to be used in this project will be secondary data from a variety of studies done in India, and will not involve any field data collection.

Promoting Health, Livelihoods and Sustainable Livestock Systems in Peri-Urban Ecosystems of India

The goal of this Initiative was to contribute to stronger evidence-based cross-sector policy and local capacity for integrating public health and livestock health, urban planning, local food production and social development in peri-urban settings of India. The long term objective of the India Research Initiative on Peri-Urban Human-Animal-Environment Interface is to create and maintain sustainable multidisciplinary and multi-actor partnerships for policy-relevant research aiming at decreasing health and environmental problems from livestock agriculture and overcrowded conditions in peri-urban ecosystems.

Facilitation in Analysis and Interpretation of Data Generated by the Comprehensive Case Management Project (CCMP), Odisha – Collaboratively Implemented By National Vector-Borne Disease Control Programme, Odisha and National Institute of Malaria Research

Despite its recent efforts in reducing the disease in the highest endemic provinces of North East and Central region, resource

constraints and problems with the overstretched health system in the most endemic states of India along with the growing complexity of the disease and vector biology, threat of emergence of resistance to the life-saving antimalarials like ACT, and narrowing opportunities for vector control due to growing insecticide resistance, continue to threaten India's vision to eliminate malaria by 2030. The state of Odisha has contributed the highest reported malaria burden in the country over the last 10 years, accounting for more than 40% of India's annual malaria burden, albeit with only 4% of the Indian land mass and 3% of its population.

A case management system for malaria was essential for endemic areas as a means of 'treating the sick' to reduce the duration of sickness and prevent the disease progressing to severe malaria. However, beyond this purpose, early termination of infections serves, particularly in areas of unstable malaria with low to moderate intensities of transmission, as

an important means of curtailing the size of the infectious reservoir. Thus, comprehensive case management systems contributed significantly to transmission reduction, particularly if attention is paid to anti-gametocytocidal medication as a complement to curative treatment.

The Comprehensive Case Management Programme (CCMP) was an operational research study under programmatic conditions in the state of Odisha. CCMP was run collaboratively with the national and the state chapter of the National Vector Borne Disease Control Programme (NVBDCP) and National Institute of Malaria Research (NIMR) with technical and financial support from Medicines for Malaria Venture, Switzerland. CCMP was implemented from 2013-2017 within the framework of the State NVBDCP, against the backdrop of prevailing vector control measures. As the programme was driven by the state NVBDCP, the potential for programme learning and scaling of successful findings was high.

Mental & Behavioural Disorders

The mental well-being is as crucial as the physical health of a population. Assessing and improving the mental health has been included in most of the studies being conducted at PHFI. Some of the studies in this are focused on following topics:

- Psycho social intervention for self-harm in youth
- Linking depression with non-communicable disorders like diabetes and cardiovascular diseases.

Some of the major projects are:

An Adaptation and Evaluation of a Psychosocial Intervention for Self-Harm in Youth.

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

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

- Describing domains of psychopathology and targets to address in Indian youth with self-harm
- Integrating additional contextual information within the intervention framework to improve its acceptability and effectiveness
- Evaluating acceptability and feasibility of the intervention The specific goal of the second phase is to evaluate effectiveness of the intervention delivered by the counsellors in reducing self-harm thoughts and behaviour in youth.

The objective is to adapt a psychosocial intervention to prevent recurrence of self-harm behavior in young people. Self-harm is the clearest antecedent of later suicide and given this, the proposal is a timely one. Rates of suicide in India have shifted with economic development with a rising rate of suicide evident in young men particularly in the more developed south of the country. And in young women suicide has overtaken maternal causes globally as a major cause of death. This is to a

large extent driven by the high rates of suicide in young women in South Asia. A study found suicide to be the second leading cause of death in the 15 to 29 years age group in India.

Epidemiology of Comorbid Cardiometabolic Conditions and Depression in Indian Population

Depression and cardiovascular disease (CVD) are both common disorders and major contributors to the global burden of disease. Their prevalence is increasing globally, especially in low and middle income countries that are undergoing rapid transitions in socio-economic profile and lifestyle characteristics

1. CVDs are the leading cause of mortality in Indians, occur at least a decade earlier and are associated with greater premature mortality. Other than the traditional risk factors, in-utero and early-life influences, stress, co-existing mental health conditions need to be examined

2. Mental and behavioural disorders account for about 12% of the global burden of diseases

3. Depression is a common mental health condition which may aggravate with time to become chronic and/ or recurrent 4,5. It is the fourth leading cause of global disease burden and accounted for 4.4% of total DALYs in 20006. Its exact burden is not known especially in LMICs. Recent population studies have reported high prevalence of depression in India (14.6-15.1%)7,8. The prevalence is much higher in primary health settings ranging from 21-84%9. Indians with depression seem to have higher prevalence of somatic symptoms as compared to western population10. While it can be diagnosed easily and managed using a range of methods at primary health care level, depression goes largely undiagnosed. Associated social stigma and dismal lack of trained mental health professionals further complicates things.

Traditionally, mental health and cardiometabolic conditions have been considered in isolation and this a major attempt to address this issue.

Non Communicable Diseases & Injuries

The burden from non-communicable diseases, including cardiovascular diseases (heart diseases, hypertension, obesity), diabetes, chronic obstructive pulmonary disease (COPD) and cancers continue to emerge globally with a disproportionate higher incidence and burden in developing countries like India. A large number of studies at PHF are focused to understand the dynamics, determinants and burden of these chronic conditions and to develop, evaluate and implement evidence-based solutions. The current studies at PHFU under this thematic area are focused on below mentioned areas:

- Estimating state level burden of chronic diseases (CVDs, diabetes, COPD, injuries and cancer) in India
- Intervention programs to reduce the risk of diabetes and hypertension
- Behavior change interventions at schools, colleges and workplaces to reduce the risk of NCDs
- Evaluating effectiveness of stroke rehabilitation services
- Development of quality improvement strategies to manage NCDs in different health care settings

- Prevention of chronic diseases through decision support system and regular check-ups in north-eastern states
- Support WHO SEA Regional Office in finalizing road map to reduce MDR-TB for all 11 SEAR countries by using epidemiological and economic modelling
- Impact of Tele radiology system of health care delivery in rural India
- Supporting diagnostic and health care services at panchayat level
- Assessment of adolescent health in relation to school health programs
- Evaluate alcohol advertisements and marketing among college students.
- Rheumatic heart disease among school children
- Trials focused to improve health care procedures, like evaluating surgery versus fibrinolytic therapy in prosthetic heart valve thrombosis
- Effect of organic pollutants on risk of diabetes
- Developing low cost non-invasive methods to detect oral cancer and anemia in saliva samples
- Assessment of adolescent health and school health programs in SEAR countries

Some of the major projects are:

UDAY

A Comprehensive Diabetes Prevention and Management Program in India

The project focusses on home based screening programme using lay but trained technologically enabled community health workers, along with linkage of screened individuals to the healthcare system. Under this project, a multi-component, multi-level, comprehensive intervention program is implemented to improve the prevention, detection and management of diabetes and hypertension.

CARRS

This is a community-based surveillance study that started in 2010- 2011. The participants are being followed annually for detection of incident cardiometabolic diseases. A second wave of data collection called CARRS-2 began in 2015-2016. Both CARRS-1 and CARRS-2 have collected a rich repository of bio-specimens including blood, urine, and DNA samples. This study will help us understand the mechanisms of disease particularly the reasons for the high vulnerability of Indians to CVD and diabetes.

A number of studies have been nested within the CARRS cohort to answer research questions pertaining to cardiovascular epidemiology. One of the study is focussed to examine the associations between cardiometabolic conditions and depression prospectively and strengthening the ascertainment and analysis of mental health outcomes. The genetic data being generated on the CARRS participants will help examine the causal relationship between various cardiometabolic traits using Mendelian randomization approach. These causal inferences will help formulate more focussed clinical and public health interventions.

The first phase of the planning of a Regional Centre of Research Excellence (RCRE) in Non-Communicable Diseases in India was conducted last year. Few demonstration projects were conducted with IN CARRS cohort for producing actionable evidence on the prevention and control of high priority NCDs, such as cancers and diabetes. Some of these activities could potentially be scaled up for other cohorts in the country. The demonstration projects included (i) linking CARRS with population based cancer registry in Chennai; (ii) assessing stigma related to cancer and diabetes in patients and their caregivers; and (iii) exploring the role of oral microbiome in oral carcinogenesis.

Evidence Based Research and Capacity Building

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

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

c) In consultation with the state health officials we have also developed a population based health survey to determine the incidence of

major chronic diseases and their risk factors among adults. Information on demographics, lifestyle behaviors, anthropometry, biological measurements and bio-samples (blood and urine), healthcare costs, and mortality will be collected. This will provide most recent data, track trends over time and facilitate evidence based prevention and control efforts.

mHealth Integrated Model of Hypertension, Diabetes and Antenatal Care in Primary Care Settings in India and Nepal: mIRA Cluster Randomized Controlled Trial

The aim of this mHealth project is to develop and implement a tablet-based electronic decision support system (EDSS) to assist frontline healthcare providers (FWs) to improve the antenatal care, specifically the screening and management of Pregnancy Induced Hypertension (PIH) and Gestational Diabetes Mellitus (GDM) in primary healthcare facilities of Telangana (mHealth integrated model of hypertension, diabetes and antenatal care in primary care settings in India and Nepal: mIRA cluster randomized controlled trial).

Anticipated impact of mIRA will be at different levels and among different groups. At the health system level, the intervention will enhance and improve the quality of ANC services and

provide continuity of care by integration of routine ANC with the screening, detection, referral and management of GDM and PIH in the most efficient manner. It will also ease the work flow in the primary care settings and likely increase cost-efficiency. For the pregnant women, enhanced quality of ANC will lead to improved health outcomes for both mothers and their babies in the near term as well as subsequently during their lifecourse by reducing the risk of hypertension, diabetes and adverse cardiovascular health outcomes. It will also increase women's satisfaction with public sector's health services and boost confidence in the health system and providers. For the healthcare providers, this will be a unique opportunity for their professional upskilling and delivery of integrated evidence based high quality ANC services, through improved record keeping, reporting, timely prompts, and easier work flow. This will lead to improved outcomes for the women, reduce costs, enhance health system performance and responsiveness to community needs. The policymakers will receive much needed evidence for implementing better approaches to enhance existing ANC services for improving women's health.



ANM explaining the current mHealth application being used to deliver ANC at subcentre Gundreddipalli, Medak.

Association of Persistent Organic Pollutants with Incident Diabetes among Urban Indian Adults

Nearly 20% of the 382 million adults with diabetes in the world live in India. While the contribution of risk factors such as unhealthy diets and physical inactivity has been evaluated, less traditional exposures such as persistent organic pollutants (POPs) remain unexplored. Epidemiological studies conducted in high-

income countries support an association of POPs with diabetes, and high levels of POPs persist throughout India. Further, animal studies suggest that POPs affect diabetes risk via action on beta cells, which is of particular interest because beta cell function declines at an earlier pathological stage in Indians. The proposed study will establish the first internationally-standardized laboratory for the measurement of POPs in human plasma in India. Stored plasma samples from an ongoing cohort study in Delhi and Chennai will be leveraged in a nested case-control study (n=236 diabetes cases and n=472 age- and sex-matched normoglycemic controls) to estimate the association of POPs with incident diabetes.

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

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

Objectives

1. Identify genetic variants associated with regional body fat distribution and lipid levels in Indian population for developing reliable instrumental variables (IVs) based on allelic risk scores.
2. Examine causal relationship between regional body fat distribution and levels of lipids and apolipoproteins using bidirectional Mendelian Randomization (MR) approach using IVs based on allelic scores.

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

The genome-wide resource that would be generated through this fellowship grant will address multiple research questions and will ensure long term research activities in genetic epidemiology in India. The findings

from the proposed study will provide evidence for the causality between increased regional adiposity and raised levels of lipids. This will help in formulating public health interventions and clinical management of the high risk patients and will address the growing burden of cardiometabolic disorders.

Non-Communicable Disease (NCD) Initiative for Capacity Building in the Field of Non-Communicable Disease (NCD) Prevention and Control in the State of Tripura

Recognizing the growing threat to public health due to the burgeoning Non-communicable Diseases (NCD), there is an urgent need to build capacity of the health system for effective prevention, management and control of NCDs. Insufficient number of adequately trained manpower is a major impediment to the health systems in implementing the National Program for Prevention and Control of Cancer, Diabetes, Cardio-vascular diseases and Stroke (NPCDCS). Hence there is an urgent need of taking initiatives to train and equip the medical professionals with clinical decision support tools to enable them in practicing evidence based NCD interventions through the public health system. In addition, the health information system also need to be strengthened to plan utilize the scarce resources efficiently.

In this premises, All India Institute of Medical Sciences (AIIMS), Public Health Foundation of India (PHFI) and Centre for Chronic Disease Control (CCDC) and), collaborated with the Government of Tripura to implement ‘NCD Initiative Tripura’ to build capacity for NCD prevention and control in the state of Tripura. The NCD initiative will cover hypertension and diabetes in the initial stage, but will expand to cover other chronic disease components such as cancer, COPD/Asthma, healthcare of elderly, palliative care, etc. In addition this NCD initiative will host and facilitate NCD related academic research and capacity building in the north-east India.

Major components of the NCD initiative Tripura are:

- Capacity building of State Medical Officers through certificate courses
- Training of Nurse Care-Coordination for NCD clinics
- Implementing mPower Heart modelled intervention at the NCD clinics as part of NPCDCS for improving access and quality of hypertension/diabetes care
- Establishing big data analytic capabilities at the state level for informed decision-making in program management
- Formation of a Technical Support Unit for NPCDCS

Chronic Obstructive Pulmonary Disease (COPD)

After ischaemic heart disease, COPD is the most common cause of mortality in India. COPD also goes undetected due to lack of equipment and infrastructure at primary health care level. This necessitates the development of simple, low-cost methods to screen people at risk of developing COPD.

What are we doing?

Developing and validating a strategy to utilize community health workers to screen people at risk at their doorsteps for COPD using a simple questionnaire and a pocket spirometer. Piloting the feasibility of community health workers led pulmonary rehabilitation program for improving the quality of life and functional status of people living with COPD.



Health Workers conducting Lung Function Tests using a Pocket Spirometer

Physical activity for prevention of NCDs

Increase in the population physical activity levels can prevent diabetes, hypertension and cardiovascular diseases, osteoporosis and many other conditions/diseases by 20-40 %. We work towards increasing the population physical activity levels through the following: Under Be He@lthy Be Mobile, M-active, a SMS based program to increase the physical activity levels with WHO and Government of India on through the M platform; Contributed to the Global Action Plan on Physical activity(GAPPA) 2018-2030 by WHO; gave technical inputs to the vision document “Tandarust Punjab of the government of India.

Physical activity and Built Environment: Healthy cities to provide a supportive environment

in daily life for people to be physically active, we are working on various aspects of measurement, monitoring and solutions for a physical activity promoting built environment which will spear- head PM Modi’s “Fit India” dream. We applaud the Honourable Prime Minister Modis “Fit india campaign. A fit India will lead to a strong and progressive India – says the PM. “Fit India” comes from being physically active in daily living, in all aspects of life, in all age groups, women and children. It is born out of “fit cities, fit pavements” fit cities and pavements which are walkable in addition to “fit worksites” and Fit-schools”. This is aligned to the National Multi-sectoral Action Plan for Prevention of NCDs for India with the overall objective to reach the WHO goal of a 25% reduction of NCDs by 2025. These is also aligned to make cities sustainable, age and disable friendly, to decrease pollution and WHO goals.



We worked on broad based indicators at the individual, and population levels, at multiple sites using multi-sectorial indicators. This is especially important in the context of the Smart cities initiative of the prime minister.

Walkability index of India: We developed a India specific walkability index (a composite index of 18 indicators) as we found that the international GIS based walkability index was not applicable for the Indian conditions. This was done by a combination of objective and subjective measures- indicators in Delhi. These were gleaned through science and experiential observations. These indicators came from experience and low and middle income country context. We then looked at its applicability in 2 highly walkable and 2 low walkable areas as defined by the international GIS based walkability index. After its development we subsequently explored its applicability “walkability index of India” as the international GIS based walkability index is not applicable in the Indian conditions.

Physical activity, active transport accidents injuries and health

Denmark is known for its supports for active transport. As an academic exercise we analysed



data from one of the best cities in the world for active transport and trends in cycling, accidents and diseases over a period of time, as a model and example for us. The objectives were to describe trends in cycling and cycle related injuries in Denmark overall and in the four largest Danish cities to see if changes in cycling trips and injuries were associated. Further, we compared number of prevented deaths, type 2 diabetes (T2D), cardiovascular diseases (CVD) and cancers with registered injuries. We analysed cycling trends over past 17 years in Denmark based on national statistics from 56 electronic counters as an ecological study. Cycle related injuries were collected by Statistics Denmark from hospital records. We also calculated the annual prevented disease and mortality accrued from the health benefits of physical activity in cycling based on relative

risk (RR) of cycling derived from population studies, number of cyclists, and number of death, T2D, CVD and cancers in Denmark. Since 1998 till 2015, cycling has increased by 10% in the whole country; the cycling related injuries however, have gradually declined and were only 45% in 2015 as compared to 1998 level. In Copenhagen specifically, cycling even increased more than 30% since 1998 while cycling related injuries decreased during the same period to one third. Diseases prevented in Denmark by cycling were annually 3328 T2D cases, 5742 CVD cases and 2076 cancer cases and prevented deaths were 6190. In comparison, in 2015, 26 cyclists were killed in the traffic, 512 were seriously injured and 297 experienced light injuries in the whole country. In conclusion, in Denmark, despite the number of cycling trips having steadily increased over the past 17 years cycling related injuries show a concomitant decline. Intuitively one might expect cycle related injuries to increase with increased cycling, but a decrease was observed in injuries. This shows that safe design and “vision zero and exceptional attention to active transport” can lower accidents as active transport increases. Additionally, the health benefits of cycling calculated from cohort studies were 21 times higher than risk of injuries.

