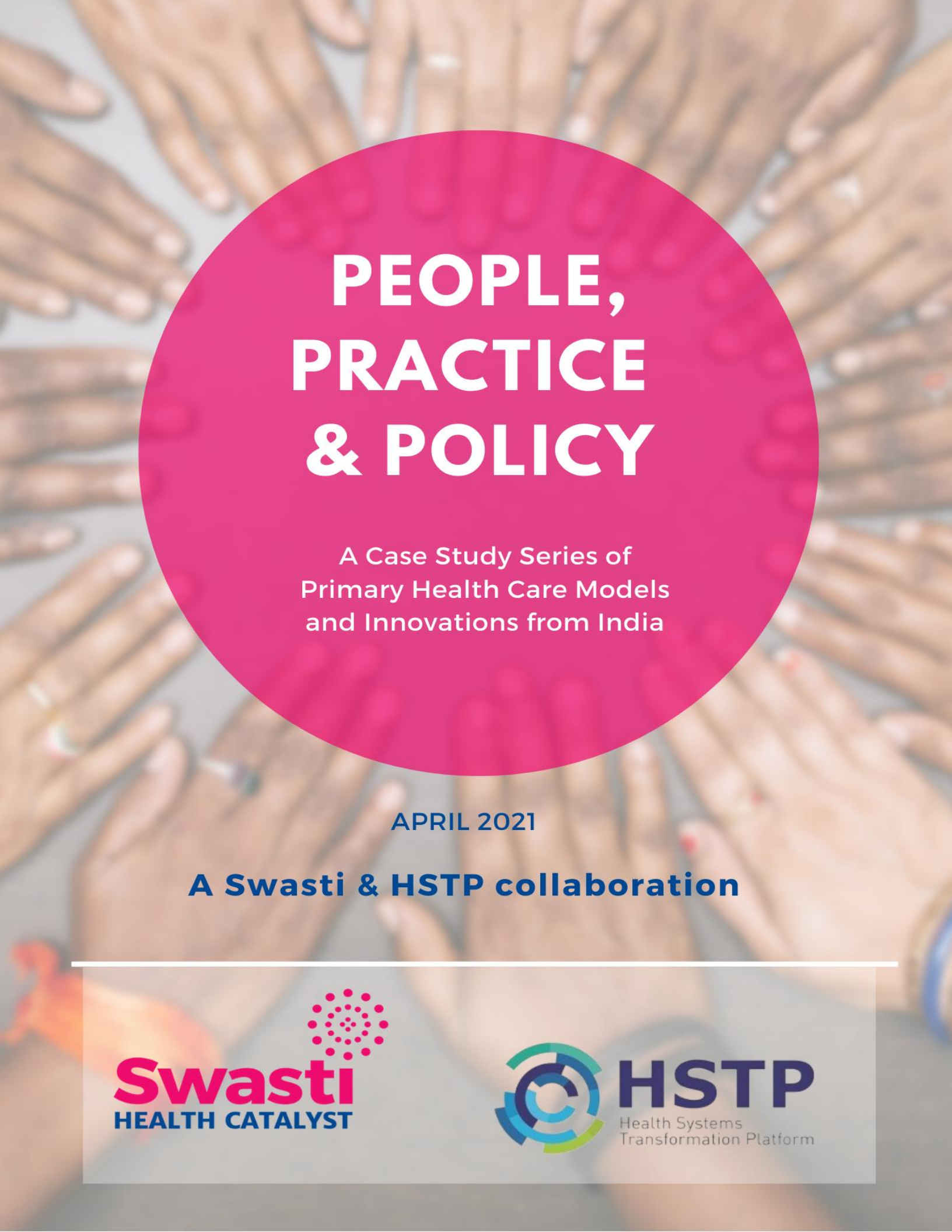

PEOPLE, PRACTICE & POLICY

A Case Study Series of
Primary Health Care Models
and Innovations from India

APRIL 2021

A Swasti & HSTP collaboration

Swasti
HEALTH CATALYST

HSTP
Health Systems
Transformation Platform

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ABBREVIATIONS

Acronym	Name
NGO	Non-Government Organisation
PHC	Primary Health Care
UHC	Universal Health Coverage
NCD	Non-communicable diseases
CPHC	Comprehensive Primary Healthcare Center
FHC	Family Health Center

EXECUTIVE SUMMARY

Caption: Swasti's i4We Health Facilitator meets with a member family as part of her routine household visit in Bommanahalli slum in Bengaluru, India.

Context of this Handbook

The objective of this report is to highlight some primary healthcare exemplars through narrative case studies and bring out inspiring and innovative learnings that all actors within the primary healthcare system can utilize. The innovative solutions work in radically different pathways to improve efficiency and effectiveness in PHC within their context.

We have chosen 8 case studies to explore through interviews and categorized their learnings into buckets or components of an ideal PHC model system. The purpose of this is to allow readers to be able to pick and choose which area of the healthcare system (governance, workforce, financing) are they looking to learn from and use these solutions in their own way.

We identify flavours in the recipe of a strong comprehensive primary health care model as well as grounded innovations that are within the models and are stand-alone that can be adapted to fit in. Key factors for supporting sustained primary health in a community identified by the study include: (1) foundational factors that help to prime the environment for policy level action; (2) catalysts that facilitate coordination among diverse agencies; and

(3) success factors for effective implementation and ongoing collaboration. Following is a summary:

This report is a narrative of the insights, the levers, the catalysts and elements of success with these case stories as examples.

What makes a foundation for sustained primary health in a community?

Foundations are factors that prime the environment or lay the groundwork for sustained prioritization or sustained action.

Recognition of historical inequities and the collective desire for equality and social justice.	Long-running commitment by community-level advocacy groups.
Awareness and acknowledgement of the historical contexts of policy and programmatic trends that relate to health inequities are critical to a more complete understanding of overarching health determinants and can help drive service delivery and innovation	Knowledge and activism around pressing community-level needs create an environment that is receptive to delivery.

Specifically expressed community needs/desires.	Commitment of local champions to advance issues and solutions.
Information conveyed directly by community members (e.g., to public officials at town hall forums, meetings) generates awareness of specific local community priorities and lays a direction and foundation for action.	Across states, innovative leaders, at any level, are continuously exploring opportunities to move the needle on issues of importance. This research and pre-work can be leveraged for action when catalytic events occur like change in leadership, larger environmental policies and budgetary allocations, exigencies like pandemics etc

Ten Outstanding Insights

Here we list the learning insights we gleaned from the selected exemplars. These learning insights cut across stories and were brought forth through multiple different pathways that these PHC heroes took to build equitable access to care.

1. No one PHC component makes or breaks the success of a CPHC model, it's the driver, the intersections of the different components and people that helps achieve excellent results and health outcomes. A critical learning was the synergy of these elements that brought forth higher quality care.
2. A successful PHC system requires diverse owners: government, civil society, private sector, public and community leaders, along with bridges linking these actors together. This not only allows CPHC models to provide for each community's needs, but also provides continuous care.
3. All the models made significant investments at providing equitable access. Task-shifting and digital innovations have been a key in making this a reality especially in resource constrained environments.
4. Successful models have a strong consistent proactive population outreach, respond to population needs and especially in CPHCs, focus on health determinants according to population need. The key to this was keeping equitable access in mind that approached care from the determinants of health. Inequitable care of marginalized communities often occurs due to the health system overlooking their specific needs.
5. Scripts/ decision support system/ clinical algorithms have been seen as an effective tool for maintaining consistent quality of care.
6. Finding incremental ways in adding services that are missing has helped make models more responsive to population needs and not strained the existing system.
7. Most of the successful models exhibited team-based care rather than a single professional (doctor or nurse centric care). The key for this was operationalizing task shifting innovations, creating positive feedback loops where both frontline workers and providers benefited.
8. Sustenance seemed to be directly attributed to diverse sources of financing and by optimizing existing resources.
9. Community acceptance and ownership of primary health ensured sustained health outcomes.
10. Openness to innovation, learning, sharing and application of learning set apart the exemplars from the rest.

INTRODUCTION

Caption: A family of five in Bommanahalli slum in Bengaluru, India as they wait for Swasti's i4We Health Facilitator

Primary health care is a whole-of-society approach to health and well-being centred on the needs and preferences of individuals, families and communities[1]. Primary health care systems serve as a first point of contact for patients and are well positioned to help individuals navigate through changing needs in the life-course: addressing health promotion, prevention, treatment, rehabilitation, and palliative care. Primary health care promotes preventive care and good health by addressing underlying social and environmental determinants of poor health, acts as a bridge to the overall healthcare system, and may be leveraged to facilitate community participation and ownership in the healthcare system. It can quickly adapt to new technologies, demographic changes, health innovations and has a high return on investment due to reduced health system costs such as reduced hospital admissions, and reduced social costs through improved health, productivity and number of healthy days for individuals.