The Global Syndemic of Obesity under Nutrition and Climate Change



The global interplay of obesity, undernutrition and climate change represents 'The Global Syndemic' and is the greatest threat to human and planetary health, affecting most people in every country and region. India faces the

triple burden of over nutrition, undernutrition and climate change. Until now, under-nutrition and obesity have been seen as polar opposites of either too few or too many calories. Similarly, climate change has been viewed as separate. In reality, they are all 3 driven by the same systems and policies. This report is about common drivers and common solutions to this "tri-demic" or "syndemic". We are already late, sitting at the pinnable and action is needed at the national level as well as ground level. Along with global colleagues we identified drivers and solutions to harness all through for meaningful action

m-Health, m-Wellcare Enhancing Uptake

Through qualitative observations and interviews in the we identified ways for enhanced uptake of the M-wellcare evidence based, resource and context specific decision support system by visiting PHC and CHC where the trial was ongoing.



Humanities and Ethics in Public Health

Qualitative studies

Health-Care for patients of heart failure We explored the facilitators and practical barriers

to access of Heart Failure Care in Kerala. We also looked at the perceptions, notions and barriers and facilitators to quit tobacco amongst patients who have suffered

Tobacco cessation amongst patient who have had a heart attack. We explored the experinces, pressures, supports patients feel and undergo after already having suffered a heart attack in the context of tobacco users. Tobacco cessation is an important intervention to reduce mortality from ischemic heart disease, the leading cause of death in India. In this study, we explored facilitators, barriers, and cultural context to tobacco cessation among acute coronary syndrome (ACS, or heart attack) patients and providers in a tertiary care institution in the south Indian state of Kerala, with a focus on patient trajectories. Patients who quit tobacco after ACS expressed greater understanding about the link between tobacco and ACS, exerted more willpower at the time of discharge, and held less fatalistic beliefs about their health compared to those who continued tobacco use. The former were motivated by the fear of recurrent ACS, strong advice to quit from providers, and determination to survive and financially provide for their families. Systemic barriers included inadequate training, infrequent prescription of cessation pharmacotherapy, lack of ancillary staff to deliver counseling, and stigma against mental health services



Heart failure care. Heart Failure is a leading cause of death worldwide and in India, yet the qualitative data regarding heart failure care are limited. To fill this gap, we studied the facilitators and barriers of heart failure care in Kerala, India. Methods and results: During January 2018, we conducted a qualitative study using in-depth, semi-structured interviews with 21 health-care providers and quality administrators from 8 hospitals in Kerala to understand the context, facilitators, and barriers of heart failure care. We developed a theoretical framework using iteratively developed codes from these data to identify 6 key themes of heart failure care in Kerala: (1) need for comprehensive patient and family education on heart failure; (2) gaps between guideline-directed clinical care for heart failure and clinical practice; (3) national hospital accreditation contributing to a culture of systematically improving quality and safety of in-hospital care; (4) limited system-level

attention toward improving heart failure care compared with other cardiovascular conditions; (5) application of existing personnel and technology to improve heart failure care; and (6) longitudinal and recurrent costs as barriers for optimal heart failure care. Conclusions: Key themes emerged regarding heart failure care in Kerala in the context of a health system that is increasingly emphasizing health-care quality and safety. Targeted in-hospital quality improvement interventions for heart failure should account for these themes to improve cardiovascular outcomes in the region

Physical Activity, Sitting, and Risk Factors

of CVDs: a cross-sectional analysis of the CARRS study. We looked at what happens when you replace 30 minutes of sitting time with 30 minutes of activity. We aimed to estimate the associations between substituting 30-min/day of walking or moderate-to-vigorous physical activity (MVPA) for 30 min/day of sitting and

cardiovascular risk factors in a South Asian population free of cardiovascular disease. Substituting 30 min/day of MVPA for 30 min/day of sitting was associated with 0.08 mmHg lower diastolic blood pressure ($\beta = -0.08 [-0.15, -0.0003]$) and 0.13 mg/dl higher high-density lipoprotein cholesterol ($\beta = 0.13 [0.04, 0.22]$). Substituting 30 min/day of walking for 30 min/day of sitting was associated with 0.08 kg/m² lower body mass index ($\beta = -0.08 [-0.15, -0.02]$), and 0.25 cm lower waist circumference ($\beta = -0.25 [-0.39, -0.11]$). Essentially replacing 30 minutes of sitting had direct benefits on blood pressure, sugar levels and lipids too

ICMR- Mtech internship- This is a competitive internship program started by ICMR to give fellows the interface of medicine, engineering and public health to come up with innovations. It's a competitive internship. We were Invited by ICMR to mentor the fellows along with other faculty from ICMR and IIM – Ahmedabad.



Public Health Nutrition

The area of public health nutrition aims at improving the health of population by improving the nutrition status of the population and preventing the nutrition related diseases. PHFI is undertaking studies focused on improving the nutrition status of children, women and public in general through various means:

- Assessment of mid-day meal fortification in different states of India
- Improving Micronutrient deficiency among children and adolescents
- Food environment and cafeteria policies in educational institutes
- Inter-disciplinary approach to ensure food security
- Examining dietary diversity and nutritive value of indigenous foods in Indian populations
- Maternal DHA supplementation to improve offspring neurodevelopment
- Complementary feeding practices and children malnutrition
- School based intervention for reducing sugar sweetened beverages
- RCT to identify efficient dose of maternal Vitamin B 12 supplementation for improving infant B12 deficiency and neuro development

Some of the major projects are:

Maternal Docosahexaenoic Acid (DHA) Supplementation and Offspring Neurodevelopment in India (DHANI-2)

The prevalence of underweight and stunted children in India is among the highest in the world. Child under-nutrition and stunting have enormous consequences for nations' productivity and failure to tackle malnutrition diminishes the potential for economic growth. Studies show a strong association between nutrition and cognitive development. This link is the strongest during the first 1000 days. One strategy to enhance neurodevelopment among children during these 1000 days can be maternal DHA supplementation. DHA is a structural component of human brain and retina, and can be derived from marine algae, fatty fish and marine oils. Since diets in India are largely devoid of such products, the plasma DHA levels in Indian populations are quite low. DHA is safe to consume during pregnancy and lactation.

Thus we propose to supplement pregnant Indian women from <20 weeks' gestation through 6 months postpartum, to ascertain the effect of DHA on:

1. Infant neurodevelopment at 12 months.



2. Infant body size and morbidity patterns through 12 months.

In addition, we will collect biochemical indices (blood and breast-milk) from mother-child dyads to estimate net changes in their DHA levels in response to supplementation.

The trial was initiated in JN Medical College, Belgaum in Jan 2016 and successfully recruited 957 pregnant women. They were followed up through delivery, 1 month, 6 month and 12 months postpartum. We ended data collection from 870 mother-child pairs in April 2019. We are currently performing data entry and data cleaning. Our trial protocol is published and available at:

<https://bmcpediatr.biomedcentral.com/articles/10.1186/s12887-018-1225-5>

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

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.

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.

Study Design: A cross sectional study design along with a longitudinal component to capture seasonality in the dietary intake patterns of specific tribal communities.

Target population: Santhals are the most populous tribal community in Jharkhand, followed by Oraon, Ho and Munda. The study focuses on three of these tribes, namely Santhals, Ho and Munda and another primitive tribal group called Sauria Paharia.

Activities: Qualitative enquiries regarding food environment of tribal communities. Free listing of indigenous foods, factors affecting their consumption, resilience of indigenous food systems to climate variability.

Quantitative methods: Household surveys; Dietary surveys; household food security assessment; Nutritional status assessment: Individual level dietary intake, anthropometric and biochemical assessment. Identification and taxonomic classification of edible indigenous plants species and animal foods, Nutrient analysis of indigenous food samples.

There is no intervention component in this project. We are collecting information on indigenous and traditional foods and estimating their nutritive values. We are also understanding the consumption of these foods in the daily diets of women and children in the tribal communities. The nutritional status of the women and children are also assessed.

The findings of the study will help in development of recommendations on evidence-based, nutrition-sensitive agricultural and other behaviour change communication interventions for encouraging production and consumption of indigenous foods to address food and nutrition security in vulnerable communities.

A Randomised Controlled Trial to Compare Two Different Doses of Maternal B12 Supplementation in Improving Infant B12 Deficiency and Neurodevelopment

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. Up to 74% women are reported deficient during antenatal period in some populations. Deficiency of B12 in newborns is problematic given the role Vitamin B12 plays in neuronal health (brain and nerve cells health) and in the development of foetal and infant brain. We propose 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 propose to undertake 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 Gynaecology and Obstetrics at Sitaram Bhartia Institute of Science and Research, New Delhi and Paropakar Indrarajyalaxmi Maternity 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 >35 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. At childbirth, the delivery and post-delivery course of the new-born will be monitored and documented for any problems potentially influencing neurodevelopment. After discharge, all neonates will be routinely followed with preventive and vaccination care as per standard

protocols. During routine visits, anthropometric measurements including weight, length and head circumference will be recorded and signs of micronutrient deficiency (especially anaemia and rickets) will be noted. Any illnesses suffered by the child in the intervening period will be recorded. Supplementation of the mother in both groups will be stopped at 6 months after childbirth followed by evaluation at 9 months. The neurodevelopmental assessment and home environment assessment will be done by a developmental therapist and complementary feeding assessment by a nutritionist. Along with routine sampling for Hb screening at 9 months, infant B12 levels status will be determined. The assessment of the infant neurodevelopment scores, the biochemical measures of B12 status of the infant and those of the mother will then be compared between the two groups to see if the neurodevelopment and/or B12 status in the group receiving the higher dose (250 mcg) is better and safe. A positive or a negative result will generate scientific evidence on whether B12 should be supplemented in vegetarian pregnant women with a view to preventing B12 deficiency and its neurodevelopmental consequences in the infant. This will also allow the development of policies and frameworks for routine/wider usage of this supplement in high-risk populations.

Data recruitment is at full swing at two trial sites (115 recruited in Delhi and 60 recruited in Nepal)

Evaluating the Effect of one Full Meal a Day in Pregnant and Lactating Women: (Feel)

The overall aim was to study the impact of one full meal (OFM) provided to pregnant women in improving pregnancy and infant outcomes. The evaluation is proposed in four taluks, namely Manvi (Raichur), H.D Kote (Mysore), Saundatti (Belgaum) and Pavagada (Tumkur). Pregnant and lactating women receiving one full meal provided by the WCD. Participants were recruited at their 1st/ 2nd trimester and baseline data on demography, health and obstetric history and information on the services availed from the Aanganwadi centres was elicited. Haemoglobin test were done at second trimester and at third trimester. Monthly weight of the mothers was monitored and newborn assessment of weight and length was done after delivery.



Pregnant and lactating women receiving one full meal at an Aanganwadi centre

Social Determinants of Health & Disability

The social factors, including economic and socio-cultural factors influence the health status of a population to a great extent. This is a very diverse thematic area including socio-demographic factors, economic indicators, human behaviors and health care access. The current PHFI studies under this area are focused on following topics:

- Intersecting women's migration, work, income and health to improve women health in general
- Development of an application to assess disability and the eligibility for the public disability benefits
- Eliminating avoidable blindness due to Diabetic Retinopathy (DR) and Retinopathy of Prematurity (ROP)
- Improving eye health in school going children through the use of portable eye examination kit (PEEK)
- Nexus between water quality & quantity, sanitation & hygiene, agriculture and health
- Comparing perspectives of vulnerable groups and health systems
- Development of training module for human right and gender equality
- Providing barrier free access to disabled population

Some of the major projects are:

Synthesis of Evidence on the Social Determinants of Health to Inform Research and Policy in India

In this project, we facilitated the development of such a system for India through a rigorous scientific effort aimed at a high-quality and policy-relevant synthesis of the available evidence on social determinants of health in India through original advanced analyses. This effort integrated diverse evidence to identify the best ways to use the available evidence on social determinants of health and identify the major gaps to inform further development of research and policy to effectively reduce health inequities in India. Through close consultation with key stakeholders, we explored development of a national health equity surveillance system and expand this research into a dynamic knowledge hub on social determinants of health that could provide rigorous information to develop policies and programmes in India to reduce health inequities and facilitate their impact evaluation

SSPHERE - Sight Sim PEEK Health Education for Refractive Errors

This project was an extension of the original innovation: evaluation of PEEK (portable eye examination kit) for vision screening by teachers, using the SightSim app to educate affected children and their parents carried out in Kenya. A higher uptake of referrals was clearly demonstrated in the original innovation. In the extension of this project, this innovation is modified for Indian settings where refraction is undertaken in schools and spectacles delivered to children. In India SightSim educational materials was used to educate all children aged 11-15 years. The Peek School Screening system was upgraded to include an app for

optometrists and multiple care providers. Effectiveness was assessed in a trial with the outcome being spectacle wear at 3-4 months.

Guiding Pro-Poor Investments In The Nexus Among 'Domestic Water Quality And Quantity', 'Sanitation And Hygiene' And Agriculture From The Bottom-Up (Ag-Watsan Nexus)

Growing competition of water for productive uses among sectors, especially irrigated agriculture and related local multi-purpose water systems and drainage, is an added challenge in the effort to improve drinking water quality and quantity. Moreover, water

quality at source often differs from water quality at domestic use, due to handling. Addressing these challenges will require increased water and sanitation investments, including investments for behavioural change and enhanced knowledge at household and community levels. While improved water quantity and quality and improved sanitation and hygiene directly and indirectly improve health and nutrition, each of these four action areas and their interface with irrigation agriculture have different impacts (per unit of investment) on health and nutrition outcomes. The objective of this project was to support 2 doctoral students for doing their Doctoral work on WATSAN and its nexus with health.

The India State-Level Disease Burden Initiative

Is a collaborative effort between the Indian Council of Medical Research (ICMR), Public Health Foundation of India (PHFI), Institute for Health Metrics and Evaluation (IHME), and a number of other key stakeholders in India, including academic experts and institutions, government agencies and other organizations, under the aegis of the Ministry of Health & Family Welfare. About 300 leading scientists and experts representing close to 100 institutions across India are engaged with this collaborative work. The work of this Initiative is overseen by an Advisory Board consisting of eminent policymakers and involves extensive engagement of 16 domain expert groups with the estimation process. The Health Ministry Screening Committee at the Indian Council of Medical Research and the ethics committee of the Public Health Foundation of India approved the work of the India State-Level Disease Burden initiative.

The first set of findings by the India State-Level Disease Burden Initiative on the variations in epidemiological transition across the states of India were presented in a Report released by the Vice-President and Health Minister of India and in a scientific paper published in The Lancet in November 2017:

- Indian Council of Medical Research, Public



Health Foundation of India, and Institute for Health Metrics and Evaluation. India: Health of the Nation's States — The India State-Level Disease Burden Initiative. New Delhi: ICMR, PHFI, and IHME, 2017.

<https://www.icmr.nic.in/sites/default/files/reports/2017%20India%20State-Level%20Disease%20Burden%20Initiative%20-%20Full%20Report.pdf>

<https://phfi.org/the-work/research/the-india-state-level-disease-burden-initiative/>
<http://www.healthdata.org/disease-burden-India>

- India State-Level Disease Burden Initiative Collaborators. Nations within a nation: variations in epidemiological transition

across the states of India, 1990-2016 in the Global Burden of Disease Study. The Lancet 2017.

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32804-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32804-0/fulltext)

The Initiative has subsequently published detailed topic-specific papers in the Lancet journals in 2018 on state-level trends of cardiovascular diseases, diabetes, chronic respiratory diseases, cancer, suicide, and air pollution, as well as a commentary in The Lancet on the relevance of these findings for health policy in India:

Women & Child Health

Improving maternal and child health is a key to progress of a developing country like India. PHFI is conducting research focused on different aspects of women and child health including safer pregnancies and child birth, improving nutrition and overall health of children and adolescents and addressing under 5 morbidity and mortality. The recently completed and ongoing studies are focused on following research topics:

- Strengthening health care services for better ANC coverage
- Develop and implement an electronic decision support system (EDSS) to assist frontline healthcare providers (FWs) to improve the antenatal care, including Pregnancy Induced Hypertension (PIH) and Gestational Diabetes Mellitus (GDM)
- Improving quality of care in labor rooms and neonatal ICUs and home based neonatal care to address maternal and neonatal mortality and morbidity
- Improving quality of care of family planning services; and for safe abortion services
- Intervention studies to improve health of children under 5 years; and prevention of child sexual violence; and overall child welfare, development and empowerment
- Addressing child sex ratios in north eastern states
- Improving diagnostic efficacy of non-invasive methods for detection of anemia
- Maternal nutritional supplementation, like DHA supplementation, to improve the offspring neuro-development
- Prenatal and postnatal exposure to pesticides effecting the neurodevelopment of the infants
- Evaluating Bihar technical support program for improving public health and nutrition systems
- Neonatal mortality evaluation in UP
- Improving Antenatal care to enhance adherence to national ANC guidelines for addressing the burden of gestational diabetes and pregnancy induced hypertension
- Evaluating interventions for reducing neonatal mortality in Bihar
- Integrated assessment of cognitive health during early childhood by different health care providers
- Evaluate impact of community engagement and ownership approach in improving immunization coverage
- Evaluating effect of one full meal per day in improving maternal and child health

Some of the major projects are:

Strengthening the Quality of Reproductive Health Services in India

The objective of this project is to contribute to better maternal health through three types of activities - systematic reviews of existing literature and evidence linking antenatal risk to obstetric outcomes and effectiveness of program interventions; field testing and validation of a tool to enable more effective assessment and responses to antenatal risk; a retrospective prevalence survey of respectful maternal care combined with qualitative non-participant observations and interviews.