[1] WHO (2019). Primary Health Care accessed from https://www.who.int/news-room/fact-sheets/detail/primary-health-care

It focuses on serving as the first point of contact and is positioned to help families and individuals through their life-course. In order for a country to have a strong health system, it first needs to have a strong primary healthcare system, especially for the following reasons:[2]

a) Primary health care is well-positioned to respond to rapid economic, technological, and demographic changes, all of which impact health and well-being
b) Primary health care has been proven to be highly effective in addressing the main causes and risks of poor health and well-being and handling the emerging challenges that threaten health and well-being. It has also been shown to be a good value investment, reducing healthcare costs and improving efficiency by reducing hospital admissions.
c) Stronger primary health care is essential to achieving the health-related Sustainable Development Goals (SDGs) and universal health coverage.

[2] *ibid*

What do we know about Primary health care in India?

India's primary healthcare system's predicament is primarily it's dual-burden, or multi-burden disease. It faces common infectious diseases, neglected tropical diseases, along with chronic deficiencies and a growing number of non-communicable diseases among its urban population. In order for it's PHC system to address such complex needs of multiple communities and uphold its responsibility of the Alma-Ata Declaration of Universal Health Coverage, it needs innovative solutions that can be flexible and scaled up even within low resource settings.

The bottlenecks in the Indian primary healthcare system are common and well documented: shortages in staff (India has a doctor-to-population ratio of 1:1,674, compared with the World Health Organization norm of 1:1,000), stock outs of common medications, lack of services for NCDs, poor quality of services especially in government PHCs, high cost, and reduced accessibility to other options of private institutions. In order to mitigate these challenges and increase access to and strengthen delivery of primary health care, multiple government, NGO, and private initiatives have created comprehensive care models and many have implemented innovative health solutions.

Comprehensive Primary Healthcare Centers/Models are classified as models that meet people's health needs throughout their life course including promotive, protective, preventive, curative, rehabilitative, and palliative care. They address broader determinants of health and take into account people's agency to choose (their characteristics and behavior). And finally, they empower individuals, families, and communities to optimize their health especially by integrating them and giving them ownership within the primary healthcare system. This criteria is an ideal one and does not necessarily mean that every model will have or need every service that could fall within this definition. It is the understanding that CPHCs belong in a broad PHC system that has the capacity to provide these needs. Not every CPHC will require palliative care depending on its context, and for this reason we have looked at CPHC models in their own capacity to perform for their designated population.

Our case studies also consist of primary healthcare innovations, broadly described as any new or improved intervention, ranging from health policies to management methods to products and technologies. It is meant to respond to any unmet public health need by either creating new resources or streamlining existing ones to focus on vulnerable populations. Health innovations can be created and implemented at any point of the health system and focus on improving efficiency, effectiveness, quality, sustainability, safety, and/or affordability[3]. These innovations are crucial to the betterment of CPHCs and filling in the gaps of care to push towards comprehensive care. These solutions are what move the system forward and help program managers and policy makers alike understand new ways to reach UHC.

These case studies are meant to inspire the next steps in the Indian PHC's journey towards universal health care.

[3] https://www.who.int/topics/innovation/en/ (WHO 2019)

Situating Primary Health in a Framework

To understand each of these exemplar's journey's we mapped their path and successes through a PHC model framework. This framework encompasses a CPHC's focal points— delivering preventive, promotive, curative, rehabilitative, and palliative aspects of health across a person's life course to ensure universal and equitable healthcare. Through this holistic approach and a key focus on community integration and participation, we described the building blocks of a PHC system of systems and PHC component level determinants that lead to specific PHC services and outcomes. We understand the relationship between these building blocks are not linear and wanted to show how a synthesis of all of these components forms a dynamic framework, especially one that is influenced by context, geography, culture, political will, and agency of actors within the system: policymakers, health-seekers, health-providers, all have decision-making power that doesn't let one component lead to another in a linear fashion.

System-level determinants are external influences that determine the functioning and priority setting of multiple PHC facilities. PHC policies determined by the concerned state government play a huge role in the health outcomes, as evident from the high indicators of states like Kerala and Tamil Nadu. Similarly, other systematic determinants like finance, the capacity of the facility to gauge and respond to the larger population demands, along with interventions that add to community participation are integral to CPHC. Whereas internal components facilitate service delivery to achieve individual and public health outcomes. Coupled with the external elements, a well-oiled CPHC system requires an agile workforce structure, functionality driven infrastructure, reliable financial streams, efficient

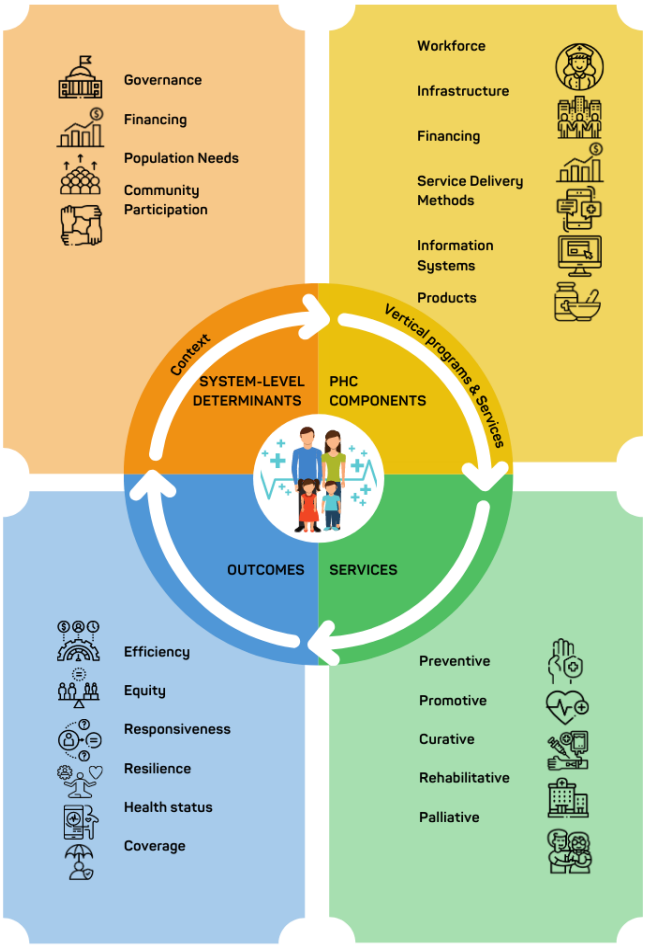

Figure 1: Swasti's Comprehensive primary health care framework

service delivery methods, optimal utilisation of information systems and need-centric designing of products.

To deliver high-quality public health services aimed at prevention and care of ailments, palliative care, and promotion of a healthy lifestyle, optimum system level determinants and PHC components need to be in place. Only then is the goal for universal healthcare attainable.

While conducting interviews across all these exciting programs, we found key messages reiterated over

and over again, across so many different solutions. Despite being varied in their unique solutions, they all shared the common goal of creating a comprehensive primary healthcare system within India. Each one went about it using a different pathway, but they found common learnings on how they believe their program model or innovation brings us closer to a more comprehensive Indian primary healthcare system.

How did the Exemplars get selected ?

To begin our case study narratives, we first needed to ensure that we select case studies that are promising and will provide learnings that are truly needed for the Indian PHC system today. We took the results of our previously conducted systematic review of health innovations and a desk review of comprehensive primary healthcare models and put these through multiple readings to reach a consensus of 16 models and 10 innovation case studies to reach out to for further study. The Institute of Public Health had conducted a desk review of all comprehensive primary healthcare centers in India. Their parameters of search were similar to the systematic review of health innovations and followed the same definition of CPHC outlined above. Their search resulted in 76 CPHCs and they chose to reach out to 16, of which 12 were confirmed to study in further detail[4]. To prevent duplication of efforts, we were able to utilise their data and further select from the remainder of 60 CPHCs for our case studies and remove the 16 that had already been chosen for further study.