Hyperglycaemia In Pregnancy and the Risk of Chronic Diseases (MAASTHI)

The study is being conducted at public hospitals in Bangalore and so far more than 3000 pregnant women have been recruited into the study. The objective is to prospectively assess the effects of glucose levels in pregnancy on the risk of adverse infant outcomes, especially in predicting the possible risk markers of later



Anthropometric measurement of a child at 14 weeks after delivery



Chest circumference measurement of a child at 14 weeks by RA

chronic diseases. So far we have found around 14% GDM prevalence in the cohort as opposed to a mere 4% reported at other government hospitals where GDM screening is not in place. Follow ups are being conducted at birth, 14 weeks and then annually until the child is 4-year-old.

Maternal Antecedents of Adiposity and Studying the Transgenerational role of Hyperglycemia and Insulin (MAASTHI) is a cohort study in the public health facilities in Bangalore, India. The objective of MAASTHI is to prospectively assess the effects of glucose levels in pregnancy on the risk of adverse infant outcomes, especially in predicting the possible risk markers of later chronic diseases. The primary objective of the proposed study is to investigate the effect of glucose levels in pregnancy on skinfold thickness (adiposity) in infancy as a marker of future obesity and diabetes in offspring. The secondary objective is to assess the association between psychosocial environment of mothers and adverse neonatal outcomes including adiposity. Pregnant women with a gestational period of less than 36 weeks are recruited. A baseline questionnaire is administered that includes socio-economic status, Standard of Living Index, 24-hour dietary recall, dietary habits, physical activity, obstetrics history,

psychosocial stressors and social support. Weight, height, sitting height, skinfold thickness of biceps, triceps and subscapular skinfold will be recorded. Blood pressure is measured using an automated BP apparatus. All women will undergo an Oral Glucose Tolerance Test (OGTT) at 24 to 36 weeks of gestation. They are asked to fast for a minimum 8 hours prior to the study visit, where fasting samples are drawn. Subsequently, 75 g of glucose is administered orally and the postprandial sample is drawn after two hours. The study aims to recruit 5000 pregnant women and follow them and their offspring for a period of 4 years. So far 4710 pregnant women have been recruited and 2973 OGTT have been completed. Followup of the participants and their children is in progress. Total number of completed followups till date during at birth, 14 week, 1 year, 2 year and 3 year followups are 1997, 1257, 899, 525 and 49 respectively. We have published 3 papers in international journals, another 2 are under review and for several other papers data analysis is being conducted. The study has due approvals of Department of Health, Government of Karnataka, Bruhat Bengaluru Mahanagara Palike(BBMP) and Institutional ethics committee.

Diagnostic Efficacy of Digital Hemoglobinometer (Truehb), Hemocue and Non Invasive Devices for Screening Patients for Anemia in The Field Settings

The burden of anemia or low haemoglobin in the blood is high in our country. This leads to several problems that can affect the health of individuals. The routine tests for the estimation of anemia need to provide reliable results. The most reliable methods are complicated, and involve expensive laboratory set-up. We are planning to test a simple test that would provide reliable estimates of hemoglobin concentration using invasive/non invasive devices and thus aid in the diagnosis of anemia in the field setting. We will recruit eligible individuals attending OPDs in field practice areas, who are willing to participate in our study and who do not suffer from any condition that impedes

blood collection. We will test their haemoglobin concentration using 4 different methods.

The study aims to establish the diagnostic accuracy and cost effectiveness of the devices. Data will be collected by field technicians and ANMs in the field. A total of 600 adults are required for diagnostic accuracy of each device. The most cost effective and accurate device will be tested in extremes of weather conditions (Rajasthan and Kashmir) for their effectiveness. The results of the study will inform the policy on the selection of most appropriate device for national programmes.

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

The aim is 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. GUIDES study involves both qualitative and quantitative components. We have completed qualitative study, which was a contextual study of socio-cultural (Individual, family, community) and health system that restricts timely screening and effective management of GDM in India. In-depth interviews and Focus Group Discussion (FGD) were conducted among health care providers (Doctors, Nurses), pregnant women seeking ANC (diagnosed with GDM and without GDM) and their family members. In addition, initial assessment and preparation for conducting the randomized control trial (RCT) is underway.

**CENTRES OF
EXCELLENCE**



The Ramalingaswami Centre on Equity and Social Determinants of Health

Over the past year (October 2018 to September 2019), the Ramalingaswami Centre on Equity and Social Determinants of Health advanced its goal of carrying out cutting-edge research. It also positioned itself to carry out teaching and training, and contributed to policy development, both nationally and internationally.

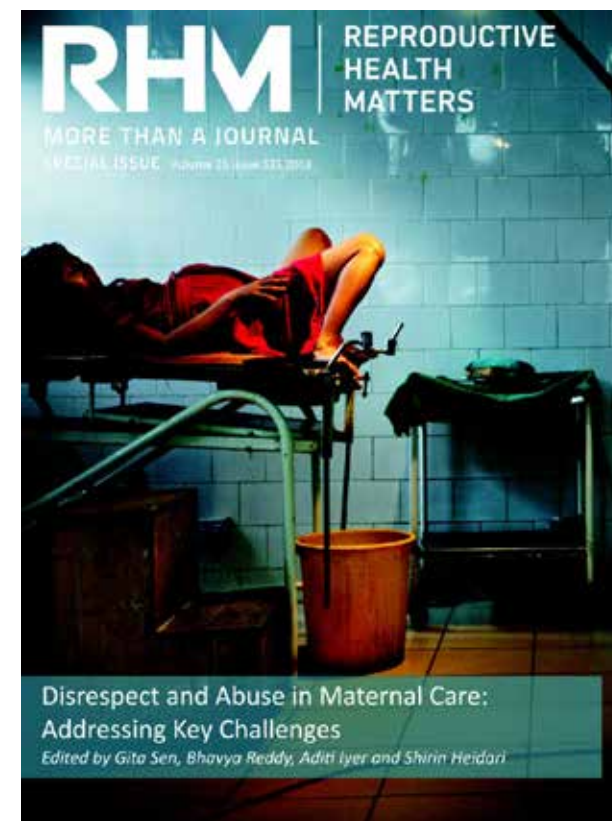
The Centre carried out descriptive research on the quality and drivers of obstetric care in public health institutions. Given its timing, this research serves as a qualitative assessment of LaQshya – the Ministry of Health and Family Welfare's *Labour Room Quality Improvement Initiative*. The quantitative data are currently being validated and the qualitative data are being transcribed. These data will be analysed during the next year.

The Centre also produced two reports for WHO's Department of Reproductive Health and Research, Geneva, that are being revised for publication in peer reviewed journals. The first report focuses on how to better *understand* and *assess* the actual working of an accountability strategy for health programmes, and the second report focuses on the manner and extent to which training programmes for frontline health

workers on sexual and reproductive health and rights incorporate human rights and gender equality concerns.

The Centre won a major international bid and was appointed a Regional Mentor Institute (RMI) by WHO's Alliance for Health Policy and Systems Research. The RMI's remit is to advance thinking and work on gender and intersectionality in health policy and systems research. The Centre will mentor early career research fellows from the SEARO region over two years and develop an online course that can be freely accessed. Currently, the syllabus is being developed and fellows are being selected.

The Centre, through its Director, is actively involved in policy negotiations and debates within the UN System and at other important policy driving institutions. Prof. Sen is a member of the Lancet Commission on A Synergistic Approach to Universal Health Coverage, Health Security and Health Promotion since 2018. She also delivered the Keynote Address titled, "Equity in Universal Health Care: how to follow the money" at the World Bank's Third Annual UHC Financing Forum in Washington DC on 20 April 2018 <https://www.worldbank.org/en/events/2017/10/20/third-annual-universal-health-coverage-financing-forum#4>. She was also appointed as a member of the Independent Accountability Panel for the UN Secretary General's Every Woman, Every Child, Every



Adolescent Initiative in 2018. In 2019, Prof. Sen was recognized as a "Champion of Change" in UNFPA's The State of World Population Report 2019 (25th Anniversary Issue). She delivered a Keynote Address, "Universal Health Coverage: Everyone Everywhere" at the Celebration of World Health Day 2019 at WHO's SEARO Regional Office & WHO India Country Office in New Delhi on 5 April 2019.

Respectful maternity care: The Ramalingaswami Centre's contribution to an evolving field

Respectful obstetric care is a global health goal that has sparked new empirical research across different continents, an advocacy agenda and a growing number of interventions, including the Ministry of Health and Family Welfare's Labour Room Quality Improvement Initiative (LaQshya). Over the past three years, the Ramalingaswami Centre on Equity and Social Determinants of Health has been steadily making important contributions to this evolving field of inquiry. The team at the Centre strongly supports every woman's right to maternal safety and see disrespect and abuse as important barriers. Informing our work are 14 years of cutting-edge research on maternal health (primary empirical

research as well as action and implementation research) with poor rural communities in Koppal district, Karnataka.

- Addressing the conceptual and methodological fuzziness in a field that has tended to be dominated by a few Northern institutions and universities, a team at the Centre guest edited a special issue of the international peer-reviewed journal Reproductive Health Matters (Sen et al. 2018) with an editorial and conceptual overview (Sen et al. 2018a, 2018b) to clarify and advance thinking on the subject. The special issue with nine papers from both well established and newer authors is widely read and beginning to be cited.
- The Centre is also carrying out descriptive empirical research on the quality of obstetric care in public health institutions and on the forces that appear to drive it: (1) intersecting socioeconomic inequalities,

(2) medical education and (3) institutional structures and processes. Given its timing, this research serves as a qualitative assessment of LaQshya. The assessment comprises (1) in-depth interview-based qualitative research with doctors at different rungs of a hospital's hierarchy and nurses, and (2) a survey of the experiences of women delivering in public health institutions. During the first phase of this work, the Centre conducted qualitative research in two well established medical college hospitals in Karnataka. Following this, the Centre carried out a survey of women who recently delivered in two contrasting districts of Karnataka: Bidar and Shimoga. Qualitative research was also conducted with the providers of obstetric care services in public hospitals in these very districts. Currently, the empirical data are being analysed.

South Asia Centre for Disability Inclusive development and Research (SACDIR)

One billion people live with disabilities globally in an era where the UN Sustainable Development Goals (SDGs) sets target for ensuring healthy lives for all at all ages and the WHO targets one more billion (Triple Billion) people benefitting from Universal Health Care (UHC). In order to achieve the set targets, UN and WHO must include these one billion, provide access and value the rights of persons with disabilities (PWDs). India being a signatory of these action plans is obliged to make substantial efforts to provide access to health care and rehabilitation for PWDs and include them in the agenda for national development.

The South Asia Centre for Disability Inclusive Development and Research (SACDIR), a centre for excellence in disability was established in 2010 under the aegis of Public Health Foundation of India (PHFI) in collaboration and with support from the London School of Hygiene and Tropical Medicine (LSHTM) and its component institution, the International Centre for Eye Health (ICEH) London UK. The mission of this centre is inclusive millennium: evidence for empowering Persons with Disabilities.

SACDIR strives to achieve its mission through various strategic activities such as

1. Implementation/operational research related to disability.
2. Capacity building and skilling of professionals involved and persons interested in disability.
3. Developing scalable innovations for disability inclusive development

Implementation Projects

- **Retinopathy of Prematurity:** a project to reduce severe retinopathy of prematurity (ROP), and visual loss from ROP by improving the quality of neonatal care by establishing models that are sustainable and scalable for the detection and treatment of severe ROP which can be integrated into the government of India's health system at every level across 4 states in India. Funded by the Queen Elizabeth Diamond Jubilee Trust.
- **Diabetic Retinopathy:** This project aims to develop and integrate services for detection and treatment of diabetic retinopathy into government health systems across 10 States in India. Funded by the Queen Elizabeth Diamond Jubilee Trust.
- **Contemporary Clinical Practice:** a series of two day short course on disability and health for medical officers and other health professionals working at the district

level was organized both in Telangana (10 districts) and Andhra Pradesh (3 districts). We have trained about 422 health professionals (319 in Telangana and 112 in AP) through this capacity building programme. Funded by HT Parekh Foundation

- **Empowering the challenged:** a DVD-based patient education intervention was developed in Hindi for self or supported management of disabilities following stroke in India. Funded by HT Parekh Foundation
- **Big Data Research:** SACDIR has developed a web-based disability survey software that could serve as an open source tool for disability researchers worldwide to collect data with the help of technology. Funded by HT Parekh Foundation
- **Building Capacity:** A manual on disability that is focussed on enabling institutions and health professionals at the grass root level with complete resources for understanding contemporary concepts of disability, planning, implementing and managing disability-related programs was developed. Funded by HT Parekh Foundation
- **Awareness and Skill Building:** SACDIR has developed a virtual disability skills lab as a state of the art, advanced lab for training and research in disability therapeutics and diagnostics for various kinds of stakeholders including PWDs. The disability

skills lad has a virtual interactive museum and virtual 3D immersive virtual reality environment connected to a collaboration software which helps any individual to experience physical visual and hearing disability and overcome it virtually. Funded by HT Parekh Foundation

Research Projects

- **Barrier free access to PWDs:** It is an assessment of 150 selected public buildings, on the extent of barrier free access to people. Funded by Govt of Telangana - Department of Disability
- **Evaluation of technology based intervention to increase screening uptake of diabetic complications:** A study to increase your awareness on managing diabetes and preventing complications due to long standing diabetes. Funded by HT Parekh Foundation
- **Care for stroke Clinical Trial:** This trial will provide reliable evidence as to whether a smartphone-enabled carer-supported educational intervention can reduce disability and dependency in activities of daily living among stroke patients. Funded by India Alliance Wellcome-DBT
- **ROP Doctoral study:** Comparison of two approaches for screening for ST-ROP in two diverse states of India and their potential for scaling up in India. Funded by the Queen

Elizabeth Diamond Jubilee Trust.

- **Climate change and UVR Impact on eye health:** to study the effect of environmental factors and global warming on the prevalence and/or exacerbation of eye diseases like cataract, dry eye, Pterygium and vernal kerato conjunctivitis in coastal South India. Funded by ICMR
- **Assessment of disability status:** a study to develop a comprehensive app to assess the disability status of a patient and certify the patient's eligibility for public disability benefits. Funded by Google India Pvt Ltd

Academic Training & Workshop

- **Disability Special Track – Masters in Public Health programme:** As a part of the MPH programme, SACDIR organizes a special track on disability for the post-graduate students. This is a 12 credit based specialised programme for participants interested in learning public health disability especially in the context of low and middle income countries. The overall aim of this special track is to sensitize participants regarding the importance of disability and its relevance to public health, especially in the context of India and other low and middle income countries.
- **Public Health Planning for Hearing Impairment (PHPHI):** This short course is

being organized every year in collaboration with the London School of Hygiene and Tropical Medicine (LSHTM) and the International Centre for Evidence in disability (ICED), United Kingdom since 2010. The aim of this course is to enable participants to understand the magnitude and causes of hearing impairment and the challenges of providing hearing health in developing countries. 55 trainees attended the short course in 2018. Funded by CBM.

- **Technical Support:** SACDIR provides technical support to the department of Women Children disabled and Senior citizens (WCDS), Government of Telangana, India. Funded by Disability Commissioner, Govt. of Telangana.
- **Journal:** SACDIR manages the South Asia edition of the Community Eye Health Journal (CEHJ) which is an indexed journal. While creating public awareness on preventive health, the journal is distributed to public at large free of cost.
- **Upcoming Collaborations:** SACDIR is in the process of establishing collaboration with The Seva Foundation USA, Microsoft India, Novartis India and Google.

Snapshots of activities of SACDIR



Centre for Chronic Conditions and Injuries (CCCI)

The Centre for Chronic Conditions and Injuries (CCCI) at the Public Health Foundation of India is a global leader in chronic disease research and has led several innovations aimed at reducing chronic disease burden and improving survival not only among Indians but in several LMICs. Currently there are about 25 ongoing projects under the umbrella of CCCI and its partners. The domains include cardiovascular diseases (CVD), prevention of diabetes and other CVD risk factors, non-alcoholic fatty liver disease, worksite lifestyle program for reducing diabetes, air pollution and cardio-metabolic diseases and asthma, sustainable and healthy food systems, prevention of gestational diabetes, yoga care in several aspects of cardiovascular care and prevention of diabetes and quality of health care in diabetes management. CCCI also encompasses programme to demonstrate cost-effective scalable approaches for effective diabetes and high blood pressure management.

More than 60 manuscripts have been published during the last one year in various high impact journals like Lancet (Impact Factor, IF-59), JAMA (IF-51.2), Circulation (IF-23), European Heart Journal (IF-23), Lancet Global Health



(IF-15) and Lancet Planet Health (IF-10.7). In addition a comprehensive Tandon's Textbook of Cardiology was edited by Prof. D Prabhakaran which serves as the needs of current and future generations of cardiology trainees in India and other emerging economies. The high impact of the publications is reflected by the average Impact factor of CCCI Publication is 11.02 and Average Impact factor between 2018-Till Sep'19 is 8.93 and number of publication between the said period is 190. These publications are highly cited and largely have a health system and policy translation focus.

Capacity building workshops, dissemination meetings, presentation of results at various scientific fora have been organised regularly. Media outreach and community outreach activities were also conducted to improve the awareness of air pollution related health impacts. Various white papers and policy briefs have been shared with the stakeholders working in space of non-communicable diseases.

Capacity building and training of health providers in prevention and management of various non-communicable diseases are major part of CCCI, which are reported in the section on training updates.

Several awards and accolades have been received by the team for their work. To name a few, Prof. D Prabhakaran was recognised by the Quality Council of India (QCI) for his outstanding contribution to public health. He was awarded the QCI - D.L. Shah Champion Award in Pune on 12th February 2019. Dr Sailesh Mohan was selected as the 2018 Paul Dudley White International Scholar at 2018 Scientific Sessions. This award recognizes authors who contributed to the highest ranked accepted abstract from each country.



Centre for Environmental Health (CEH)

The Centre for Environmental Health was launched by the Honourable Union Minister for Health & Family Welfare, Shri JP Nadda in May 2016 as a joint initiative of the Public Health Foundation of India and the Tata Institute of Social Sciences, with support provided by Tata Sons and Tata Consultancy Services Ltd. The Centre operates under the aegis of an eminent Governing Council which is led by Mr. S. Ramadorai and includes three members of Parliament and distinguished scientists, apart from a Research Advisory Council and a Steering Committee.

The aim of the Centre is to build capacity in India in environmental health research and training, and to provide evidence-informed policy guidance based on research in several thematic areas including air pollution; water; sanitation and hygiene; chemical exposures; climate change, and other environmental issues of concern. The research mandate of the centre operates upon the principle of influences across the life-course.

The overarching goals of the centre are: -

- **Action** towards 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,

Research - Some of the pivotal research and implementation projects include work on Air pollution and cardio-metabolic diseases, through the GEOHealth (Global Environmental and Occupational Health) Hub, Health impact assessments near thermal power plants, respiratory health of asthmatic adolescents, White Paper on situation Analysis of Household Air Pollution and Health in India, enhancing WASH in schools, communities and healthcare facilities, assessing health risks for pesticide users and environmental risk factors for cancers, along with establishing an Air Pollution Monitoring Network in hospitals and providing a platform for health technology development

to address environmental issues. [*Detailed research updates are provided in the research section]

Capacity Building - The Centre has placed considerable focus on developing a cadre of environmental health researchers in India through a number of pathways. These include providing research development grants to mid- and senior-level researchers, thesis fellowships for Master's students to explore innovative research questions in environmental health, short courses for skill-building to conduct environmental health research and a module on environmental and occupational health for MPH students.

Technical Consultation & Advocacy

Technical inputs and stakeholder consultations for evolving policy guidance are a regular feature amongst the centre's core activities and have culminated in several reports, policy briefs and technical guidance documents for the National and state-governments. The focus is also to work in collaboration with nodal ministries and organisations including Ministry of Health & Family Welfare(MoHFW), Ministry of Environment, Forests and Climate Change (MoEF &CC), National Centre for Disease Control(NCDC), National Health Systems Resource Centre(NHSRC), WHO, UNEP, UNDP, UNICEF, FAO and other national and state agencies.

CEH researchers and faculty members are also deeply engaged with the policy landscape on environmental health through membership of various government committees including those of the Ministries of Health, Environment and the National Disaster Management Agency. We also contribute to work with State governments such as the governments of Gujarat, Maharashtra, Karnataka, Odisha, Delhi, Punjab and others.

Most recently, the team contributed to the initiative by NHSRC for incorporating the Green and Climate resilient healthcare rules and guidelines into the latest Indian Public Health Standards. This effort is to bring in a dialogue and policies on climate-smart healthcare to reduce healthcare carbon footprint in the Indian health systems. Additionally, a collaborative effort with the Department of Science, Technology and Environment, Government of Punjab will see our researchers contributing to the development and implementation of two critical programs- Mission Tandrast and Mission Innovate Punjab to foster research and innovation in the state of Punjab.

Partnerships and Collaborations at the international level, the Centre is forging academic and educational collaborations under the Israel Environmental Health Fund,

University of Michigan, University of Berkeley, University of Iowa, Columbia University, Georgetown University (all in the USA), Karolinska Institute, Sweden and collaborators in Germany, Finland, UK and Africa.

The Centre is also advancing sectoral engagements to strengthen research and policy work on environmental health across India. MoUs have been signed and partnerships established with National Institute for Advanced Studies (NIAS), Indian Institute of Science, Bengaluru and SASTRA University in Thanjavur for joint research in mutual areas of interest. Partnerships with NGOs like KHUSHHI (Kinship for Humanitarian, Social and Holistic Intervention in India) are established to enhance the pilot “WASH in schools” programme. The project will focus on developing and delivering a curriculum on “WASH modules” in schools in low economic settings and to utilize the school as a platform and children as agents to generate behavioural change among communities and improve related health outcomes.

Awareness Building, Remediation and Implementation/Action Research the Centre is committed to engaging in impactful community-based interventions across its programmes by working with community based organizations

to increase awareness amongst various stakeholders at the community level and ensure effective outcomes of the Centre’s activities. The centre has carried out a number of activities to raise public awareness on environmental risk factors including air pollution, WASH, e-waste through collaborations with civil society groups, NGOs and schools across the country.

On World Environment Day 2019, the Centre supported UNEP’s call for the ‘Mask Challenge’ by inviting participation from researchers, staff members and MPH students-IIPH Delhi to build awareness on this year’s theme i.e. Air Pollution. Under this initiative, the participants designed innovative face masks as a symbol to demand clean air. They also highlighted alarming air pollution statistics and pledged to take action to #BeatAirPollution. The theme of World Environment Day 2019 invites us all to consider how we can change our everyday lives to reduce the amount of pollution we produce, and thwart its contribution to global warming and its effects on our own health. The Centre will continue sustained engagement with various stakeholders at the community level to raise awareness on environmental health issues affecting different parts of the country.

WASH (Water, Sanitation & Hygiene) Program Highlight

Clean water, access to toilets, and good hygiene practices are essential for good health. These factors contribute enormously to human health and well-being, especially for girls and women. Improving access to sanitation is, therefore, a critical step towards reducing the environmental burden of disease. It also helps create environments that enhance dignity, self-esteem, and safety particularly for women and girls across India. Government programs such as Nirmal Bharat Abhiyan and Swachh Bharat Abhiyan were created to address the issue of open defecation by building toilets across India. However, evidence suggests that building toilets alone will not be sufficient to address India's poor sanitation and hygiene status. Various environmental and socio-cultural factors remain impediments and addressing these factors will be essential to improve sanitation practices across India. Efforts at the Centre of Environmental Health focus on understanding the adverse health outcomes linked to lack of access to toilets, factors that impede the use of toilets and designing community-based interventions to improve toilet use. The Centre is also carrying out a number of activities to

raise public awareness on environmental risk factors linked with WASH through activities with civil society groups, NGOs, schools and health care facilities across the country. The ongoing activities in the WASH space are being executed at various levels: -

- **Community –settings:** Development of a model site in an urban slum in South Delhi primarily aiming at the improvement of WASH infrastructure and corresponding health outcomes. We aim to implement an in-situ waste management intervention facilitating economic value to waste in low resource settings.
- **School–settings:** Development and delivery of WASH model and its incorporation into the school curriculum across 4 government schools targeting about 8000 students while planning for scale-up across states. Utilize the school as a vehicle of community action, engaging with communities around the school catchment area to extend the efficiency of the WASH-in-school programme under SWACH BHARAT MISSION to communities. Intervention to focus on addressing gaps that result in slippages and ensure sustained behavior change.
- **Healthcare facilities:** A suite of assessment and intervention packages through a toolbox

for WASH in healthcare facilities addresses the needs and effective deployment of WASH to harness the potential of improvement in health outcomes across labour rooms, neonatal care units and in-patient hospital facilities.

- **Remediation activities:** The action plan for Ghazipur proposed aims to arrest, experiment, utilize, cap, remedy and to control the dumpsite. A two-fold plan has been suggested for the same.

Community Engagement: Pilot Site

Colony name: Nehru Nagar

Type: authorized slum

Population Size: approx. 300 families

Socio-demography: (Comprising of migrant tribal and backward communities primarily from Rajasthan with some households of Gujarat). Strict caste-bifurcations and corresponding spatial arrangements for living

Livelihood: Artisans engaged in doll making, herbal medicines and indigenous drummers (dhol)

Community Outreach in Nehru Nagar

Community of migrants in Nehru Nagar include “Kathputli” population from Rajasthan with about 300 families living in the Delhi Jal Board

Community Engagement: Scoping

Immediate needs	Proposed activities by CEH
Waste generation is high; Poor waste management Dump site in the proximity: an aggravating problem	Demonstration of dry and wet waste separation Piloting of waste separation activities at HH level Scale-up for other sites
One Community toilet complex only accessible to the upper socio-economic strata; High Open Defecation; Need recognized by community	Liaise with NDMC to construction the second toilet complex
No improved drinking water supply <ul style="list-style-type: none"> • No proper water outlet • Collection of waste water and reflux of drain water at the drinking water site • Poor flow 	Liaise with Urban Local Body for flow regulations, improving drainage, build platform, installation of proper outlets such as taps, create awareness around maintaining water safety

land. Several health issues including sanitation, substance abuse, poor mental health are prevalent. Various community outreach sessions have been conducted through toolkits for awareness at Nehru Nagar in collaboration with Udyam Trust. Extensive health camps and WASH interventions are in the pipeline.

Major CEH WASH Activities

- Enhancing the evidence base for interventions to end open defecation – pilot study with 3iE and LSHTM aimed to establish what part demand creation can play in increasing latrine use among all family members of a household. This linked

well with the Government of India's Swachh Bharat Abhiyan, aimed at making India OD free by 2019

- Support to enhance WASH use and facilities in CanKIDs (Center for kids with cancer)
- Ongoing grant applications for WASH-related work in different states
- Community engagement for enhancing WASH facilities –ex. Ghazipur Action Plan, Nehrunagar
- Resource-mapping conducted to understand the politico-spatial challenges prevailing in the Nehru Nagar site and infrastructure negotiation mechanisms planned accordingly

- Negotiation with CM office and DUSIB (Delhi Urban Centre Improvement Board) to carry out the infrastructure interventions given that this is an unauthorized settlement
- Baseline Health survey in Nehru Nagar
- Waste Audit (data collection to start)
- Community mobilisation partner has started micro-groups in the community and mobilization work on domestic waste segregation is currently underway, with facilitation work being done to integrate management with livelihoods.
- Waste Management intervention is also to be carried out in Ansari Nagar, South Delhi.
- The WASH Sanitation and hygiene interventions across schools in association with KHUSHII (NGO) are on the anvil with current baseline surveys being conducted

MOHFW has recognised CEH as **“Centre of Excellence” for Climate Resilient Healthcare & Green health facilities.**

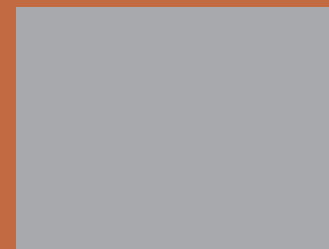
CEH will be drafting a framework & action plan for National Action Plan for Climate Change and Health (NAPCCH) which will feed into State Action Plans & assist in ground implementation in States.



Challenges pertaining to menstrual health management continue to affect school absenteeism

– **Focus group discussion highlights need for systematic action, Faridabad, Haryana, April, 2019**

HEALTH TECHNOLOGIES AT PHFI



Swasthya Sahayak

Point of Care technology aimed at delivering high quality, affordable, efficient diagnostics and follow-up services leading to better health decisions and outcomes for Health Care. The previous version of the device “Swasthya Slate” has now been completely redesigned with advanced sensors to develop “Swasthya Sahayak” with new functionality.

Swasthya Sahayak incorporates and enables

- Diagnostics - urine and finger prick based rapid diagnostic tests along with diagnostic algorithms and applications for patient registration, medical records, payment and referrals using a single device
- Basic Decision support system
- Referrals – to the higher facilities
- Integrated Data – Integrated patient and health institution records on the cloud

Key Benefits

- Reduces cost of diagnostics both directly and indirectly and potential major economic savings
- Increased access to care by providing care anytime anywhere



Swasthya Sahayak

- Improves care seeking behaviour
- Improves quality of care by improving the patient experience.
- Provides Continuum of Care across life stages and care site
- Rapid turnaround of test results may result in faster response by care provider to a patient's condition
- May help to reduce crowding at secondary and tertiary level facilities by screening at primary facility
- Allows for testing in settings outside the hospital including ambulatory and home care settings and in remote rural locations
- Rapid innovation to incorporate new features and diagnostic tests

Current deployments

PHFI –GAIL partnership

Under GAIL's CSR initiative, PHFI has developed application to support the Swasthya Slate System, which is being piloted around GAIL Pata plant in District Auraiya (UP) for screening and referral for various deliverables including Tuberculosis, using Swasthya Slate digital platform.

PHFI- CSC-e-Governance Partnership

CSC e-governance Services India Limited provides a centralized collaborative framework for delivery of various services including Telemedicine to citizens through Common Service Centers (CSC) across the country. CSC and PHFI have partnered to provide affordable medical diagnostics to all the 700 digital villages as an entrepreneurship model.

PHFI – Erfolg Life Sciences

Erfolg is a health care technology and Analytic organization. Erfolg Life Sciences and PHFI have come together to provide the last mile delivery of Diagnostic services to the rural population of Telangana and Andhra Pradesh through Erfolg's project of E- clinic and Telemedicine services.

Digital Real-time Advanced Medical Modular logistics system—for Home Care (DREAM-H)

Last mile logistics support for products facilitating primary health care services is a bottle neck that has still not been addressed because of three challenges: (1) lack of a comprehensive platform for delivery at the point of need; (2) precise temperature control requirements for several health care products; (3) lack of critical mass as services are delivered by multiple stake holders. Health care logistics is the logistics of blood products, diagnostics samples, pharmaceuticals, medical and surgical supplies, including vaccines, digital devices and equipment, and other products. In addition, logistics systems carry information about supply and demand for products back to planners and policymakers and handle financial flows so that the system is adequately resourced. A broken or ineffective logistics system or supply chain can cripple the health system and undermine positive health outcomes.

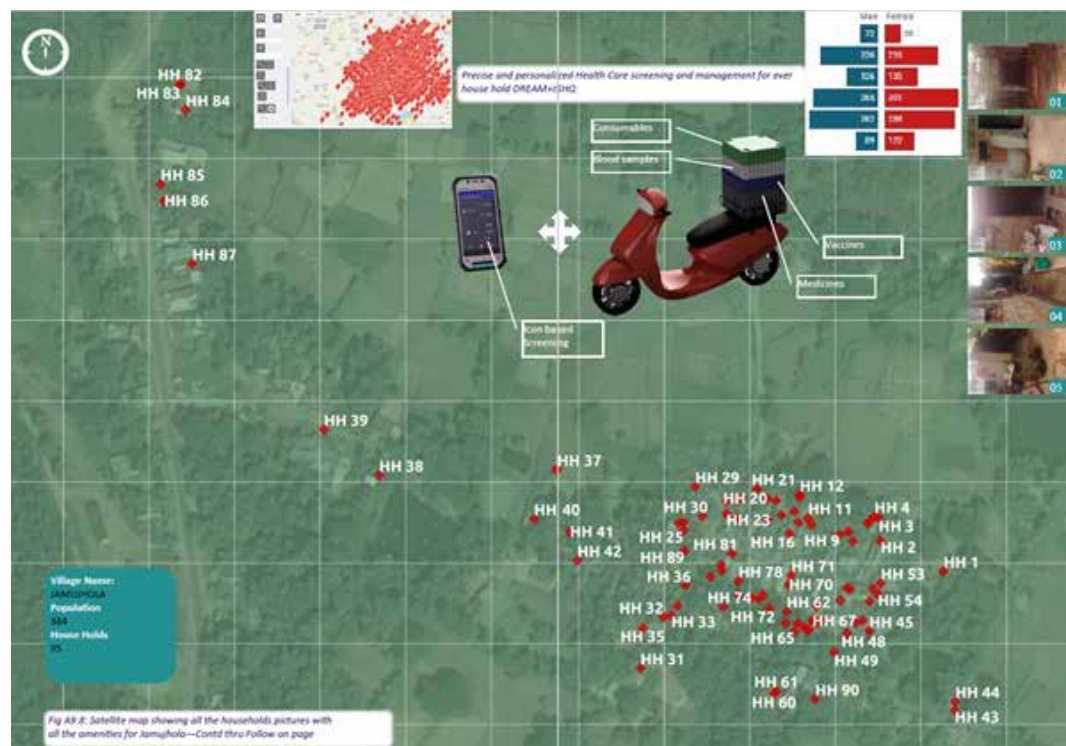
What we are doing?

Project DREAM-H proposes to address the medical logistics needs of primary health care service provider at the point of need,

the person's home. Project DREAM-H (Digital Real-time Advanced Medical Modular logistics system—for Home Care) is a portable, modular, multi temperature controlled ruggedized, stackable box to be fitted on to a two-wheeler , to carry vaccines, blood samples, temperature sensitive medicines, other consumables, digital hand-held devices for health care management. Each box will be color coded, with secure lock arrangement, and will be designed to be used as a standalone unit, with a recessed handle/ groove. The temperature inside the storage compartment of the box, will be maintained at 2 -8 degrees, and 15– 24 degrees depending on medical product for up to 6-8 hours. Real time temperature logging and syncing to the accompanying mobile digital device will be enabled.

Impact

Project DREAM-H and ISHQ (Icon based Structures Health Questionnaires) is being designed and developed as a digital mobile platform that can comprehensively manage primary health conditions across all age categories, be universally applicable, and empower the village level service provider at the point of need. In combination, Project DREAM-H and ISHQ, for the first time in the world, can be an effective artificial intelligence based comprehensive digital and mobile platform that can screen, manage primary health conditions



Project FWD3: Food Water contaminant Digital Diagnosis at the point of need

and empower the village level service provider at the point of need.