These 60 models were researched and their data extracted in order to discuss among team members and senior management which ones would be chosen with which criteria. Each chosen case study was selected based on their ability to deliver comprehensive care for a selected population over a long period of time, showing that they have been able to deliver care sustainably and successfully. Innovations were chosen based on their impact and uniqueness within their context. These resulted in the following selected models and innovations:

[4] 1.Jan Swathya Sahyog (JSS) Bilaspur, Ganiyari, 2.Rural Rishi Valley Madanapalle 3. Tribal Health Initiative, Sittilingi 4. LCECU-CMC 5.Basic Health Services (BHS) Rajasthan, Gujarat. 6.FamPhy 7. Swasti-i4We (invest for wellness) primary health care model 8. Asha Kiran, Lamtaput 9. Society for Education, Action and Research in Community health (SEARCH), Gadchiroli 10. DHAN- SUHAM, Madurai 11. Merrygold, Uttar Pradesh 12. CHAI

Case Study Name	Description	Location	
Comprehensive Primary Healthcare Models			
1. What can a leader achieve? - the case of Noolpuzha Primary Health Center	CPHC model in the tribal village of Noolpuzha with an emphasis on adaptive and proactive governance	Noolpuzha, Wayanad, Kerala	Case Study 1
2. Whose Health Is it? - The case of Community Needs assessment based program design, Institute of Health Management, Pachod	CPHC model pushing towards comprehensive care by focusing on population needs and surveillance	Pachod, Aurangabad, Maharashtra	Case Study 2
3. Can Communities be more than beneficiaries of the health system? - The case of KC Patty PHC and community governance	A community ownership focused CPHC model	Kodaikanal, Tamil Nadu	Case Study 3
4. Who is Accountable for Health? - The case of Community Monitoring and Planning (CBMP) by SATHI	CPHC model focused on community based monitoring and planning	17 districts of Maharashtra	Case Study 4
Primary Health Care Innovations			
5. Low-cost Technology to High-level Impact: Using Simple Tele dentistry for Wellbeing at Manipal Academy of Higher Education	A digital Innovation for screening Oral PMDs through mobile phones	Udupi, Karnataka	Case Study 5
6. mPower'ing primary care delivery for NCDs - The case of mPOWER Health a tech-enabled approach	A multi-layered innovation that uses task-shifting and a digital (mobile-based) decision support system	Andhra Pradesh, Himachal Pradesh, Tripura	Case Study 6
7. On Games and Well-being- A Case story of POD Adventures, an innovation in mental health among adolescents	Gamified digital service delivery innovation	New Delhi	Case Study 7
8. A stepped-care design to improve equitable access to specialised care - The case of MANAS	A lay-health worker intervention that helps create integrated teams for mental healthcare	Goa	Case Study 8

KEY LESSONS

Caption: An i4we wellness facilitator in consultation with a patient

Through a systems lens and utilising our PHC framework, we probed our interviewees a little further to describe what they believe is key in reaching a CPHC system in India and how they believe their program, model, or innovation is a key in attaining that goal. Many responded with key messages that cut across our framework and case studies and brought to light the different ways in which the PHC system in India can move towards comprehensive and universal coverage.

Ten Outstanding Insights

1. **No one PHC component makes or breaks the success of a CPHC model, it's the driver, the intersections of the different components that helps achieve excellent results and health outcomes.**

In a successful model, it is not a single component of a model or innovation but the culmination of several components as seen in the framework.

An example of this is POD Adventures where the main innovation or the component of
focus was a digital service delivery method (gamified version of counselling for adolescents). However, this innovation was only successful to such a great extent, because they employed lay health counsellors to counsel users of the video game, making the human connection critical for long-lasting impact. Implementing this innovation in a school setting also added to high uptake because of a conducive and judgment-free environment where the children received information on its benefits and significance. Similarly, with the Wayanad CPHC, governance was the central point of the model, however, strong political will led to an augmented financial stream that was key in the success of the model. The transition from PHC to FHC changed the service delivery drastically and had a medley of components contributing to its success. Mobilizing the community to actively change their lifestyle and behavior was encouraged by the FHCs, making this model highly successful by cutting across several components of the PHC framework. The IHMP model also paves the way to comprehensive care by focusing on the community's needs but supporting that with innovative workforce structure, community ownership and sustainable product development. Each component adds to another, where the whole becomes greater than the sum of its parts. Innovations and PHC components therefore should not be looked at in isolation.

2. A successful PHC system requires diverse owners: government, civil society, private sector, public and community leaders, along with bridges linking these actors together. This not only allows CPHC models to provide for each community's needs, but also provides continuous care.

No successful PHC system works with only one type of actor. It is formed through the amalgamation of different actors, different sectors, and different communities. Each of these stakeholders have different needs, priorities that have to be coordinated and considered when making decisions and these diverse priorities are what ensure that everyone's needs are voiced, heard, and met. Take for example the Wayanad model where NGOs, CBOs, private hospitals, and a government facility came together to offer safe delivery services to expectant mothers. Similarly in Kodaikanal, the KC Patty PHC model was able to utilize other NGOs to train their outreach workers to become lay-family practitioners for their communities. A key player that all of these programs have tried to engage with is the government. Many interviewees have stressed how important government buy-in is to create continuous care and that without the government taking responsibility, the healthcare system will never reach its full potential or universal healthcare. Government responsibility through the entire system, primary through to tertiary, builds in an incentive towards primary care, because that is the only way of keeping tertiary costs low. Many interviewees agreed that this accountability will be a stepping stone towards UHC in India.

To enable such multicomponent programs, inclusion of several stakeholders is important. Building these bridges and linkages is the key to developing well-rounded care models and that is seen in all of the programs, innovations and models that were highly successful. Diversity among stakeholders not only involves several groups and delegates responsibilities, but also brings different perspectives towards care delivery that a single organization might not be able to recognize. For example, if medical professionals are the singular stakeholders in a diabetes care delivery intervention they will focus more on downstream care after development of the outcome, medication use and treatment adherence. However, involving the community members by means of lay healthcare workers educating people on the importance of proper nutrition and exercise can empower them to actively change their behaviours. This will result in a more successful model where both the recipient and caregiver are actively involved. Thus, a diverse panel of stakeholders that involves the medical workforce, governing bodies, the community, civil society and influential community leaders is critical for the development of a comprehensive care model or program. This is especially seen in the Wayanad case study where the government run PHC provides the care, but the funding is received through close ties of the panchayat, gynecologists time and scans are volunteered for free from private hospitals, NGOs and CBOs provide food in order to support nutrition initiatives. All these come together to serve the community needs.

3. All the models made significant investments at providing equitable access. Task-shifting and digital innovations have been a key in making this a reality especially in resource constrained environments.

All of the successful models that we investigated invested heavily in order to provide equitable access to care. Ensuring easy access resulted in high uptake and contributed to the continuum of care, leading to high acceptance amongst the communities. The civil

society models that employ community outreach methods are especially successful in providing equitable care, a core principle of CPHCs. Task-shifting was one of the key methods in creating a bridge for access to care.

Task shifting to lay health workers or selected community members to take up outreach work was a common theme seen in all successful and sustainable models. This not only reduced the burden on the medical professionals but also helped to build trust and rapport with the community. Outreach workers representing different types of community members, such as the Kodaikanal CPHC, ensured that nobody felt like the PHC was not meant for them. Thus, task shifting was a cost effective and efficient way for care delivery to all members of the communities.

With the advent of Covid-19 we have seen the swell of technology within the healthcare sector. Technology has long played a role in the primary healthcare landscape and continues to be a key enabler in resource constrained settings to help provide equitable care. The versatility of the types of technology has enabled many parts of the PHC system to grow in capacity without additional infrastructure or human resources. It has allowed services to scale up, cross boundaries, and reach the unreached. Within many PHC models and programs, it has also been used to assess population needs, surveil the community, build community ownership through sharing of information, and build capacity in HRH through decision support systems that allow task-shifting or apps that allow a certain amount of standardized care to be delivered without any additional supervision. The PRIDE and the mPower case study exemplify this idea. In both studies technology was used to build capacity within HRH. The PRIDE study put together a gamified counselling app called POD adventures, that allowed students to explore issues affecting their mental health on their own. This could be done in conjunction with a counselor, a lay-counselor, or by themselves, freeing up time for counselors who already are heavily burdened due to staff shortages. The mPower study similarly implemented a mobile-based clinical decision support system that helps lay-nurse coordinators develop a care plan, freeing up time for the physicians and simplifying patient interactions. These innovations also foster task-shifting with electronic triaging and decision support systems.

Technological advancements are a welcome addition to the healthcare infrastructure and help shoulder the high demand for services. They can not only assist in care delivery but also play an active role in training, team building and building comprehensive information systems that mitigate the need for manual and paper-based databases.

4. Successful models have a strong consistent proactive population outreach, respond to population needs and especially in CPHCs, focus on health determinants according to population need.

Many a times, the national initiatives and primary health care programs are run in a top-down approach with targets set at a national level by the central planning authorities. By not taking the specific community needs into consideration, the system risks the low acceptance of public health initiatives and a wastage of healthcare resources. A CPHC does not need to provide all the services set out by the central authorities. The ground realities often differ with changing population needs and context not reflected in the policies and programs applied in that area.

India has one of the lowest public spending in health - 1.5% of GDP. In low-resource settings and rural

areas, the allocation of the scanty health resources based on the needs of the population has the potential to maximise the benefit from the interventions. Although other popular alternatives to a needs-based approach for health resource allocation and priority setting exist (Health technology assessments), these are relevant and well positioned at the national policy level. Population health needs assessments on the other hand have not gained traction in the public health space due to a lack of standardised indicators for "need".

In our analysis of the PHC exemplars, we found that population HNA was used to plan health services, in an equitable and efficient manner. The IHMP has worked in the Marathwada region of Maharashtra for nearly 40 years and has used HNA to tailor health interventions and create action plans that correspond to the local burden of disease and needs and preferences of the population.

It has used the process of community-based monitoring at the local level to collect data about the population health needs and attitudes to identify and plan the right kinds of health services and interventions keeping in mind the existing national strategies and policies. They were able to make dynamic decisions and focus on the most deeply felt need to deliver interventions (e.g. Life skills and health education to adolescent girls) that improved both the health (e.g. sexual and reproductive health) and non-health outcomes (e.g. education and violence etc). Through these interventions, IHMP addresses the social determinants of health such as basic education and life skills to ensure that the girls remain in school, are financially independent and have access to information about their health rights. A similar approach addressing the need-specific behaviours and determinants around nutrition in a proactive and preventative manner has helped the institute reduce malnutrition to a great extent in comparison with the plethora of supplementation and nutrition rehabilitation programs.

Figure 2. Effective planning and local priority setting[5]

Wayanad built a vegetable garden and children park that allowed community ownership to play a role in their change of eating habits. They realised that serving the populations undernutrition was to address the source, eating behaviours, rather than provide supplementation to fix the immediate and noticeable problem. This ability to address needs, specific to the community, by understanding their context is what made these CPHCs so successful and truly comprehensive in their approach. Comprehensive did not necessarily mean providing all the care under the sun, but what is required.

[5] https://improvingphc.org/local-priority-setting

Figure 3. Social determinants of health[6]

5. Scripts/ decision support system/ clinical algorithms have been seen as an effective tool for maintaining consistent quality of care.

To help the staff care delivery and involvement of non-medical professionals in the workforce, technology played a pivotal role. We see in the mPower heart study how a mobile-based clinical decision support system was employed to help the lay nurse care coordinators to develop an initial care plan by taking a note of the symptoms and medical history of patients. This significantly reduced the workload of physicians and also resulted in a higher uptake within the community because the first point of contact was a well-known and trusted member of the community. Thus, such algorithms, decision-support systems that help employ lay health workers in treatment plan development have the potential to make a model successful.

This is also observed in the KC Patty PHC (Kodaikanal) model where the Health Workers are provided with clinical guidelines that aid in case management, basic treatment of common ailments and referral to external facilities when necessary. These guidelines are available at all levels - Voluntary health workers, Nurses, and Doctors in the local language. While these guidelines are in no means hospital protocols, they help the health workers choose the best alternative for the patient based on their history, context and severity of the condition. These guidelines are cost effective when compared to resource intensive training and improve the confidence of the health workers while delivering quality care.

6. Finding incremental ways in adding services that are missing has helped make models more responsive to population needs and not strained the existing system

Services that were previously not associated with primary care, such as mental health, but are crucial in being integrated to prevent expensive down the line conditions, need an alternative solution other than just scaling up staff. Digital innovations have been key in adding and streamlining services that have now been moved to primary care. India has a prevalence of approximately 10% of the population with only 0.30 psychiatrists available per 100,000 population[7]. Between May and July 2002, only 3,800 psychiatrists existed compared to the 11,500 that were required to address the existing need.[8] Within the PRIDE case study, lay-counsellors were able to

[6] Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved [date graphic was accessed], from https://health.gov/healthypeople/objectives-and-data/social-determinants-health

[7] *World Health Organization. Mental Health Atlas 2014.* Geneva: WHO; 2015.

[8] *Government of India, Ministry of Health and Family Welfare. Annual Report 2012-2013.* New Delhi: Government of India, Ministry of Health and Family Welfare; 2013. p. 161.

interact and provide counseling through tele-counselling through schools. Primary care prevention does not necessarily need to be provided through any facility, especially when it concerns prevention and maintenance of wellbeing. Schools are a primary organization where primary healthcare can be disseminated within the community itself. Using PRIDE in schools, students were also able to access care through a game, termed POD adventures. This way they could manage on their own, reducing the burden of the available counsellors, and also providing flexibility and anonymity to many of the students.

These innovations not only think out of the box when it comes to solving HRH shortages, but also bring primary care into the community and outside the facility, a key principle in patient-centered care within the PHC framework.

7. Most of the successful models exhibited team=based care than a single professional (doctor or nurse centric care)

Although team-based care isn't widely utilised in India, many interviewees stressed the importance of holistic team-based care in primary care, especially teams that are intrinsically motivated. Integrated team-based care is generally described as a care team which would include a family or primary care practitioner, a technician, a care coordinator, and any other necessary team member taking decisions in consultation with each other to address an individual's health needs. This would be tailored to the individual, for example a gynecologist would be a part of the care team for a woman. This reduces redundancies in the system and offers the patients a more holistic form of care. In Indian PHC systems, a team is slowly taking shape with task shifting and outreach workers becoming more and more common. Lay-health workers, counselors, and practitioners are now liaisons and first responders, streamlining care and reducing workload for the practitioners. There are two major requirements for a nascent care team in India that our interviewees pointed out: intrinsic motivation within the staff and trained family practitioners. In a discussion with Dr. Ramaswamy, he described hiring outreach workers and training them to be lay-health practitioners. Each hire was meant to represent different members from the community and they all volunteered their time knowing that they are working for their own community. This built an intrinsic motivation that cannot be replaced by other incentives and a system that had better chances at sustainability. This however is rare to find with medical practitioners and most do not train within family medicine. The dearth of training in family medicine has weakened the ability of primary care to be able to respond to the needs of marginalized populations and this forms a gap within the system and the ability to form integrated team-based care.

Figure 4. An Integrated Care System

8. Sustenance seemed to be directly attributed to diverse sources of financing

All PHC facilities, models, and systems need funding. With low government spending on healthcare, only 1.5% of the GDP, many models have to look at varied and piecemeal funding from various sources. The Wayanad model is a key exemplar, showing that financial needs can be met to run an impressive and comprehensive PHC only when diverse funding sources can be identified and sustained. Dr. Muhammed was able to run the Noolpuzha PHC only by leveraging funds from all types of organizations and funding sources. Although this may not be sustained, through COVID-19 they managed to stay afloat even with increased demand. He utilised local state funding through the gram panchayat to build infrastructure, national grants to maintain medicines and hospital resources, and foundational grants to run health promotion projects. An innovative and entrepreneurial approach to funding is one way to better comprehensive primary healthcare.

9. Community acceptance and ownership of primary health ensured sustained health outcomes

The community has to play a role in their health rather than waiting for treatment and curative approaches to be delivered singularly from care providers. Successful community ownership helps to empower individuals and groups, increase the commitment of the community to change unhealthy behaviors and reduce health inequalities. It is foundational for primary health care and is essential for effective and sustainable health interventions. Community ownership goes beyond participation and extends to the act of owning control and accountability of programs which ultimately leads to the community's empowerment. Every model and innovation had some form of community involvement and ownership that helped in the successful implementation of the project. The Wayanad project created parks and gardening centers that were maintained by the community and helped improve eating behaviors.

The KCPPHC model from Kodaikanal ensured community ownership through the planning and implementation of their program by mobilizing local resources from different sectors, conducting regular meetings, training and health education sessions with the community members (volunteers), and encouraging the community members to participate in the monitoring and evaluation of the program. This has not only reaped economic benefits by providing financial sustainability, but increased community awareness about prevention, control and treatment of several common health issues, ensured high levels of acceptability and also helped in enhancing skills of the community members. This level of accountability and representation not only helps sustain the model, but also increases engagement of all different types of communities represented in the PHC.

10. Openness to innovation, learning, sharing and application of learning, set apart the exemplars from the rest

Finally, we've seen that no CPHC can progress without the adoption of new innovations. Every CPHC is only able to adapt and tailor its services to it's community through the use of innovations, through financing, community participation, or new technologies such as decision support systems, gamified applications, and new training tools. The

way these innovations are implemented is key, and sharing this knowledge of using innovations in their own context, builds to the success of the PHC system at large.