Food and Water Contamination Digital Diagnosis (FWD3)

“Safer food, safer lives” and **“Safer water, better health”** are slogans of World Health Organization. Consumption of contaminated Food and Water causes several acute and chronic health care conditions including

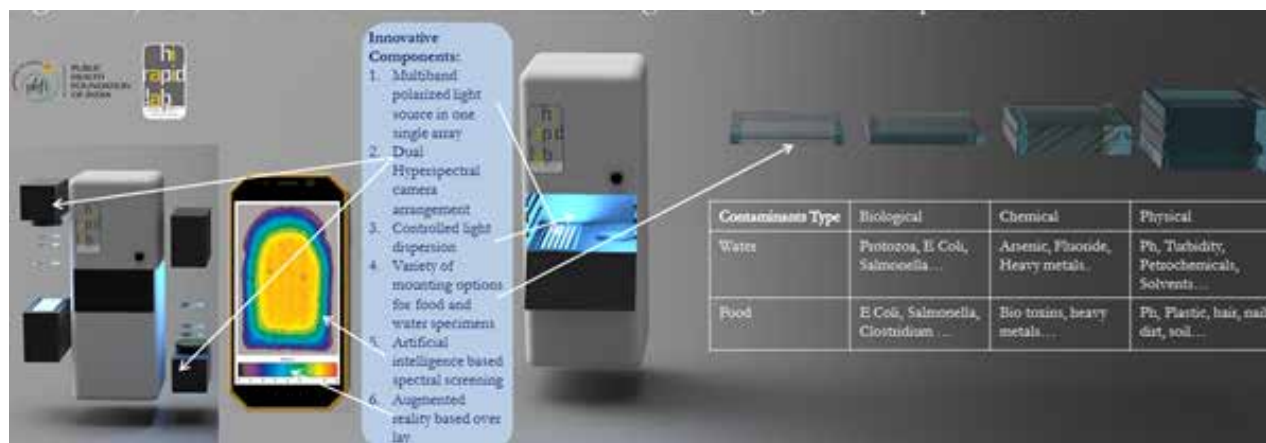
diarrhoea, malnutrition...that account for more than 10% of all deaths worldwide. Food and water contamination often happen together and often preclude to the vicious cycle of disease, disability and death. Micro enterprises and government backed services are springing up even in resource constrained settings to provide safe water and cheaper mass procured and cooked food. However, there is no one single device to test both Food and Water contamination in an easy to use format at the point of need.

What we are doing?

FWD3 proposes to test both Food and Water contamination in an easy to use format at the point of need universally. The core of FWD3 is hyper spectral + near infrared camera sensor. Significant developments have been made in hyperspectral and near infrared imaging due to which it has emerged as an effective tool in numerous civil, environmental, military and health care applications including screening for contaminants in food and water.

Impact

The present methods of testing are chemical reagent based and are slow, cumbersome and require skills that require significant levels of training as shown in Figure 2. The proposed FWD3 concept is based on a much simpler light evaluation method that required no chemical reagents and is designed with automated analytics that requires minimal skill levels. FWD 3 can provide real time test results of contaminated food and water. This in turn can enable real time interventions to prevent or predict several acute and chronic health care conditions including diarrhoea, malnutrition... that account for more than 10% of all deaths worldwide.



Project FWD: Food Water contaminant Digital Diagnosis at the point of need

Geo tagged Mapping with REAL time automated Annotation of socio Demographic Imaging (GM-READI)

It is said, “A picture is worth a thousand words”. Describing socio demographics of a rural, remote, resource constrained house hold would

require thousands of words or perhaps a few photos. Hence we took tens of thousands of photos of thousands of households and the features around them, to document, analyse, better understand the environment where people with Neglected Tropical diseases (NTD's) live, and their Water, Sanitation and Hygiene (WASH) status. The photos with geo tagging and

time stamping provided reliable information with spatial and temporal precision. Now we are faced with the challenge of identifying the features, annotating them and documenting them in text, as tens of thousands of photos would require thousands of person hours.

What we are doing?

Project GM-READI proposes to develop a smart phone application that will in add real time automated annotation of socio demographic features while taking geo tagged photos. The features that are being considered for (semi) automated identification and annotation are: (1) type of house – pakka or kaccha; (2) presence or absence of water stagnation around house hold; (3) usable or un usable toilet; (4) covered or open well; (5) presence or absence of water stagnation around water pump; (6) clean or un clean hands. Computer vision based pattern recognition thru several classification methods



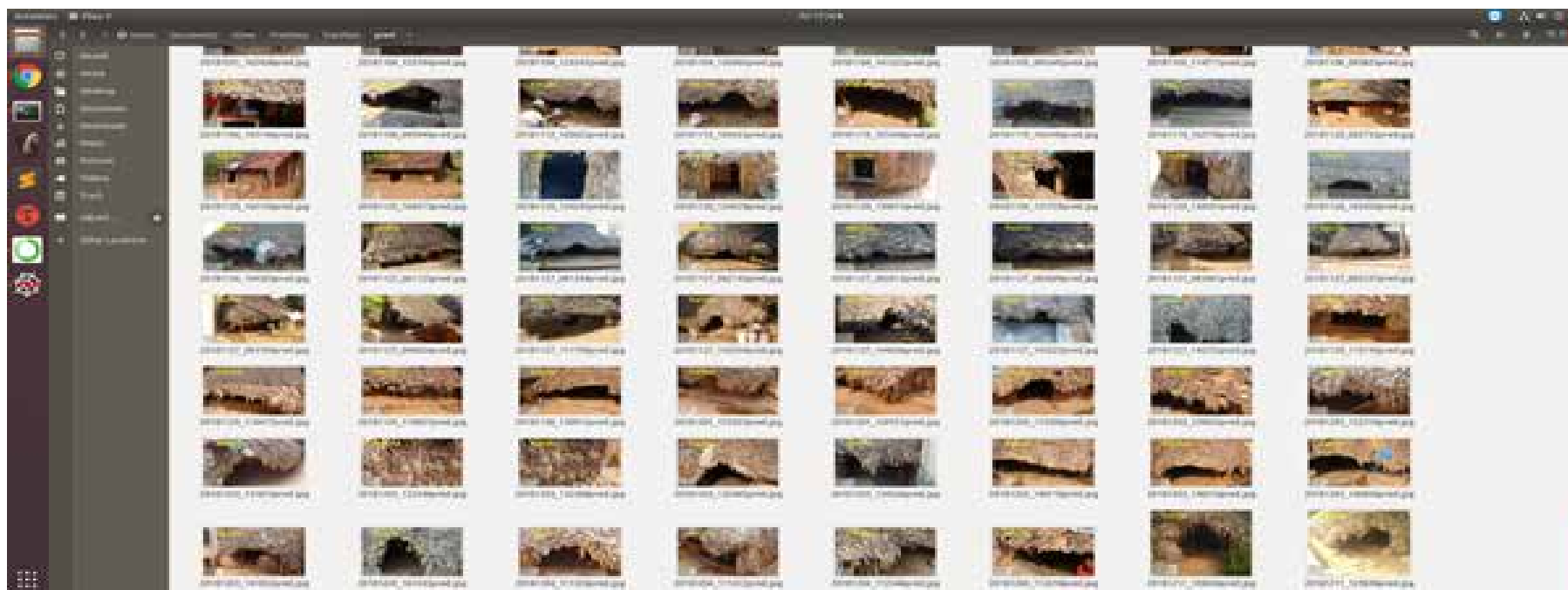
Project GM-READI: Geo tagged Mapping with REAL time automated Annotation of socio Demographic Imaging

such as neural network, structural, fuzzy and transform-based techniques have been used in image feature identification systems. Artificial neural networks (ANN) and support vector machine (SVM) based classifying have shown satisfying results of close to 85% reliable identification of above listed features. After identification of the feature Augmented Reality overlay will be used for semi-automated correction for annotation.

Impact

The camera of the smart mobile phone in our hand is turning in to a powerful visual tool, to help us understand the world around. Imagine a health care professional on the ground in a remote village standing in front of a hut with poor WASH facilities, If he or she can simply point the mobile phone camera at the hut or the person, take a photo- and if computer vision and augmented reality algorithms embedded

in the mobile phone can understand the photo in real time, we believe three outcomes can arise: 1. automatic documenting of the situation; 2. automatic guidance on what needs to be done; 3. automatic networking for further support. All these outcomes can happen in a matter of seconds or minutes and that can immense value, fast track WASH management, reliably, economically, sustainably by empowering the local person and provide him or her with WASH management skills – automatically.

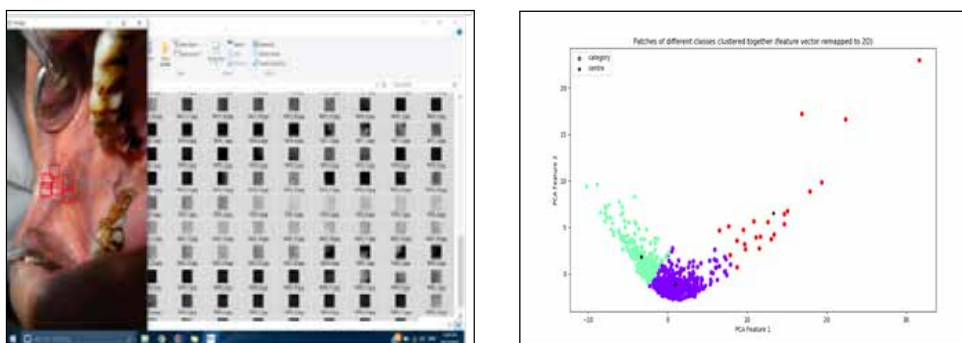


Cancer – Computer Aided Diagnostic Tool (CADT)

CADT analyzes grey-scale textural features in digital photographic images of clinical sites of the oral cavity to distinguish precancer lesions from healthy or benign lesions and cancer. This is based on supervised machine learning technology.

As a proof-of-concept, we *trained, tested and validated CADT* using 'grey-level co-occurrence matrix' with 3-class support vector machine classifier. We demonstrated reasonable feasibility and reliability of CADT to aid in early diagnosis of oral precancer and cancer. However, the present model is less valid in real-life settings for several reasons. Systematic training and debugging with a better model might increase its potential in future.

A preliminary report with next phase of work is submitted for publication.



Regional Resource Hub for Health Technology

Assessment in India (RRH-HTAI_nA regional resource hub for Health Technology Assessment in India (RRH-HTAI_n) has been established for the Northeast Region at Indian Institute of Public Health Shillong (IIPH-S). The RRH-HTAI_n is an initiative by the Department of Health Research (DHR), Ministry of Health and Family Welfare (MoHFW), Government of India. The RRH-HTAI_n team at IIPHS has just completed a cost-effectiveness analysis of hypothermia detecting devices (Bempu and Thermospot) and the report has been presented at technical advisory committee meeting in Aug 2019.

We have also received a requests from the Manipur Government to assess PM-JAY health benefit packages of the State.



Technology Business Incubation (TBI) Centre

Department of Science and Technology, Govt. of India funded Indian Institute of Public Health- Gandhi Nagar, Public Health Foundation of India to set up a Technology Business Incubator (TBI) for a period of 5 years in May 2019. This initiative will cater to the demands to business incubators and start-ups and support innovations and development of technology and prototype/product development. The thrust areas of the technologies will be around Infectious diseases, Non communicable disorders, Health Systems, Environmental health, maternal and child health & adolescent health (RMNCH + A) and health management information system (HIMS).

HEALTH PROMOTION



The Health Promotion Division at the Public Health Foundation of India (PHFI) aims to nurture interdisciplinary health promotion research, programming and practice and focuses on promoting multi-sectoral coordination. The Division adopts a settings based approach to design health communication, health literacy, and community outreach activities that mainstream health promotion policy and practice. The Division works on designing theory-based interventions to develop healthy settings in diverse contexts and generates evidence to support effective messaging, programming and policy development. The Division brings together approaches ranging from health education, advocacy, community empowerment, legislative reforms, fiscal policy change to organizational change and strengthening health services to address social inequalities in health. The Division undertakes rigorous evaluation of outcomes and processes to assess impact of these health promotion interventions on population health and wellbeing. Research on impact of programmes in influencing health of individuals and population is a core activity undertaken at the Health Promotion Division. Represented by multi-disciplinary team of Epidemiologists, public health



experts, clinicians, behavioural scientists, nutritionists, qualitative researchers and health communication experts.

Project PaTHWay: PromoTing Health and Wellbeing

- The Health Promotion Division at the Public Health Foundation of India joined hands with the **Directorate of Health**

Services (Government of Maharashtra and Directorate of Health and Family Welfare Services (Government of Karnataka)

to combat the rising burden of non-communicable diseases (NCDs). An MoU was signed between PHFI and state governments (Karnataka and Maharashtra). This three years' interventional research is implementing behaviour change interventions for prevention and control of



February 12, 2019: Official Launch of Project PaTHWay, announced the partnership with Directorate of Health and Family Welfare Services (Government of Karnataka)

NCDs, addressing key NCDs behavioural risk factors (unhealthy diet, physical inactivity, tobacco and alcohol use). The intervention is targeting varied population across schools, colleges and workplaces in two cities of India (i.e Pune and Bangalore). The study is being led by the Health Promotion Division in collaboration with local partners in Pune (Janaseva Foundation) and Bangalore (NIMHANS) and funded by AXA Business Service Pvt. Limited under their CSR funding (donation to PHFI).

Project i-PROMISe (PROMoting Health Literacy in Schools)

- This initiative aims to reach school student Pan-India and promote an enabling and supportive environment among children and adolescent to adopt healthy lifestyle practices. The project was developed by PHFI in collaboration with World India Diabetes Foundation (WIDF). Under the project, a comprehensive module

comprising of interactive activities and short films (Audio-Visual module) focusing on importance of healthy diet and being physically active were developed using Health Belief Model (HBM).



Students providing inputs during FGDs to develop i-promise resources



Teacher's participation during pre-testing of i-promise resources

Review of Food Environment and Cafeteria Policies in Educational Institutions in India

- The study is being undertaken by the division in schools and colleges of Delhi and NCR in collaboration with the World Health Organization (WHO), country office for India. The goal of this study is to examine the current environment, policies and practices with regard to the food and beverages in educational institutions in India and to come up with recommendations for developing a healthy cafeteria policy and environment for promoting healthy eating practices among children and adolescents.

Alcohol Advertisements and Marketing among college going students and Control Policies in India

- The goal of this study is to undertake an evaluation of alcohol advertisements and marketing in young college students' vis-a-vis alcohol control policies in India. The study is being undertaken by the HPD in collaboration with the World Health Organization (WHO), Country Office for India in colleges of Delhi.

- Dr. Monika Arora is a Board Member of the NCD Alliance, Switzerland for the term 2019-2021.
- Dr. Monika Arora is a Member of Second WHO Civil Society Working Group on NCDs formed by the WHO Director General (April 2019-April 2021).

National Technical Working Group

- National Technical Working Group (Dr. Monika Arora, Shalini Bassi, Tina Rawal) and **National Resource Group** (Shalini Bassi, Tina Rawal) for development of School Health Curriculum and training the State Resource Groups (SRG) under AYUSHMAN BHARAT, formed by the Ministry of Health and Family Welfare and Ministry of HRD, Government of India.

Working Group for updating the prototype training material for the Programme Staff of National Tobacco Control Programme (NTCP)

- formulated by the National Institute of Health and Family Welfare (NIHFW) [April, 2019] and **Resource Persons for Training the Trainers** (Dr. Monika Arora and Shalini Bassi).

Rapid Assessment of Adolescent Health and School Health Programmes in India

- was a two-month review of all plans, programmes and policies relevant to adolescent and school health in India. This study was led by HPD in collaboration with the World Health Organisation South East Asia Regional Office (WHO-SEARO) as a part of a wider study to assess these programmes in all SEAR countries. As a part of this rapid review, a desk review of all relevant literature was conducted. This included national and regional surveys, policy briefings, meeting proceedings and relevant reports related to adolescent health and school health programmes in India. In addition, Key Informant Interviews (KIIs) with stakeholders (n=18) were held. These stakeholders were senior officials from health, education, development sector as well as representatives from different civil society organisations. The report from this study informed on the status of the existing programmes; the strengths and gaps in design, implementation and coordination of programmes (adolescent health and school health) and provided recommendations for further scale-ups that can be used as best practices for global or regional replication.

TRAINING AND CAPACITY BUILDING



TRAINING PROGRAMS

Training Division of PHFI signed the following MoUs during the period Oct'18-Sept'19:

1. PHFI signed the MoU with The Live Love Laugh Foundation (TLLLF) & Association of Healthcare Providers India (AHPI) for Certificate Course in Common Mental Disorders (CCCMD)
2. PHFI signed the MoU with Pallium India, Trivandrum for Certificate Course in Palliative Care (CCPC)
3. PHFI signed MoU with Indian Institute of Science, Bangalore (IISc) and Indian Institute of Space Science and Technology, Trivandrum (IIST) & AHPI for Certificate Course in Healthcare Technology (CCHT)
4. PHFI signed the MoU with Indian Institute of Management, Ahmedabad (IIM-Ahmedabad) for co-developing Two Customized Executive Education Programmes: 1) Leadership in Indian Public Healthcare System & 2) Attitude, Ethics and Communication (AETCOM) in Healthcare
5. PHFI signed the MoU with National Institute of Occupational Health (ICMR-NIOH) for jointly developing and implementation of Training Workshop for Healthcare Professionals on Occupational Health Program: Care & Compliance Perspective for Healthcare Professionals (OHP-CAPH)
6. PHFI signed the MoU with Govt. of Madhya Pradesh for making PHFI as a skill building/training partner for the healthcare professionals of Govt. of Madhya Pradesh.
7. PHFI signed the MoU with Govt. of Odisha for the implementation of Certificate Course in Management of COPD & Asthma (CCCA) for the training of Medical Officers of Govt. of Odisha
8. PHFI signed the MoU with Larsen & Toubro (L&T) for conducting Need Assessment study of health facilities at Vadodara, Gujarat and Kanchipuram, Chennai
9. PHFI signed the MoU with Govt. of Meghalaya for the implementation of Certificate Course in Evidence Based Diabetes Management (CCEBDM) and Certificate Course in Cardiovascular Diseases & Stroke (CVD) for training of Medical Officers of Govt. of Meghalaya.
10. PHFI signed the MoU with National Asthma Allergy Bronchitis Institute (NAABI) for the implementation of Certificate Course in Management of COPD & Asthma for the training of doctors in Kalyani, West Bengal.
11. PHFI signed the MoU with Kolkata Municipal Corporation (KMC) for the implementation of Certificate Course in Cardiovascular Diseases & Stroke (CVD) for training of Medical Officers of KMC.



**PUBLIC
HEALTH
FOUNDATION
OF INDIA**



The Department of Public Health & Family Welfare, Government of Madhya Pradesh has signed 5 Years MoU with PHFI making it as a Skill Building/Training Partner



PHFI Signed MoU with Pallium India which is led by Dr. Rajagopal for the Certificate Course in Palliative Care (CCPC)



PHFI Signed MoU with Indian Council of Medical Research - National Institute of Occupational Health (ICMR - NIOH) for workshop on Occupational Health Program



PHFI Signed MoU with Deepika Padukone's The Live Love Laugh Foundation (TLLLF) & AHPI for the Certificate Course in Common Mental Disorders (CCCMD)



PHFI Signed MoU with Indian Institute of Science, Bangalore (IISc), Indian Institute of Space Science and Technology, Trivandrum (IIST) and AHPI for Certificate Course in Healthcare Technology (CCHT)

Snapshot of Capacity Building Initiatives for Healthcare Professionals

The Training Division at Public Health Foundation of India (PHFI) is working towards building capacity of healthcare professionals to fill the above mentioned gap & improve the quality of healthcare in India. Various initiatives have been formalised and implemented for healthcare professionals from diverse backgrounds in the areas of chronic conditions and other areas of health system strengthening such as Healthcare Quality, Mental Health, Palliative Care, Occupational Health, Healthcare Technology, Patient Safety, Disaster Management, Public Health Management, Management Development Programs with prominent institutions like XLRI and IIMA.

There are 17 capacity building courses / workshops being conducted with the objective of upgrading skills, knowledge and core competencies of healthcare professionals.

- The Capacity Building Courses in Chronic Conditions are being conducted in over 542 centres across 118 cities in 28 states and UTs with monthly contact courses module wise.

PHFI Capacity building initiatives		
Courses		Workshops
For Medical Officers/PCPs	For Health care professionals	For Health care professionals
Chronic Conditions	Healthcare	
Diabetes management	Healthcare quality	Occupational health
Diabetic retinopathy		Public health management
Gestational diabetes		Maternal and child health nutrition
Cardio – Diabetes		Patient safety and communication
Common mental health disorders		MDPs
Cardiovascular disease		
Hypertension		
Thyroid disorders		
Women's health		
COPD and asthma		
Palliative Care		

- Till date, PHFI has trained and created a network of over 24,000 healthcare professionals from 548 of the 707 districts with a completion rate of over 90%.
- Various state governments such as Madhya Pradesh, Gujarat, Haryana, Odisha, Assam, Meghalaya, Kerala, Tripura, Mizoram, Manipur, Uttarakhand and Kolkata Municipal corporation have adopted our various training programs for training their healthcare professionals.

Capacity Building Courses

- Chronic Conditions
 - ♦ The courses on chronic conditions are conducted as contact based training with once-a-month sessions on a weekend delivered by specialist faculty trained in standardized course delivery and supported by a strong monitoring and evaluation mechanism.

- ◆ Accreditation and endorsements by various international bodies including Royal College of Physicians (London), International Diabetes Federation, South Asian Federation of Endocrine Societies, International Primary Care Respiratory Group, UK Research and Innovation, Ornate India, Global Challenges Research Fund and Asia Oceania Thyroid Association.
- ◆ Designed and delivered as a partnership model with academic partners, implementation partner (PHFI) and supported by an educational grant. Academic partners formulate course curriculum that is further contextualized by a panel of national experts.
- ◆ Selected as one of the innovative models for 2 consecutive years at the “National Summit on Good, Replicable Practices & Innovations in Public Health Care Systems in India” conducted by

the MoHFW, Government of India every year. In 2016, the Gestational Diabetes Management model implemented for NHM, Govt. of Gujarat and in 2017, the Hypertension and Diabetes training implemented for NHM, Govt. of MP were selected as the innovative training models.

- ◆ The programs are being implemented overseas too, in countries of the African region and South Asian region (Myanmar, Bangladesh, Afghanistan and Nepal). The Training division also has an agreement with the Ministry of Health, Rwanda for training of their public health workforce.
- ◆ Accolades in the form of awards for excellence in skill development in healthcare include the Quality Council of India D L Shah Platinum award, BMJ-India award, PHD chamber award, FICCI Healthcare Excellence award,

CII National Excellence award, India Health and wellness award, and the ASSOCHAM award.

Healthcare courses

- Healthcare quality program is being conducted in collaboration with the National Health Systems Resource Centre (NHSRC) and Association of Healthcare Providers (India) (AHPI).

Workshops and other activities of the division

- Workshops being conducted in the fields of occupational health, MCH nutrition, public health management and patient safety/communication.
- Public health management and patient safety/communication workshop being conducted in collaboration with various state governments for their respective district program managers

CAPACITY BUILDING

Over the past decade, PHFI has established five Indian Institutes of Public Health - IIPH Delhi, IIPH Gandhinagar, IIPH Hyderabad, IIPH Bhubaneswar, IIPH Shillong and Indian Institute of Public Health - Bengaluru which is a Satellite Campus. IIPH Gandhinagar has been recognised as the first public health university in India, a university formed through enactment of IIPH Act 2015 by the Government of Gujarat. IIPH Hyderabad is offering MPH in affiliation with Kaloji Narayana Rao University of Health Sciences, Warangal, Andhra Pradesh and IIPH Delhi is offering MPH programme in collaboration with Sree Chitra Tirunal Institute of Medical Sciences and Technology (SCTIMST). The Indian Institutes of Public Health (IIPHs) are involved in building a competent and skilled public health workforce through teaching, innovative research, and knowledge sharing in public health. Multiple post-graduate diploma programmes, short-term trainings and certificate programmes, distance learning programmes and research projects have been initiated in these facilities. Further a variety of MPH and MSc-PhD courses are offered by the IIPHs, through a mix of campus and distance education programmes, both under its umbrella

and in partnership with other academic institutions. The diploma in public health management is linked to the National Health Mission and has trained a large number of deputed medical officers from states across the country. Apart from the trainings at IIPHs, PHFI central offers certificate courses for primary care physicians through which more than 25000 primary care physicians have been trained.

PHFI and IIPH have assembled a technical talent pool of over 400 individuals inclusive of faculty and dedicated researchers. Many of these faculty have been trained in Public Health and Research from leading universities of the world. Our faculty are sought after, as visiting or adjunct faculty, by leading global public health schools. The PHFI and IIPH researchers meet during the annual Research Symposiums where senior, mid and junior level researchers and faculty showcase their research and capacity building activities. External faculty who have attended these symposia have appreciated the high quality research that is showcased during these symposia.

The major funding agencies of the PHFI capacity building program include the Ministries of

Health & Family Welfare, and Science & Technology (through the Department of Science and Technology; DST, Department of Biotechnology; DBT, and Science and Engineering Research Board; SERB), Indian Council of Medical Research, Indian Council of Social Science Research (ICSSR), National Health System Resource Centre, the TATA Trusts, Medical Research Council (UK), National Institute of Health (NIH), USAID, BMGF, European Union, The Queen Elizabeth Diamond Jubilee Trust, IDRC, DFID, AUSAID, IFPRI, WHO, the World Bank, UNFPA, UNICEF, UNDP, FHI 360, MacArthur Foundation, The WT/DBT India Alliance, The Rockefeller Foundation, Royal Norwegian Embassy, NRDC, 3ie Inc, Eli Lilly & Company Ltd, HT Parekh Foundation, Infosys Foundation, GSK Pharmaceuticals, Johnson & Johnson Ltd, Transport Corporation of India, HCL Foundation, MSD Pharmaceuticals and Mott MacDonald Limited. In addition, funds have also been received for research and capacity building from State governments.

Some of the key capacity building programs are described below.

Strategic Award- Strengthening Research Capacity at the Public Health Foundation of India's Indian Institutes of Public Health (Phase 1 & 2)

The Wellcome Trust supported grant was initiated in 2008 and implemented by the Public Health Foundation of India (PHFI) and the UK Consortium (The UK Consortium consists of faculty from 16 universities throughout the UK with expertise in global public health). Its overall aim was to develop the research and teaching skills of PHFI's faculty members (including its member Institutes of Public Health across India) by supporting their growth at various career stages, in collaboration with the UK Consortium. There were 2 phases for this grant –Phase I started in 2008 and Extension phase started in 2013.

The goal and objective of the WTP PHFI-UKC Wellcome Trust Capacity Building Programme is to build public health research and training capacity at PHFI and IIPHs. The major components include PhD, Masters, Research Grant, Research Fellowship, Short courses, Exchange Visit. This programme involves the collaboration of 16 UK Universities. Under the

PHFI-UKC Wellcome Trust Capacity Building Programme, a total of 19 short courses across a variety of topics, collaboratively developed by UK and India faculty and conducted at various IIPHs in India to build skills of the junior researchers/staff at IIPHs/PHFI. Over 500 participants have benefitted from these short courses.

The objective of the extension phase grant was to enable returning Wellcome Trust Capacity Building Programme (Phase 1) doctoral scholars and new recruits to become productive researchers and to attain positions of research leadership with the eventual goal of transforming public health in India through Research Career Training Programme and Career Development Research Fellowships. These two components of the strategic award were expected to enhance the early career of the faculty and researchers at PHFI/IIPHs by acquiring skills in Indian health systems, research and grants management, policy outreach and communications and completing pilot projects and also successful in getting further research grants other than Wellcome Trust, thus creating an enabling environment for them to build a structured and well-defined career trajectory

Through the successful collaboration between PHFI and the UK Consortium, this strategic award has enabled the development and

strengthening of public health research and teaching capacity at the Public Health Foundation of India and its institutes.

Under this award, around 100 faculty/ researchers/ staff have had capacity built through long-term intensive programmes including formal Masters program. PhDs & long term fellowships and over 500 have received short-term trainings.

Components of the award

The various components of the PHFI-UKC Wellcome Trust Capacity Building Programme (such as doctoral studies, Masters studies, research grants, research fellowships, short courses, exchange visits, Career Development Research Fellowships and Research Career Training (RCT) courses) have contributed significantly to more advanced research that has eventually resulted in institutional capacity building. The systems and structures at the institutional level have been incrementally evolving as an outcome of this strategic award.

Under this grant, a total of 24 scholars have completed their doctoral degree, 15 scholars have completed their Masters degree, 21 research grants (two large and 19 small research grants) were completed by the researchers at PHFI & IIPHs. 18 research fellowships (6 UK-based and 12 India-

based research fellowships) and 11 Career Development Research Fellowships were completed by the researchers at PHFI & IIPHS. Till now 21 short courses have been conducted to build skills of over 500 junior researchers/ staff.

Scholars who have received their doctoral or Masters degree, or have submitted their doctoral thesis, have been placed at PHFI & IIPHS as follows: 1 as Professor, 3 as Additional Professors, 17 as Associate Professors / Senior Research Scientists, 10 as Assistant Professors / Research Scientists, 4 as Senior Lecturers, and 2 as Research Associates. The trainees have presented their research results in various fora, received awards and published 200 plus papers in high profile journals.

Creating an Enabling Environment: A Central Research Data Repository (CRDR) has been launched in 2018, which is a unique platform aims provide researchers end to end solution from development of questionnaires, data analysis and sharing research data with internal and external groups.

Implementation of Public Health Research Initiative (PHRI)

PHRI Initiative has set up a fund to provide the Indian Researchers working in institutes focused on public health, established process.

The Initiative will be implemented by SERB with techno managerial implementation. PHRI will enable young Indian researcher to carry out clearly defined research project at a place of their choice up to a period of 36 months.

Objectives

- Strengthen and expand the knowledge base of Indian Public Health Research and Education.
- Help build a fleet of young researchers with potential of emerging as leaders in Public Health.
- Contribute to evidence generation through research in key priority areas of action.
- Provide scope for incubating, testing and implementing innovative new public health

solutions to local and national public health issues.

- Findings of break through research studies will be widely disseminated among decision makers to inform the policy.

Outcomes and Main Activities: Total 36 grants have been given in all the three rounds. Out of 36 grants, a total of 30 participants have initiated project activities and 6 have completed their projects.

Publications and Monographs are under preparation.

16 Grant awarded to PHFI researcher and 20 to extramural participant

Round 1: Grants allotted in First round (2014-15) and their Present status

Sr. No.	Name of Participants	Study Titles
1	Nanda Kishore Kannuri	Tribal health. Technology for Inclusive Health: A proof of concept action research project among Tribals in Telangana and Karnataka
2.	Poornima Prabhakaran	Chronic diseases. Association between parental growth patterns and chronic disease risk in their children – an intergenerational study in the new Delhi birth cohort
3.	Shubhojit Dey	Cancer. Generate more scientific evidence regarding Breast Cancer survivorship in India
4.	Veena Iyer	Effect of climate on health. Relationship between Enteric Fever incidence and Climate in the city of Ahmedabad – 1990 – 2014
5.	Mayur Trivedi	Health of vulnerable populations. Towards Universal Health Coverage: Improving health of selected 'de-notified and nomadic tribes' of Gujarat
6.	Neena John	Diabetes. Evaluation of technology based intervention to increase screening uptake of diabetic complications (with specific reference to eye complications) in rural and urban Chennai

Round 2: Grants allocated in Second Round of PHRI grants (2015-16) and their status their Present status

Sr. No.	Name of Participants	Study Titles
7.	Kranti Vora	Prevalence of Human Papilloma Virus and feasibility study of a preventive strategy for Cervical Cancer: A community survey in Gujarat
8.	Bhaskar Purohit	Study of Human Resource Management (HRM) policies, strategies and practices to increase the availability of Medical Officers in underserved areas in MP and Gujarat, India
9.	Niveditha Devsenapathy	A prospective cohort to assess improvements in patient reported outcomes and weight gain pattern in patients undergoing primary Total Knee Replacement (TKR)
10.	Habib Hasan	Assessment of efficiency of medicine procurement and supply management in public health system in Gujarat- A mixed-method study
11.	Preeti Negandhi	Diagnostic accuracy of MCV/RBC count ratio (Mentzer Index) for screening patients for beta-thalassemia
12.	Subhasisa Swain	Spatiotemporal Prediction of Dengue prevalence in Odisha, India: A tool for outbreak prevention
13.	Anurag Saxena	Analysis and Redesign of Health Policy using Behavioral Science and Systems Thinking: A Case of Anti-smoking Campaigns in India

Round 3: Grants allocated in Third round (2016-17) and their Present status

Sr. No.	Name of Participants	Study Titles
1.	Mahaveer Golecha	"Assessment of the six WHO building blocks for health system strengthening in Rajasthan".

Innovation in Science Pursuit For Inspired Research (Inspire) Fellowship Programme

The INSPIRE fellowship is a prestigious fellowship funded by the department of Science and technology. So far 6 researchers have been awarded this fellowship. One of the fellowship work is described below.

Details from 2 of them are provided below:

Innovation In Science Pursuit For Inspired Research - Dr Manu Raj Mathur

The Oral Health Needs Assessment and Planning (OHNAP) study aims to determine the oral health status and the psychosocial and socio-economic determinants of oral health in the district of Jaipur (Rajasthan) to enable planning comprehensive oral health programs designed to meet community needs with an overall aim to provide universal oral health care across all population sub-groups.

Objectives

- Identify the oral health disease burden, quality of life and access to dental care in Jaipur District in Rajasthan
- To determine the presence of socioeconomic

gradient in oral health, namely dental caries, level of oral hygiene, periodontal diseases, traumatic dental injuries (TDI's), and self-rated oral health in a sample population from Jaipur District in Rajasthan.

- To examine the role of material resources, social capital and social support in explaining the socioeconomic gradient in adolescents.
- Identify the oral health needs of the residents of Jaipur district and preparedness of the district health systems to tackle these needs.
- To analyze nationally representative data to understand socio-economic patterning of oral health in India.

Is HS-CRP Associated with Depression in Pre-Diabetes and Diabetes Subjects Participating in a Worksite-Based Lifestyle Modification Program in Urban India (Inspire) - Dr Deebrati Mukharjee

Project Objectives

- Determine if low-grade systemic inflammation, as measured by hsCRP levels, is associated with depressive symptoms in individuals with pre-diabetes and diabetes in the Indian population.
- Determine if an intervention involving

lifestyle modification for diabetes risk reduction, also leads to reductions in mean hsCRP levels and depressive symptoms over a 3-year period.

Update:

Complete data has been collected in 961 participants and preliminary results indicate that 51/961 (5.31%) meet the criteria for depression across 11 Indian worksites (see Fig. 1 for distribution), and this may be related to the levels of stress experienced (see table below). hsCRP levels do not correlate well with either depression scores or stress levels. Data on adherence and adoption to the program is forthcoming.

Stress levels (1) PHQ-8 score (2) hsCRP levels (mg/L)

- | | Mean (SD) | Median | Mean (SD) | Median |
|-----------|-------------|--------|-------------|--------|
| Very low | 1.66 (3.12) | 0 | 1.95 (1.36) | 2.2 |
| Low | 1.96 (2.93) | 1 | 2.62 (2.35) | 2.1 |
| Medium | 2.10 (3.48) | 0 | 2.75 (2.50) | 2.0 |
| High | 3.64 (4.30) | 2 | 3.87 (9.71) | 2.4 |
| Very high | 5.71 (6.31) | 3 | 3.02 (2.59) | 2.2 |

Capacity Building Initiatives for Healthcare Professionals

Capacity building and training of health providers, at primary and tertiary levels, for prevention and management of various non-communicable diseases are also major activities of the research team, which are reported in the section on training programs.