Good governance and leadership is what allows these programs to learn and adapt and keep building from where they started. Leadership can be borne out of all sectors within the primary healthcare system and is one of the critical factors in piecing together the different sectors and silos of the system to create learning continuous care. Every model and innovation studied had a key member that pushed them to further learning and adoption. Within the Wayanad model, Dr. Muhammed's vision led to the building of flexible financing, Dr. Ashok in the IHMP model ensured that the system changed with evolving community needs, learning was the most important to this system, the PRIDE innovation reiterated their program for their target audience, students, over and over again until they were able to create an inclusive program and flexible game app that could actually address the school's needs. Learning and remaining open to changes is a culture that every successful model and innovation is imbued with.

Figure. Social determinants of health[9]

[9] Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved [date graphic was accessed], from https://health.gov/healthypeople/objectives-and-data/social-determinants-health

Some Takeaways

Caption: Swasti's i4We program nurse on the way to a home-visit in Bommanahalli slum in Bengaluru, India.

All these pearls that we gathered from our plethora of interviews can be adapted to any PHC's context. Each model brings about interesting take-aways and lessons that can be used as a jumping off point for PHCs struggling with similar problems. Each innovation also provides a new way to expand and strengthen PHC services in any sector, public or private. The PRIDE project can be taken and scaled up at different schools, whereas the mPower project can be used in areas looking to task-shift to nurses and build a care-team. Dr. Muhammed's style of financing can inspire others to not look at the government as a main source of funding but optimize and navigate sources present locally, whereas the KC Patty Kodaikanal model can offer modules on family training for lay-health workers within smaller rural communities. These opportunities can be molded as actors in the PHC system see fit and should be advocated for as so.

The stories also bring out the opportunities we have now to operationalize collaborative stakeholder partnerships, create systems to support team-based care rather than placing the burden on a single medical officer in PHCs, and overall move towards a paradigm shift from HWCs to CPHCs. This system shift will need to be incremental, collaborative and will require identification of short-term and long-term goals with inputs from citizens' engagement being the heart of this movement.

These results and findings are limited by our searches on exemplars, which were conducted via desk reviews and a detailed systematic review. This limits our selections by what has been published

online and may miss those exemplars that may be doing fantastic work on the ground but haven't been put into academic publications. These reviews were conducted in 2020 and with rapid changes and evolution on the ground, especially during Covid-19, many of these exemplars would have changed and these findings would be different in the next 5 years. Despite these caveats, we have to remember that exemplars are only possible when the PHC environment is amenable to growth, learning, and innovation. These pillars form the foundation of a sustained primary healthcare system:

(1) Recognition of historical inequities and the collective desire for equality and social justice. This brings about a determinants of health approach to health services and a commitment towards universal healthcare.

(2) Long-running commitment by community-level advocacy groups to represent the marginalized and vulnerable communities.

(3) Utilisation of specifically expressed community needs/desires, to understand that comprehensive care does not mean providing all medicalized services, but services that the community needs to better their health at that given time.

(4) And commitment of local champions to advance issues and solutions. Local champions are the key to shedding light on community issues and in turn also bringing about trusted, sustainable change.

Without these a PHC system would not be able to effectively address preventative, palliative, promotive and rehabilitative care. Medical advancements and innovations are highly laudable, but they take away the focus from preventative efforts that are just as important. The models and innovations that we have explored in depth through this case series were selected because they all strongly exhibited the five hallmarks of quality primary care: comprehensiveness as per the health index, continuity, coordination, first contact availability and person-centric approach. Although they varied in their focus and priorities, the emphasis was always on high quality primary care delivery. Living through a global pandemic for the past year also stresses on the importance of a comprehensive healthcare model rather than just a strictly downstream approach, and we cannot forget to continue to strengthen these foundational pillars and create a conducive environment for the innovations and models yet to come.

What can a leader achieve? - the case of Noolpuzha Primary Health Center

Nilakshi Biswas

The Noolpuzha PHC, the first Family Health Center (FHC) in the Wayanad district of Kerala, was ranked as the number one PHC of the country by the expert panel of the Union Health Ministry, an acknowledgement of its proactive, inclusive and equitable approach towards delivering high-quality services. It's accolades and recognition are found with a quick search on google, with many cheering on its inclusive and preventative approach to healthcare. The quick rise to stardom is intriguing and upon further reading, I found the vision and journey of this PHC can be credited to the exceptional leadership of Dr. Dahar Muhammed. Dr. Dahar Muhammed, a Medical Officer at the Noolpuzha facility, has spent perhaps a little less than 4 years in his tenure there but has managed to achieve feats that may have taken a decade to finance and complete. This was due to his ability to take alternative routes when faced with financial blockades, create innovative ways to engage the community through participation and ownership and form integral relationships that brought together stakeholders to materialize his vision of a comprehensive PHC. To understand the vision, mission, and leadership, its secret to success, we sat down with Dr. Dahar Muhammed and mapped out the paths this PHC took over the past 4 years.

The Model

The Kerala government has long focused on health as one of their top priorities. In September 1995, the Primary Health Centres and Government Dispensaries were transferred to the Village Panchayats. Therefore, decisions with respect to funding are determined at the level of the state and local self government institutions (LSGIs) and public funding in healthcare is substantially decentralised and high in Kerala compared to other Indian states. The decentralization of decision-making has made it possible for the state to shift approximately 40 percent of state healthcare funding to local governments, thus, creating community-based services that are accessible and affordable. Along with various patient-centered policies, in February 2017, they launched the Aardram Mission under the umbrella of 'Nava Kerala' to achieve the following objectives -

1. People-friendly Outpatient Services
2. Re-engineering PHCs into FHCs
3. Access to comprehensive health services for the marginalised/vulnerable population
4. Standardization of services from primary care settings to tertiary settings.

The focus was to bring PHC to the forefront, in line with the Alma Ata Declaration of 1978, and encourage PHCs within Kerala to focus on incorporating the community voice and address community needs while hoping to move away from the increasingly popular curative approach to health towards a more preventative one. One of the key shifts is that of PHCs to FHCs or Family Health Centers. **Family Health Centers** are geographically bound to a local level, specifically to a singular panchayat, indicating that they have the responsibility towards only this community and that the gram panchayat serves as their governing body.

The panchayat being a powerful stakeholder in the PHC/FHC system in this region, the Swasti team and I reached out to talk to Hema, the former Secretary of the Noolpuzha Gram Panchayat. Over her tenure as the secretary, she saw the Noolpuzha PHC be the first to be converted to an FHC, and worked with the Panchayat to support the FHC through both funding and access to the community. Dr. Dahar Muhammed, the Medical Officer of the Noolpuzha FHC, had close relations with the gram panchayat that gave him an in into the community, spurring multiple innovations and building trust. Hema credited Dr. Muhammed for not only taking the FHC to the next level but creating an environment where

Noolpuzha staff became the first responders to the community. Any issue was first brought to the FHC and if needed be taken to the nearest hospital, Talique hospital, approximately 10 kilometers away.

FHCs are meant to be the first point of contact operating at the most fundamental level of our community existence, and convincing people of this is surprisingly hard. Many choose to go to specialty care, rather than taking a referral, because why waste money on an additional visit? So what did this model do right? This was possible in this case through trust. The community truly believed in Dr. Muhammed and their outreach workers and the fact that they responded to the needs of the community. After all primary healthcare only works when primary healthcare providers take responsibility for the community around them, and the community accepts them as first responders. And this could only happen if the community feels heard and finds the services useful.

Based on formal and informal population surveys, Dr. Muhammed recognised that eating and drinking behaviours constituted the main cause of health ailments in the village. Apparently, the routine **community outreach programs** in place were attended by community members, but they were not putting any of the information into practice. One of the programs was on the importance of clean water and chlorinating wells, but even if members allowed chlorination, Dr. Muhammed pointed out that due to the smell, they would travel to ones that were not yet cleaned. Similarly, many accepted they needed to have varied diets, but did little to change their day to day nutritional intake. Supplementation and treatment for water borne diseases was not the simple answer, it never is the silver bullet people make it out to be, but rather a sense of **community investment and ownership** for behavioral change. And so, a Nutrition Rehabilitation Centre (NRC) was constructed, along with a public park. To build more sense of community, the FHC hired tribal women to create brown covers to hold tablets and medicine. This allowed for the socio-economic upliftment of women in the community, positively impacting greater ownership by the community, ensuring a higher participation and proactiveness on its part.

Through all of this, Dr. Muhammed wanted to imbue the human centeredness around all parts of care and scrutinized who is included and who is not within his staff. Afterall in a rural tribal setting, a lot is a function of social and community relationships, and representation of each type of community member brings inclusivity. They recruited some members of the tribal community and made them the Gothramas under the Gothrasparsham initiative. They were hierarchically above the AMAs and ASHAs, acting as liaisons between the tribal community and the FHC. An immediate impact of this innovation was the visible reduction in the workload of the medical staff.