Capacity Building for Research in Environmental Health

The Centre is also committed to establishing a critical mass of environmental health researchers and policymakers in India through its capacity building initiatives. Fellowships have also been awarded to support researchers and students working on environmental health concerns in India. The following researchers were selected this year under the two-year research development program:-

1. Research development grants for researchers in PHFI, IIPHs and TISS
 - ♦ Dr. Krithigha Shridhar (PHFI) 2018 – Dr. Shridhar is a research scientist at PHFI. Her research development grant focuses on “A Multi-Site study on environmental risk factors for gall bladder cancer, and mediating role of reproductive factors and diet”.

- ♦ Dr. C. Joglekar (TISS) 2018 – Dr. Joglekar is an Assistant Professor at TISS. His research development grant focuses on “Pesticide Risk Assessment and Mitigation through Community Participation and Capacity Building”.
 - ♦ Dr. Suresh Munuswamy (IIPH Hyderabad) 2019 – Dr. Munuswamy is an Associate Professor at the Indian Institute of Public Health in Hyderabad and his research development grant focuses on “FWD3: Food Water Contaminant Digital Diagnosis at the point of need”.
 - ♦ Dr. Aditi Roy (PHFI) 2019 – Dr. Aditi Roy is a Research Scientist at PHFI and her research development grant focuses on “Environmental toxicants, child development and school readiness: a preliminary study with intra-familial exposures in communities affected by battery recycling facilities in Patna, Bihar”.
2. Thesis Fellowships for MPH students in PHFI, IIPHs and TISS. These 6-month fellowships are awarded on a competitive basis to Masters students to fund innovative research that they plan to carry out as part of their Master’s degree dissertation.
- ♦ Dr. Diksha Singhal (IIPH Delhi) 2018 – Dr. Diksha Singhal from IIPH Delhi was awarded a Thesis Fellowship. The title of her fellowship was “Knowledge, attitude and practice (KAP) study on health risk awareness among e-waste recyclers in informal sector of Delhi: a cross sectional study”.
 - ♦ Dr. Sana Ansari (IIPH Delhi) 2018 – Dr. Sana Ansari from IIPH Delhi was awarded a Thesis Fellowship. The title of her fellowship was “Assessment of Heavy Metal Burden, Health and Nutritional Status of Children (Aged 5-14 years) Living In and Around Landfill Site in Delhi: An Exploratory Study”.
 - ♦ Mr. Hardik Parmar (TISS) 2018 – Mr. Hardik Parmar from TISS, School of Health System Studies was awarded a Thesis Fellowship. The title of his fellowship was “Roasting Workers: A Study on Heat Vulnerability of Indoor Small Scale Industry Workers and adaptive strategies in Ahmedabad”.
 - ♦ Mr. Ipsit Mohanty (TISS) 2018 – Mr. Ipsit Mohanty from TISS Jamshetji Tata Center for Disaster Studies was awarded a Thesis Fellowship. The title of his fellowship was “Mountain Top Removal Coal Mining and Community Well Being- study of Mining Villages in Odisha”.
 - Mr. Saurabh Suman (TISS) 2018 – Mr. Saurabh Suman from TISS School of Habitat Studies was awarded a Thesis Fellowship. The title of his fellowship was “Impact of Organic Food Mission on Food Security”.
 - Dr. Sonal Singh (IIPH Delhi) 2019 – Dr. Sonal Singh from IIPH Delhi was recently awarded a Thesis Fellowship. The title of her fellowship is “To assess knowledge, attitude and practices about the usage of polluted surface water along with its health impacts among the population residing along bank of Yamuna River and concentration levels of ammonia & Organochlorine pesticides in water samples collected from Yamuna River”.
 - Dr. Rashi Saboo (IIPH Delhi) 2019 – Dr. Rashi Saboo from IIPH Delhi was recently awarded a Thesis Fellowship. The title of her fellowship is “Assessing risk factors influencing crop residual burning in the state of Haryana”.
 - Dr. Anu Sharma (IIPH Delhi) 2019 – Dr. Anu Sharma from IIPH Delhi was recently awarded a Thesis Fellowship. The title of her fellowship is A study of indoor air quality in schools in Navi Mumbai- A pilot study

I. Exchange Scholars Program

The Centre also offers this program to leverage research capacity within India as well as US/UK/Australia/Canada/Israel/other partner organizations and vice-versa to advance the agenda and objectives of the centre.

- Dr. Jyothi Menon – Dr. Menon attended a 2-week t course on SPSAS on Atmospheric Aerosols” organized by the Institute of Physics, University of Sao Paulo in July 2019.
- Dr. Nanda Kishore Kannuri – Dr. Kannuri will be carrying out research activities at Center

for Environmental Research and Children’s Health (CERCH), School of Public Health, UC Berkeley; Prevention Research Center for Rural Health, College of Public Health, the University of Iowa and Barry Commoner Center for Health and the Environment, Queens College, CUNY Urban Food Policy Institute, The City University of New York.

Workshops and Meetings Conducted

PHFI conducted various workshops and scientific meetings in different areas over the

last year. Some of the major activities are listed below:

1. National Health Conclave on Climate Change and Health
2. Clinical Nutrition
3. Training of Asha Managers
4. Grant and Scientific Writing
5. Technical Innovation Learning Centre (TILC) at IIPH-Bengaluru

HEALTH SYSTEM SUPPORT AND TECHNICAL ASSISTANCE



HEALTH SYSTEM SUPPORT



Dissemination Program of First Phase Swasth Uttar Purv : Healthy North East Initiative at North Eastern Council Secretariat, Nongrim Hills, Shillong, Meghalaya. The Swasth Uttar Purv initiative is supported by Ministry of Development of North Eastern Region(MDoNER), Government of India to strengthen human resource and systems capacity for Public Health in the North Eastern States of India. The Chair of the Meeting is Shri. Ram Muivah, Secretary, NEC, Govt. of India, the Keynote Address was delivered by Prof. K Srinath Reddy, President, PHFI

Swasth Uttar Purv: Healthy North East

Strengthening Human Resource and Systems Capacity for Public Health in the North Eastern Region.

Location: North Eastern States (First phase - Arunachal Pradesh, Meghalaya, Mizoram and Assam.)

Goal

To build capacity of in-service government officials to implement key programs on the ground by building knowledge and understanding on Sustainable Development Goals (as applicable to health), monitoring and implementation methods and program management. These efforts will be complemented by awareness building activities around emergent health priorities of the region (including Cancer awareness efforts, life skills, disease awareness, etc.)

Aims & Objectives

a. Capacity Building in Public Health: Short term trainings and full-time academic programs in diverse areas of public health including management of National Health Programs, Financial Management of Public Health

Programs, Public Health Management, Health Policy and Health Economics, Health Promotion and Advocacy etc. These will be conducted by PHFI to cater to in-service government personnel and health department officials from North Eastern States.

b. Technical Assistance: PHFI will play the role of a technical support agency supporting governments and civil society partners for implementation of public health projects and programs in the North-Eastern States.

c. Conducting Cancer Awareness Programs and Health Care Summit in the North Eastern Region. Besides conducting Annual North East Health Care Leadership Summit(s) and Cancer Awareness programs, PHFI will work closely with government school teachers to build their capacity to be public health ambassadors and change agents in the state.

The period from October 2018 to July 2019 saw a range of activities implemented in the states of Meghalaya, Arunachal Pradesh, Mizoram and Assam, the four states identified for implementation of Swasth Uttar Purv: Healthy North East Initiative.

Short term capacity building programs covered topics on program planning, management and implementation of Public Health Programs, Financial Management of key health programs. Long term academic programs designed

for in-service government officials from the state of Mizoram and Meghalaya includes programs such as Post Graduate Diploma on Health Economics, Financing and Policy; Post graduate diploma course on Health Promotion; Post Graduate Diploma on Reproductive and Child Health, Public Health Nutrition; Post Graduate Diploma on Epidemiology, Public Health Management, etc. Under SUP project, each programs have been designed to fulfil some general as well as state specific expectations. These capacity building initiatives provided opportunities to bridge the gaps on management skills and knowledge, which are critical requisites for effective health systems management.

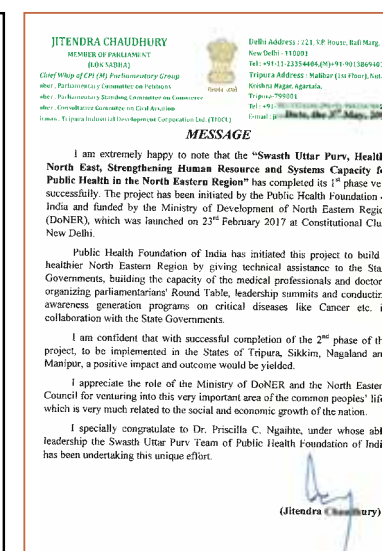
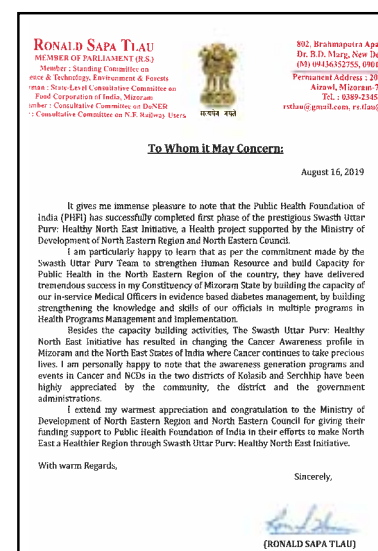
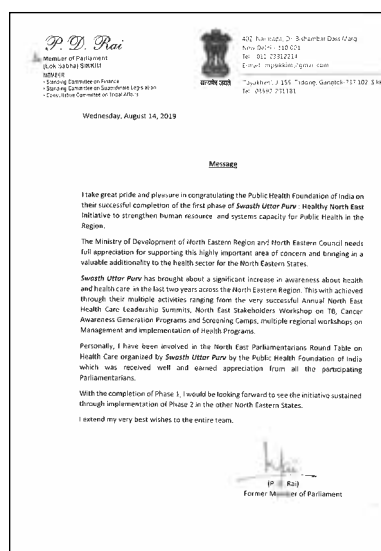
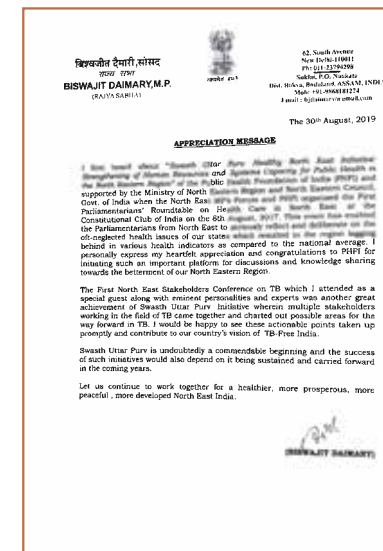
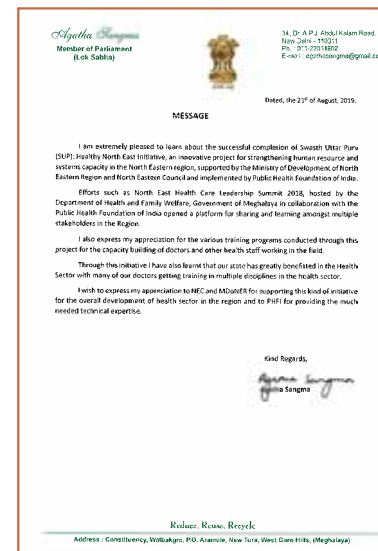
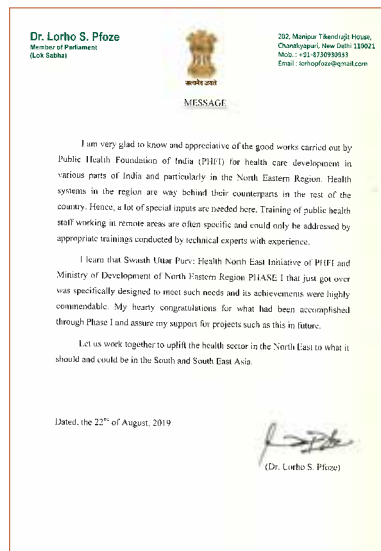
In addition, primary care physicians were trained in the management of NCDs ranging from management of hypertension, diabetes, pulmonary diseases, thyroid disorders amongst others.

These capacity building efforts are complemented by conducting impact assessments of innovations for improving outreach and effectiveness of programs and organizing awareness building activities, policy dialogues around emergent health priorities of the state/ region.

The 3rd Annual North East Health Care Leadership Summit in Meghalaya organized

by Public Health Foundation of India's Swasth Uttar Purv in collaboration with the Department of Health and Family Welfare, Govt. of Meghalaya also seen a tremendous success as it presented a unique opportunity in the region for cross learning, sharing of knowledge between the various stakeholders across the states. There was an active participation by medical practitioners, hospitals, government health departments, academia, civil society organization from the region. These summits helped in forging partnership between national, regional and local stakeholders that are unique to the region and contributed to quickening of deployment of processed that were proven to be successful.

The period from October 2018 – July 2019 also saw completion of first phase of Swasth Uttar Purv: Healthy North East Initiative with an evaluation conducted between the month of May to July 2019 aimed at identifying results and contributions of Phase which built capacity at the institutional and individual level for the state government officials in the North Eastern States. The dissemination meeting held at the North Eastern Council Secretariat, Shillong, Meghalaya on the 15th of August 2019.



Communication for Health Education, Tuberculosis Notification and Awareness (CHETNA)

Keeping in view the growing concern on the Tuberculosis (TB) as a major public health challenge, Public Health Foundation of India (PHFI) initiated a pilot intervention in Meerut city on private sector engagement for TB control supported through CSR assistance from the HT Parekh Foundation during June 2016–December 2018. A three-pronged approach was adopted to -: Improve TB notification among private practitioners, enhance the capacity of the private sector to improve treatment as per the WHO endorsed Standards for TB Care in India (STCI) guidelines; and to enhance awareness among the public regarding care seeking for TB. The project closely collaborated with the key stakeholders i.e., District Tuberculosis Centre, Meerut; Indian Medical Association – Meerut Branch, key hospitals, private providers and district administrations to implement the project activities. Training modules for private practitioners and support staff were developed. The project played a critical role of bridging the gap between the public and private sector players and doubling the notification of TB cases diagnosed in the private sector largely catering to slum population from Meerut and



Door to Door campaign on TB awareness

surrounding districts and submitted about 3000 notifications to the District Tuberculosis Officer. Being a non- incentivized model of engagement, for ensuring sustainability, project CHETNA engaged with IMA Meerut Chapter through a formal agreement. Innovative tools and techniques to enhance TB notification, build capacities of service provides and enhance awareness among the public on TB were developed. A peer led engagement and sensitization model was used wherein leading private practitioners were identified and mobilized to constitute a TB Taskforce to facilitate and catalyze the adoption and conformance to standard diagnosis and treatment guidelines on TB, among private practitioners in the district. As part of the communication activities, an array of activities

for effective community engagement were undertaken coupled with an innovative communication campaign. School children rallies, painting competitions, poetry and essay writing competitions, parent-teacher meetings, involvement of slum elders, informal service providers, and madrasas, house visits, Nauchandi Mela, wall writings at key locations etc., resulted in an increased awareness regarding TB and its impact on the society. Special efforts were made to include cottage

industries, factories and other work places. A mnemonic “CHETNA Didi” was developed to carry messages to the community and through its communication activities, the project reached out to TB patients, their immediate family members, community members, students- teachers, doctors and support staff, factory workers, etc. It successfully raised “One Lakh Voices against TB” during a week-long celebration of World TB week through CHETNA ‘Raths’ and Street Theatre. School children participated in “Freedom from TB” campaign by taking out rallies, slogan writing, blowing tri colored balloons with key message on ‘Saving our Lungs’ (as part of the communication activities). CHETNA has successfully trained about 1000 doctors from Indian Medical Association, National Integrated

Medical Association and medical students from private and government medical colleges in Meerut. More than 150 support staff and RNTCP program staff were capacitated on TB diagnosis and counselling. More than 13,000 students and 1500 teachers including Moulanas from schools, madrassas and colleges were sensitized on TB. About 1700 parents and 233 volunteers were trained on TB signs and symptoms and importance of early diagnosis, prompt referrals, nutrition and adherence to treatment. In collaboration with the health department, during the month long Nauchandi Mela, a local fair, more than 40,000 people were sensitized on TB. Door to door campaigns were undertaken in which more than 7000 household members from 1281 slums were made aware on TB. More than 700 patients were followed up and about 50 TB suspects identified during home visits and parent teacher meetings were referred to the District Tuberculosis centre for treatment.

The project has been successful in substantially improving notification from the private sector, perceived facilitator for bridging the gap between the public and private sector, enhanced awareness among the public on TB and enhanced capacities of the doctors and support staff. (PHFI is grateful to the HT Parekh Foundation)

Monitoring & Evaluation support to the National Vector Borne Disease Control Program (NVBDCP) and Training of Epidemiologists for Elimination of Kala Azar

Kala core project supports the National Vector Borne Disease Control Program (NVBDCP), Government of India (GoI) at national and state level in endemic districts of Bihar, Jharkhand, Uttar Pradesh and West Bengal. The project provides technical support in strengthening Kala azar elimination program (KAEP) through monitoring and review mechanisms through technical inputs, monitoring, onsite mentoring and supportive supervision, data management, analysis and reporting on key indicators from the field/various levels for evidence based decision making. Critical insights have been provided in case identification, reporting, diagnosis and treatment and in preparedness and implementation of IRS activity. Besides, the team also undertakes routine monitoring of ILR functioning, as well as checks availability of drugs and diagnostics at all diagnostic and treatment facilities in the four States. Another key component of the project is building capacities of the national, state, district and block level personnel both medical, para-

medical and non-medical staff including district epidemiologists, surveillance officers and other officials working with Kala-azar programme (such as Vector Borne Disease Consultants or VBDC) and other Programmes such as Integrated Disease Surveillance Programme (IDSP) involved in KAEP to improve responsiveness to the program on Early Warning System (EWS) and Outbreak detection. More than 1500 personnel including the Medical Officers, Nursing Staff and Lab Technicians in nearly all of the treatment facilities and Multi-Purpose Health Workers (MPWs) in Jharkhand and Front Line Workers (FLWs) in West Bengal and Uttar Pradesh have also been trained on early identification of suspected case, and referral for diagnosis and treatment.