The Gothrasparsham initiative implemented by the FHC in collaboration with the Gram Panchayat mobilized tribal antenatal mothers to attend ante-natal clinics. State of the art electric auto rickshaws were arranged in collaboration with the Canara bank to transport antenatal and pregnant women as well as the elderly to the PHC and sub centres for check-ups. The Gram Panchayat built cottages in the villages for pregnant women to stay, with adequate nutrition provisions supplied through NGOs for safer pregnancies. It was through these partnerships that Dr. Muhammed built that the community needs could be met if existing infrastructure was not adequate.

Listening to all these innovations, we wondered where all the funding was coming from. The most pressing issue when it comes to government administered units including FHCs is — Where does all the money come from? Supporting lofty visions and ambitions is no small feat in tribal communities'

PHCs and the Noolpuzha seemed to be addressing every need seamlessly. Dr. Muhammed replied with a short laugh, saying ingenuity and involving your stakeholders is all it takes, a common theme we start to see through his stories. The key remained a judicious utilisation of funds of approximately Rs 1.83 crore routed through the Gram Panchayat, as claimed by MO —

"Out of 8 different categories of funds, which includes general purpose grant, financial commission grant, development fund - general, developmental fund- ST, developmental fund - SC, I utilised all 8.!"

Dr. Muhammed Dhar

The FHC also mobilised support through CSR— for its physiotherapy unit—MP and MLA fund, Block Panchayat, IEC and National Health Mission funds, thus, accepting and proactively seeking all help available to ensure the PHC was supporting the community. This funding did not only go towards quirky community ownership innovations, but also helped build up and maintain infrastructure and management within the FHC.

Firstly, the availability of drugs, which happens to be a prime concern across PHCs and and even at higher levels of health infrastructure, had to be addressed, and Dr. Muhammed delivered. A workable system was designed for the projection of required drugs, to preempt shortage and facilitate further procurement. This ensured that there was no shortage at crucial junctures, leading to equitable treatment of ailments.

He additionally went ahead to digitise medical records and while this seems to be an arduous task in a tribal setting, it was contextualised by simplifying the process wherein each individual connected to the FHC was given a token number connected to his/her name, which connected them directly to their medical history. This practice helped in establishing a more one-on-one connection with the doctor, leading to a more effective treatment. In one instance, an elderly lady had walked into the FHC with knee pain. Her token automatically connected the doctor to her medical records, informed him of her current complaint, and so when she entered the doctor's office, he greeted her with her name and asked her how long her knee had been paining. She could not believe that the doctor knew her name!

A patient with a chronic knee injury is grateful when the doctor says "Good afternoon aunty! How has the arthritis and knee pain been recently?". The patient feels like they don't need to repeat their entire story, their issues, and they feel welcome. It becomes a huge pull factor to feel like you are heard. This form of digitization also allows for more accurate documentation and treatment of conditions.

These incremental gestures make up a large portion of the successes of this PHC, and the marriage of good governance, people centered-ness and a community focus.

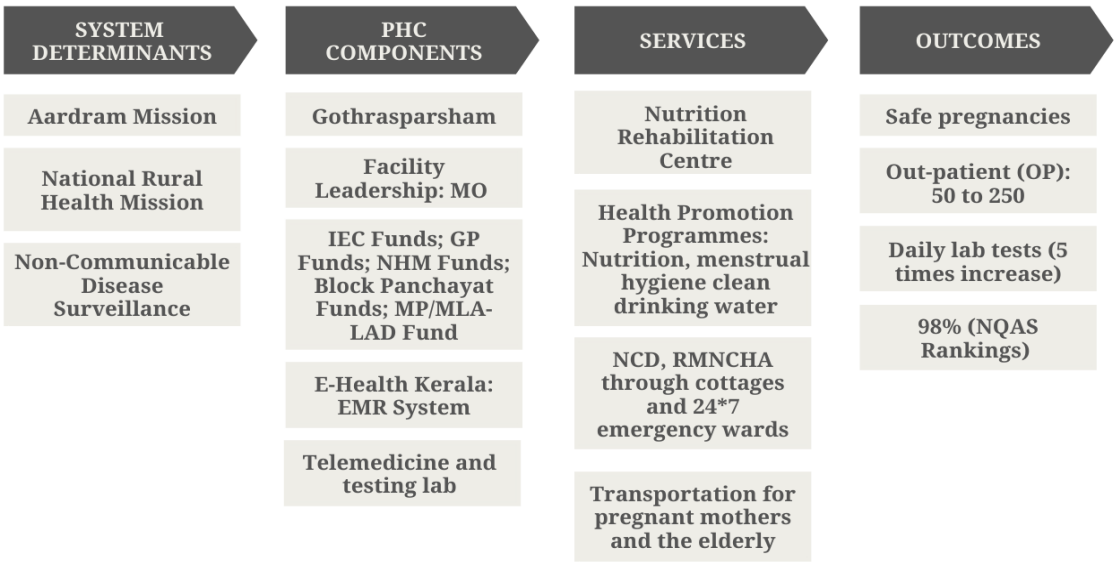

Figure 5: Noolpuzha PHC Framework

Key Insights

The health outcomes of the Noolpuzha FHC are thus a result of favourable system level determinants—the Aardram mission of the state government, and the proactive role played by FHC authorities to ensure internal components are in place to achieve desired outcomes. The Noolpuzha FHC brings out some lessons for the rest

- A CPHC is built from a multitude of stakeholders. Be it funding, human capital, or digital innovations (ie, funding from state, national, and grant based funds, gynecologist volunteers, NGOs providing food, private hospital providing scans)
- An individual with a big picture view is required to fit these puzzle pieces of the PHC system together
- Focusing on needs (ie eating behaviors NOT supplementation, maternal and child health)
- Primary health care works when there is accountability and trust. The Noolpuzha FHC worked through trust and community needs to become the first response of care within the community
- Focus on inclusivity, be open to inclusion of the private sector, and go beyond the bare minimum—best exemplified by the Gothrasparsham initiative, to win the trust and confidence of the larger community.

Successful models have a strong consistent proactive population outreach, respond to population needs and especially in CPHCs, focus on health determinants according to population need.

Ways to move forward

Noolpuzha FHC is a textbook example of how those in the positions of authority should think out of the box to come up with context specific interventions and actionables to serve the population needs. It highlights the need for a proactive leadership. However, excessive reliance on individual leadership comes at its own cost, since a well functioning system is much more than the goodwill of an individual. A system which fosters this leadership is

required and the gram panchayat's governance can offer that. Since FHCs are bound to one panchayat, they can remain constant in the training and building of leadership within the FHC and keep accountability through surveillance of community indicators and needs. This can ensure the health and performance of the FHC for years to come.

Contributors

Dr. Mohammed Dahar V P

Dr. Muhammed Dahar is the Medical Officer at the Noolpuzha Family Health Center and has been incharge of the facility for a little less than 4 years. In this short span, with the help of a team of 4 doctors, nurses, a lab technician and a pharmacist he has developed the Noolpuzha PHC into an FHC that scored 98 per cent in the national quality certification of PHCs by the Union Health Ministry.

Nilakshi Biswas (Author)

Nilakshi Biswas is a Technical Health Specialist at the Catalyst group and focuses on research and knowledge synthesis projects. Her experience is within synthesis research and research design and evaluation, her background in global health policy and policy advocacy from George Washington University, MPH and her heart in global health systems strengthening and policy prioritisation. But nothing comes without evidence and data!

Whose Health Is it? - The case of Community Needs assessment based program design, Institute of Health Management, Pachod

Purnima Ranawat

What happens when health programs are based on community listening and designed using a deep understanding of the community's health and social needs? In simple terms, what happens when you listen to the people you intend to serve?

Seemingly intractable health problems start to become not so intractable.

As I heard Dr Ashok Dayalchand, the founder of IHMP, recount the evolution of his health program, this seemed to be a common thread in his journey of over four decades as he and his team worked to create comprehensive community-based care models, some of which have now become the standard of care in India and many other LMICs.

As a public health practitioner, I have come across many promising and well-intentioned health programs that were not able to reach their potential because they were not rooted in community experiences and needs. On the other hand my work with tribal communities in rural Gujarat anchored in me a belief that programs that approach their design with humility- understanding that the communities they intend to serve know their problems best and approaching intervention design with a spirit of curiosity and collaboration tend to have the most long term success. This approach however is time intensive and requires organisations to go deep and build trust within the communities they serve.

I was curious to understand how IHMPs journey and what has helped them create and sustain successful models of care over decades. Dr Ashok did not hold back as he narrated the story.

He spoke passionately of how their modest 4 member team started a comprehensive health care project in Pachod in the 1970's that has now evolved dynamically, providing a wide range of public health services and benefitting over a million people in marginalized communities in the economically backward Marathwada region of Maharashtra.

He shared that when they first talked to communities to understand their health needs, people highlighted that one of their biggest worries was that families were losing a lot of young mothers during childbirth. A big reason for this was that mothers were not able to get medical help for delivery complications timely, complications were detected late, and poor roads and transportation options meant it was almost too late by the time help arrived. This was unacceptable as these young lives could be saved with simple, proven medical interventions that we in the city don't think about twice.

"Interventions driven by regular health needs assessments (HNA) conducted at the village/block level is one of the key actions for a successful PHC model"

Dr. Ashok Dayalchand

As a result of these discussions a Dai training program was born, where traditional birth attendants (TBA), typically older women in each village that supported deliveries were now trained to handle and prevent common complications in deliveries and identify complications that would need medical attention early so that women could reach hospitals on time. This proved to be successful in reducing maternal mortality and was taken up by the government of India, TBA training became a core component of the maternal and child health programs nationally.

The team went a step further in 1999 however and tried to understand what were some of the upstream determinants of poor maternal health outcomes in their area. They found that 82% of the adolescent girls were married before the age of 18, median age at marriage was 14 years and median age at first conception was 15 years. These girls, expected to become mothers, were essentially children themselves. When adolescent girls become pregnant there are well documented, severe mental and physical health consequences for both the mother and the infant. Maternal morbidity in this group is high, they face higher risk of eclampsia, puerperal endometritis, and systemic infections than women aged 20 to 24 years, and babies of adolescent mothers face higher risks of low birth weight, preterm delivery and severe neonatal conditions[10]. Not to mention that these young mothers are not well equipped to handle such complications and may suffer from mental health issues.

Discussions with the community highlighted that there were several social and economic determinants that led families to marry girls off early despite this being illegal. There was pressure from the community when girls passed a certain threshold of age and were unmarried, people would say something must be wrong with the girl or the family if the girl is not married yet. In addition, higher the age of the girl, more the dowry expected, leading to poor families pushing girls to marry earlier. They did find however that parents wanted their girls to do well, even if they were unable to overcome these pressures[11].

The institute's focus thus shifted to **addressing the social determinants** causing early marriages. They started programs for unmarried adolescent girls and organised all "girls groups" in partnership with communities. These groups allowed girls a safe space to talk, gave them knowledge about their rights and imparted key life and trade skills that could allow them some economic independence and ability to support their families. The team also targeted adolescent married couples to talk about contraception and ways to delay pregnancy. In addition "Boys clubs" were designed to bring adolescent boys together to talk about gender equality and their role in supporting the women around them against mental, physical and sexual abuse.

Through their efforts, the median age of marriage increased from 14.5 to 17 years over a period of 3 years and the average age at first conception increased from 15.8 to 18 years by 2012. This program has currently been successfully scaled in 19 districts in Maharashtra with support from partners like Tata Trusts.

[10] WHO fact sheet adolescent pregnancy, Jan 2020.https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy

[11] Ref: https://worldschildrensprize.org/ashokstory

If IHMP had not gone back to their communities to understand why maternal morbidity and mortality statistics were stagnating in their region, if the team had not been willing to listen to why or not go outside of the comfort zone of purely health care delivery interventions this impact would not have been possible. Some 50,000 girls[12] have gone through the "girls club" interventions and have gained essential life skills, many are able to advocate better for themselves and this is evident in the improved statistics of child marriage in the area.

Caption: Creating awareness in boys and young men

Tackling malnutrition through need specific behaviour change communication:

A similar approach of community listening and community based health needs assessment led to the establishment of IHMPs nutrition program. Malnutrition in children is due to a complex interaction of factors like dietary practices, poverty, neonatal diseases, health illiteracy at home, sanitation and hygiene.

"Prevention rather than correction. Reactive methods like nutrition rehabilitation, although very promising,
have not been able to meet the comprehensive approach required to counter malnutrition."

Dr. Ashok Dayalchand

The government programs at the time were tackling only severe mal-nutrition through corrective programs to rehabilitate malnourished children. Dr Ashok's team decided to take the approach of prevention rather than correction and developed a counselling based program where the health workers were empowered to assess the needs and resources of the family and provide need specific behaviour change communication instead of using broad, predetermined messaging as was prevalent at the time. This was implemented through peer to peer and peer to community linkage through women and children. Impressively the team saw a reduction in malnutrition in children from 20% to 5% over a period of just 3 years.

Learning Insights

Taking the practice of assessing local health needs to the wider population, the Institute of Health Management addresses primary care in a holistic view, including health interventions outside of the clinic or those that may not typically considered health care interventions but have direct impacts on health outcomes.

" IHMP has used the process of community based monitoring at the local level to collect data about the population health needs and attitudes to identify and plan the right kinds of health services and interventions keeping in mind the existing national strategies and policies.

They were able to make dynamic decisions and focus on the most deeply felt need to deliver interventions (e.g. Life skills and health education to adolescent girls) that improved both the health (e.g. sexual and reproductive health) and non-health outcomes (e.g. education and violence etc).

[12] Ref: https://worldschildrensprize.org/ashokstory

Community acceptance and ownership of primary health ensured sustained health outcomes. ”

We have seen many health interventions fail to reach the level of acceptance and optimal use even after ensuring equal access due to a lack of demand in the population. IHMP demonstrates that community needs surveillance, need-specific behaviour communication at the household level either in a one-to-one or group setting successfully creates demand for health services in the primary care setting and modifies harmful health behaviours. All interventions additionally were implemented by ASHAs, ANMs and PHC staff. There are over a million trained ASHAs in the country which makes all IHMP interventions imminently replicable in both the Government as well as non-government sectors.

IHMP has been able to do this work as the organisation has consistently invested in community processes over decades and built programs to address its needs. The organisation is an exemplar of community needs based design which is applicable across Comprehensive Primary health Care models, be they run by the state or by a civil society or non-state actor that is rooted in the community.

As a way forward the public system needs to re-imagine community based planning and monitoring, not as a process for data generation but as a way to empower communities, frontline workers and organisations that serve them to ensure their specific needs are met by the health system.

The IHMP Process

Program Start	**Program Implementation:**
1. Undertake community diagnosis of a health problem by generating evidence about ● The magnitude of the health problem ● Distribution of the problem in the community ● Identifying underlying causes of the problem which could be biological, medical, social, economic, behavioural, environmental or because of lack of access to health services 2. Plan interventions for the multidimensional underlying causes of the problem	1. Undertake monthly health needs assessment and morbidity surveillance 2. Provide needs specific behavior change communication every month at the household level 3. Undertake village/slum specific monthly microplanning 4. Actively link beneficiaries to health providers and facilities through community based workers 5. Community based monitoring by village health committees to ensure universal coverage equity and accountability of health providers to civil society

Contributors

Dr. Ashok Dayalchand
Director at IHMP, Pachod

Dr. Ashok is the Director at IHMP and actively works for girl's rights in India and fights to abolish child marriage. In 2019, Dr. Ashok was chosen as Child Rights Hero of the Year and recipient of the World's Children's Prize, (WCP). He is skilled in Healthcare Consulting, Corporate Social Responsibility, Epidemiology, Emergency Management, and Program Evaluation and is an alumni of The Johns Hopkins University and CMC Vellore.

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Purnima Ranawat has a Masters in Public Health from Columbia University. Purnima had worked in rural India, Malawi and across South East Asia on maternal health and infectious disease programs. She is passionate about how innovations in healthcare can be translated into sustainable and impactful interventions and delivered equitably to communities that need them the most.

Can Communities be more than beneficiaries of the health system? - The case of KC Patty PHC and community governance

Arushi Pandey

Kodaikanal is a beautiful hill station city in the southern Indian state of Tamil Nadu. The city earned its name as “gift of the forest” in Tamil, from its lush nature and mountainous terrain. Despite its natural beauty, health systems have struggled to make progress in serving this community. What was striking to me about this community is despite having high health outcomes on most indicators, the community still struggles to tackle malnutrition - more than 50% of women and 40% of children suffer from anemia, 15% of women are underweight and 30% of the children are stunted[13]. The lack of government facilities and access to affordable healthcare in these areas has meant that the health needs of the community were often unmet and resulted in a compounded decline in health indicators.