Partnership for Sustained Impact (PSI)

The Partnership for Sustained Impact project implemented by the Public Health Foundation of India (PHFI) and supported through the Bill and Melinda Gates Foundation (BMGF), provided support to the National AIDS Control Organization (NACO) and select states to ensure adequate coverage and quality of key prevention interventions under the III and IV phase of the National AIDS Control Program (NACP). The two

main outcomes envisaged through this support were - HIV prevention implementation services across India are consolidated, managed and sustained and institutional mechanisms made transition ready for NACO which were achieved through increased techno managerial capacities of NACO and its implementation through National Technical Support Unit (NTSU) and Targeted Intervention (TI) Division and through TSUs in AP and Karnataka. To strengthen implementation of the TI program across the country, skill building of various staff to improve overall functioning of TIs through cross learning and training were undertaken by PHFI for

Female Sex Workers/Truckers pan India except North-East through a comprehensive training covering over 786 TIs. A Standard Operating Procedure guide for facilitators was developed through a collaborative effort of PHFI, TI division, NACO and NTSU. The training curriculum was need based considering the programmatic relevance at State level. The pedagogy used for the training included experience sharing, invoking discussions on identified gaps, context specific discussions to address gaps in knowledge and skills among staff with special emphasis on newly recruited project managers and use of field based learnings.

A comprehensive training covering all TI cadres across the country was undertaken through a cascade model of trainings wherein PHFI, with support from NACO and other key stakeholders trained Master Trainers at the first level, followed by training of Program Managers of all FSW & Trucker TIs who then collectively and in conjunction with respective State AIDS Control Societies (SACS) and Technical Support Units (TSUs) trained the entire staff of all TIs. The cascading model resulted in creation of a resource pool of trainers at national, state and sub-state levels. The trained personnel comprising of Master Trainers, Program Managers and with support from SACS and respective Program Officers of the TSUs enabled capacity building of all TI staffs including M&E cum Accountant, ANM/Counsellor, Outreach Worker and Peer Educators. The trained resources were utilized by SACS to undertake further trainings in order to improve program performance and efficacy. In all, 660 PMs from FSW and Core Composite TIs along with 77 PMs from Trucker TIs were trained in these 21 trainings covering a total of 737 participants.

The cascade model of trainings achieved the following:

Tier 1

National Level: Creation of a national level pool of resource of master trainers nominated by various SACS who were instrumental in training Program Managers, TSU staffs and SACS team in respective States.

Tier 2

State Level: Second tier trainings at State level that enhanced capacities of Program Managers of all FSW and Trucker TIs in the state with support from the trained Master Trainers, TSU Team and SACS

Tier 3

TI Level : Final tier of trainings that enhanced capacities of all TI staffs including ORWs and PEs by the trained PMs, Master Trainers and TSU POs and achieved enhancing quality of implementation of the TI program

What needs to be done to ensure Universal Access to Health Care for excluded communities. Faculty of IIPH Delhi, Sunil Mathew George undertaking his research study among the kurumba community living within the forests of Attapadi in Palakkad Kerala.



TECHNICAL ASSISTANCE

Technical assistance is also being provided to central and state governments for health system strengthening. Areas of such engagement include HIV prevention, routine immunisation, allied health professional training, universal coverage, health accounts and budgeting, access to drugs, antibiotic resistance, tobacco control, environmental health, health workforce planning and public health cadre development.

Some of the major projects are:

Setting Up Technical Support Units (TSUS), Under The National Aids Control Program (NACP), India

Goal: 'to provide evidence-informed technical assistance to the State AIDS Control Societies (SACS) to enhance the coverage of multiple programme components for comprehensive HIV prevention, care, support and treatment.'

Objectives:

To provide technical support to SACS to:

- Saturate the coverage of HRGs and vulnerable populations in the states
- Enhance access of HRGs, PLHIV and eligible couples in reproductive age group (15-49

years; men, pregnant and non-pregnant women) to quality assured STI/RTI (sexually transmitted infections/ reproductive tract infections) control and prevention services

- Create an enabling environment for HRGs, PLHIV and their sexual partners (spouses, regular partners and clients) to adopt safe sex behaviours and harm reduction practices by improving their access to essential commodities like condoms, lubes and needles/syringes
- Enhance access of HRGs (both HIV-negative and HIV-positive) to quality assured services for HIV counselling and testing; care, support and treatment; and diagnosis and treatment of common opportunistic infections (OIs)
- Ensure universal availability and routine access to quality assured HIV related laboratory services in the states
- Enhance access of HRGs, PLHIV and other vulnerable groups to social protection measures/ schemes of national and state governments
- Strengthen private sector engagement in HIV/AIDS
- Build in-house SACS' staff capacities by transfer of TSU staff knowledge and skill sets

- Strengthen in-house institutional capacity of SACS in cross-cutting areas like capacity building, strategic information, operational research and communication.

Technical Support for Universal Health Coverage Pilots in Karnataka and Kerala

The broader aim of this study is to provide technical support to Universal Health Care (UHC) pilot activities in the state of Karnataka and Kerala, India. This exercise is carried out by undertaking in-depth analysis of existing data, developing a decision-support system for policy-makers and to develop a roadmap for scale-up of UHC in these states. The expected outcomes of this exercise are to facilitate governments in these two states in priority-setting, designing of the UHC programs and monitoring the progress. The project is being funded by IDRC, Canada since 2016.

The project envisaged several activities in both states. In Karnataka, the technical support included identifying priority activities: a) Developing and finalizing Standard Care Pathways for two five most common essential health services; b) Implementation support for rolling out the delivery of Comprehensive

Primary Health Care (CPHC) through Health and Wellness Centres. In the state of Kerala, the priority activities included: i) facilitating Kerala government in identifying comprehensive primary care packages and costing them; ii) facilitate the state government in its current reform through its State Health Mission called AARDRAM to improve quality of service delivery in public hospitals; iii) supporting the state government in rolling out regulatory mechanisms for effective delivery of health care services and iii) providing technical support in data analysis involving financial risk protection measures. In both the states, the Department of Health and Family Welfare, Government of Karnataka and Kerala are the partners collaborating and facilitating the UHC pilots.

Since the beginning of the project, the following activities were undertaken in Kerala:

Prepared and shared a technical report on expanding and deepening financial risk protection measures for Kerala; Carried out detailed costing exercise using Standard Treatment Guidelines for over 100 medical interventions and procedures; Developed a user manual explaining steps to register an establishment for health care providers. In respect to Karnataka, PHFI was designated as Technical Support Unit for the UHC pilots. The unit has been able to identify and rollout Programme Study Centres, conducting

orientation to Medical Officers and others in planning and monitoring of the pilot programmes. Besides, the project in association with the government has been able to develop the Standard Care Pathways for 25 clinical conditions. The project activities in Karnataka concluded last year.

Evaluating Bihar Technical Support Programme to Strengthen Public Health And Nutrition Systems for Improving RMNCH+N Outcomes

Bihar is one of the poorest states in India and has a population of over 100 million. The Bill & Melinda Gates Foundation (BMGF) is funding the Technical Support Program (TSP) in Bihar in collaboration with the state government, the goal of which includes reduction of neonatal mortality.

PHFI could engage across these three components:

1. Household survey for neonatal mortality
2. Potential impact of TSP interventions on neonatal mortality reduction
3. Other technical support Since the beginning of the project, the following activities were undertaken in Kerala:

Prepared and shared a technical report on expanding and deepening financial risk protection measures for Kerala; Carried out

detailed costing exercise using Standard Treatment Guidelines for over 100 medical interventions and procedures; Developed a user manual explaining steps to register an establishment for health care providers. In respect to Karnataka, PHFI was designated as Technical Support Unit for the UHC pilots. The unit has been able to identify and rollout Programme Study Centres, conducting orientation to Medical Officers and others in planning and monitoring of the pilot programmes. Besides, the project in association with the government has been able to develop the Standard Care Pathways for 25 clinical conditions. The project activities in Karnataka concluded last year.

Technical Consultations and Reports by the Centre for Environment Health

Lancet Countdown India Policy Brief Launch

A policy brief for India based on the Lancet Commission's Countdown 2018 report on Climate Change and Health was authored by Dr. Srinath Reddy and Dr. Poornima Prabhakaran. CEH hosted the India regional launch of the report in December 2018 to present recommendations to the government on heatwaves and their impacts on health and labour capacity, air-pollution related mortality,

sustainable transport and media coverage of climate change.

National Health Conclave 2019: Climate Change & Role of the Health Sector

A one-day conclave was organized by Centre for Environmental Health (CEH), Public Health Foundation of India (PHFI) & Association of Healthcare Providers of India (AHPI) about health impacts of climate change in India, role of the health sector & appropriate risk mitigation & adaptation strategies. “LET US LIVE...” a musical evening featuring Grammy® Winner Ricky Kej-Music Maestro, UNESCO mgiep’s Ambassador, UNICEF Celebrity Supporter & United Nations Humanitarian Artist, organized to raise awareness about harmful effects of climate change and health and the need to preserve & save our beautiful planet. A White Paper was drafted to summarize the available evidence on inter linkages between climate change, air pollution and its

associated Health impacts and the critical role played by the health sector as a contributor as well as a first responder to climate change. The White Paper with recommendations will be presented to the government.

Consortium for Health Effects of Air Pollution Research in India (Chair India)

The Centre has facilitated a Consortium for Health effects of Air Pollution Research in India (CHAIR India) with Karolinska Institutet, Sweden. This consortium aims to build a strong evidence base for the health effects of air pollution in India connecting India-based work by exposure scientists and public health researchers that can effectively feed into policy-making. The goal of the consortium is to create a common platform for exposure scientists and public health researchers to share, conduct research and build the evidence base on air pollution research in India.

The Centre collaborated with Centre for Occupational and Environmental Health and National Health Systems Resource Centre associated with the Ministry of Health and Family Welfare for incorporating the Green and Climate resilient healthcare rules and guidelines into the latest Indian Public Health Standards. This effort is to bring in a dialogue and policies on climate-smart healthcare to reduce healthcare carbon footprint in the Indian health systems.

The State Government of Punjab signed a Memorandum of Understanding with Public Health Foundation of India (PHFI) on 7 September 2019 to undertake collaborative programs in the areas of environmental health, road and food safety besides nutrition and preventive health among others through the Mission Tandrast and Mission Innovate Punjab. PHFI researchers will be providing technical inputs on all aspects of the two Missions and guiding implementation on the ground.

RESEARCH PUBLICATIONS



LIST OF PUBLICATIONS

2019

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Book & Book Chapters

Total 296 Books or Book Chapters published by PHFI Researcher since 2007 and 30 Books or Book Chapters published between 2018 till August 2019. Some of them are best seller, got best review and very high impact Books. For example, these were two major books published in Year 2019.

1) Make Health in INDIA – Reaching a Billion Plus

Author of this book is Prof K. Srinath Reddy. The book critically analyses the various policy initiatives undertaken over the past 15 years to improve access and affordability of health services with particular attention to the National Health Policy of 2017 and Ayushman Bharat unveiled in 2018.

2) Tandon's text book of Cardiology" (Vol 1 & 2)

A comprehensive two volume 1600 pages was edited by Prof. Dorairaj Prabhakaran and is aimed at Cardiology fellows and Cardiologists in Practice.

2019

1. Babu GR, Jeemon P. Evaluating Published Research. In: Prabhakaran D, Kumar RK, Naik N, Kaul U, editors. *Tandon's Textbook of Cardiology*. Vol. 1. New Delhi, India: Wolters Kluwer Health (India); 2019. p. 223-39.
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Research Papers in Conferences - Presentation (Oral or Poster)

Total 904 Research papers presented (Oral or Poster) in different National & International conferences since 2007 and 69 paper presented between 2018 – August 2019 by PHFI Researcher.

Project Reports

21 Project reports were published in collaboration with different National (Govt / Non Govt) and International partners during 2018 – August 2019. Some of these report were submitted to State or Central Government, United Nations & World Health Organization etc.

PHFI IN NEWS

3 BP readings must for right diagnosis

Times News Network

Mumbai: The chances of a patient's blood pressure readings not being accurate are high if not taken three during a visit, states a new Indian study.

The study by the Public Health Foundation of India and All India Institute of Medical Sciences (AIIMS), New Delhi has calculated that there is a 60% higher prevalence of hypertension if only the first blood pressure reading is considered for diagnosis in comparison to the mean of the second and third readings.

"Improper measurement of BP can lead to inaccurate classification, overestimation of a patient's true BP, unnecessary treatment, and misinterpretation of the true prevalence of hypertension," said the authors of the study published in the peer-reviewed Journal of Human Hypertension. The normal blood pressure for a young person in the thirties is below 120/80 mmHg. However, it is known that blood pressure readings fluctuate with moods, meals, fever, among other factors. There also is a well-recognized phenomenon called the white coat syndrome in which a person's blood pressure rises merely by being around doctors. It is, hence, recommended that a person's BP readings should be repeated if the first one is abnormal.

In current clinical practice, often a single BP measurement is used to diagnose and manage hypertension in busy clinics, said the authors. This results in a large number of patients being labelled as having high BP and receiving treatment that may not be needed.

Although there are American and European guidelines on measurement of blood pressure, there is no consensus on the number of recommended measurements as a single visit or the method of arriving at final clinic BP readings.

Hence, the PHFI-AIIMS study analysed the data of the National Family Health Survey conducted in India from 2015 to 2016. Using statistical analysis, they found a 50% higher prevalence of hypertension when only the first reading was considered instead of a mean reading.

"In the young population, based on a single BP measurement, the prevalence of hypertension was 18.5% and when the average of second and third readings was taken, the prevalence was 10.1%," said the authors.

54% of health professionals not qualified enough: Study

'20% Of Docs In India Not Part Of Workforce'

24% OF DOCS SHORT OF QUALIFICATIONS

Percentage of health professionals without the requisite qualifications

Health worker category	Health professional not with requisite qualifications (%)
Allopathic physician	24
Dental practice	8
Ayush	21
Physiotherapy, diagnostic and others	45
Nursing and midwifery	50
Health associate professional	52
Pharmacist	62

New Delhi: Around 54% of health professionals including doctors, nurses, midwives and other paramedics in India do not have required qualifications, whereas 20% of adequately qualified doctors are not in the current workforce, a new study in the British Medical Journal (BMJ) shows, highlighting concerns about a severe dearth of quality care across the country, particularly in rural areas.

The study, conducted by researchers from the Institute of Public Health and the Public Health Foundation of India, was also the first to report on the educational level of health workers in India, reflecting a widening gap between demand and supply of health personnel which is already in shortage.

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Distribution of health workers in rural areas anaemic: Study

Country, however, is close to WHO norm on overall number of health professionals

Density of health workers among States/UTs

#10,000 population

State/UT	Density of health workers (#10,000 population)
Andhra Pradesh	1.8
Assam	1.8
North-Eastern States	1.8
Uttar Pradesh	1.8
Chhattisgarh	1.8
Gujarat	1.8
Haryana	1.8
Himachal Pradesh	1.8
Jammu & Kashmir	1.8
Madhya Pradesh	1.8
Nagaland	1.8
Northeast	1.8
Rajasthan	1.8
Tamil Nadu	1.8
West Bengal	1.8
Goa	1.8
Kerala	1.8
Odisha	1.8
Punjab	1.8
Uttarakhand	1.8
Delhi	1.8

Country, however, is close to WHO norm on overall number of health professionals

India currently has more or less adequate number of healthcare professionals, but their distribution across the country is rather top-heavy, according to a new study.

Although the overall size of health workers population in India is smaller than that of many developed countries, these numbers are close to the World Health Organization's (WHO) minimum threshold of 22.8 doctors and nurses per 10,000 population. However, there are serious problems in the distribution of health workers across the country.

Diverse trends in diseases need state-specific remedies: Experts

HEALTH ALARM Global health study shows the rise of non-communicable diseases in the country

THE INDIAN EXPRESS

13 September 2018

4 of 10 women who commit suicide in world are from India, most are under 40

BARBARIC CHINA TREATS ALBINO WOMEN

BARBARIC CHINA TREATS ALBINO WOMEN

BARBARIC CHINA TREATS ALBINO WOMEN

Toxic air killing Indians faster, 2.5 yrs younger

THE AIR WE BREATHE

Air pollution is killing millions prematurely

Health experts say that air pollution is killing millions prematurely in India. The study, conducted by researchers from the Institute of Public Health and the Public Health Foundation of India, was also the first to report on the educational level of health workers in India, reflecting a widening gap between demand and supply of health personnel which is already in shortage.

Diet revamp needed to feed 10 billion by 2050

LANCET STUDY Eat minimal meat, rely largely on plant-based diet, say scientists

WHAT AND HOW MUCH

Based on a 2,500 kcal/day diet, the consumption must include a daily combined intake of:

Food group	Intake
Grains	175g (dry weight)
Vegetables	125g (raw weight)
Fruit	125g (raw weight)
Protein	50g (raw weight)
Oil	25g (raw weight)
Salt	5g (raw weight)
Alcohol	0g (raw weight)

The Lancet study, published in The Lancet, says that to feed 10 billion people by 2050, the world must shift to a diet that is low in meat and high in plant-based foods. The study also found that the current diet of the world is unsustainable and that a shift to a plant-based diet is necessary to meet the needs of the growing population.

Why we need community health providers

hindustantimes

There are the vast gaps of access and quality. There's a way to reconcile the views of the government and doctors

Community health providers are essential for improving the health of the population, particularly in rural areas. They provide a bridge between the government and the community, ensuring that health services are accessible and of high quality.




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