Some stakeholders have been working relentlessly with the communities of Kodaikanal to ensure access to care and improve health outcomes. One such organization is the KCPPHC or KC Patty CF Primary Health Centre, which has been working with the communities to not only bring quality primary care to them but surveil their data regularly. Dr. Rajkumar Ramasamy, who along with his wife, has spent the past 20 years of his life running this model primary healthcare centre, was interviewed by the team at Swasti and I had the privilege to hear the conversation. What I found to be the most unique aspect of this model, is how they engage the community not only for health advocacy but to get real time feedback on their program specially from those who do not access the centre. Something that Dr. Ramasamy said really resonated with me, “it’s not just those who come to a health facility that matter — the people who don’t come matter equally.” What I present here today is a snapshot into KCPPHC model and what were some of our most striking learnings from it..

About the KC Patty CF Primary Health Centre

The KCPPHC or KC Patty CF Primary Health Centre is a non-governmental organization and a joint project by the Palani Hills Health Development Trust, a community-based organization in the Palani hills of Tamil Nadu and The Christian Fellowship Hospital in Oddanchatram, Dindigul District, Tamil Nadu. The organization has been catering to the comprehensive primary health care (antenatal care, child health, chronic disease screening, and health education in schools and villages) of more than 15000 people, of whom about 6,500 are tribals.

Dr. Ramasamy spoke of how engaging the communities was crucial to their work, their aim is to continuously converse with the communities to identify their evolving needs, to gain their trust and to empower them to take charge of their own health. As a starting point to this process, the Initial approach of the PHC was to operate through mobile clinics and provide quality care to 7000 people residing in hard-to-reach areas while complementing the services with health education sessions in the evenings. The PHC then evolved to provide evidence-based primary health care, health prevention and health education in the community at the primary health centre. Even today, the KCPPHC team goes into the field every day to ensure continuity of care for those who are unable to come to the centre and to see those who for socio-economic, cultural or physical disability reasons are unable to or afraid to use the facility.

[13] NFHS-4, Dindigul Factsheet

A unique volunteer led governance to ensure community ownership

The KCPPHC model is led by health workers and volunteers as opposed to a doctor-led approach. These health workers are selected from the community (by the community as well as by the centre) and trained in specific protocols and guidelines to screen, diagnose, refer and manage common clinical conditions in case of absence of proper referral facilities and follow-up with non-adherent patients. Agricultural workers from the community often volunteer at the PHC in their spare time to provide basic acute and preventive care. The volunteers and the healthcare workers screen the populations and assess health (immunization, child health etc) and non-health outcomes (patient satisfaction, utilization of services etc.) regularly. They set priorities and correct course of action and based on the community needs and outcomes. The appointment of community members as the health workers ensures that the vulnerable communities feel a strong sense of trust towards the system and increases community involvement in the health programs. Task shifting from medical professionals to voluntary health workers has helped deliver services effectively at a much lower cost.

In most public health models, there are inbuilt power hierarchies between different types of clinicians such as doctors, nurses or frontline health workers act as barriers to inclusive teamwork and can affect the quality of care delivered to the patients.
Horizontal models like the KCPPHC, that promote team cohesion and collaboration across different levels of profession improves patient care and also positively affect health worker morale and motivation.

Task-shifting and empowering members of the community by appointing them as lay-health workers is a cost-effective way of increasing acceptance, satisfaction, and ownership of primary health while improving and sustaining health outcomes.

It is evident that CHVs have the potential to supplement the formal health system in the struggle to achieve UHC in low resource settings. Volunteer-led models of service delivery can help improve health outcomes and can deliver high rates of satisfaction and increase community confidence in having conversations around their health while accessing formal health services. Capacity Development

Learning about the volunteer lead structure, and how the training of the volunteers and healthcare workers plays an imminent role in the success of the program, I further wanted to delve into how they train their team?

“Health Worker training and team-work are the pillars of this PHC model.”

Dr. Rajkumar Ramasamy

The PHC provides regular training sessions to the volunteers, field workers and doctors through a blended model of learning including role play and patient interaction simulations and teaching communication skills. The training is accompanied by

evidence-based clinical guidelines that are based on principles of family medicine and catered to voluntary health workers as well as nurses and doctors working at the PHC. These guidelines help the health workers choose the best available option for the patients based on their history and the context, they also help reduce the number of referrals to secondary and tertiary care facilities, which in-turn has a large impact on out-of-pocket expenses the (mostly poor) beneficiaries have to bear.

Dr. Ramaswamy also illustrated the dire need for training in primary care focusing on Family Medicine. He spoke about how it integrates contextual and individual characteristics to suggest the best suitable care for the patients. With proper training for family medicine, community-based medical practitioners can take care of 90% of clinical conditions in a community and act as the primary contact for referral to secondary and tertiary facilities.

A blended financing model

It is always crucial to understand how community lead and community centred PHC models are financed and what really makes them sustainable?

If the volunteer led model is the beating heart of KCPPHC, the financing model is its lungs, it has kept the facility foraging forward for decades. Dr. Ramasamy elucidated on how providing ongoing access to appropriate quality care in a cost-effective and efficient manner is very important in rural and tribal areas where the need for these health services is the greatest and the privilege to pay is the lowest. Apart from organizational enablers such as workforce management, funding, leadership, infrastructure and service linkages, sustainability of PHCs also relies on systemic factors such as a strong policy environment, government buy-in and strong community involvement.

The KCPPHC is a non-governmental organization being run in partnership with The Christian Fellowship Hospital in Dindigul. The hospital acts as a key facilitator in the operations of the PHC by contributing 25% of the monthly budget as well as positioning 3 doctors as voluntary fellows. The PHC works as a pay for service model with nominal fees that generate a bulk of the budget, but occasionally when the individual cannot afford the treatment it is provided for free. This has made sure that communities served by the PHC are able to afford the care in an equitable manner. This comes from their strong belief that primary care services are meant for everybody regardless of whether they can afford this care or not. But this system is run on the resources of volunteer doctors from a private institution, and to ensure this system stands the test of time, a volunteer staff needs to be guaranteed.

“Primary Healthcare is not about ensuring that there is a bottom line but that needs are met.”

Dr.Rajkumar Ramasamy

The potential of this community led horizontal model is immense. Where I see the most potential is that this level of is that the center and the community learn, inquire and innovate together; community-PHC planning leads to a synchrony of effort that creates environments for health; quality assurance emphasises mechanisms whereby broad groups of stakeholders can examine whole systems of care for their diffuse and unexpected long-term effects and then act for co-ordinated quality improvements.

As the interview came to close, I was struck by how the KCPPHC model is an eminent example of how community integrated PHC models can work. It exhibits how one can successfully deliver a model where communities play a leading role in their health, and have learnt to own their outcomes. This has not only proven to be a successful model for improving health outcomes of a community, but also the impact one well-oiled primary care centre can have.

Contributors

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Family Physician, KC Patty Primary Health Center

Trained at Cambridge UK and specialized as a physician, He is a Fellow of the Royal College of Physicians (FRCP). He came to India to work in a hospital catering to a poorer population but soon realized that the need in India is for primary health care. He retrained as a specialist family physician in Australia to obtain the Fellowship of Royal College of GPs (FRACGP) with broader skills and has worked in the Lower Kodaikanal hills for over 25 years. He has participated in the training of over 100 family physicians in India.

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Arushi Pandey has been a public health and management professional for the last five years. She is passionate about systems strengthening, human resource for health and innovative financing.

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Who is Accountable for Health? - The case of Community Monitoring and Planning (CBMP) by SATHI

Piyasree Mukherjee

I still remember the day I found out about the death of over 500 children in Melghat, Maharashtra that had been reported. Although this incident is actually almost two decades old, I was hearing about it the very first time, as a horrific 'back-story' to a fresh death that was being reported by the media. At the time, as a newbie in the malnutrition world, to me, the death of an infant because of severe acute malnutrition in today's day and age, in a state such as Maharashtra itself seemed unfathomable. I quickly learnt, much to my horror, that this, however, was neither a lone incident and nor the last one that I would hear of.

Maharashtra has, for a long time, established itself as one of the 'richest' states in the country. However, going by the NFHS-5 data (2019-20)[14] almost 4 out of every 10 children under age five in rural Maharashtra continue to remain stunted (short in height for their age) and underweight (low in weight for their height). What is particularly alarming is the increasing rate of anemia among children, currently at a staggering 70.7%. These numbers, however, do not by any means indicate lack of action from various stakeholders. Intensive efforts continue to be made to address the challenge. One such entity who has found a pathway in the form of a comprehensive model is SATHI. I recently had the privilege of interviewing Ms. Trupti Malti who is a part of the Action Staff at SATHI to delve into the work that is happening in Maharashtra. What I present here today is my understanding of SATHI's work, approach and model.

About SATHI

SATHI stands for Support for Advocacy and Training to Health Initiatives, and is an action centre of Anusandhan Trust which originated in 1998 as a part of the CEHAT (Centre for Enquiry into Health and Allied Themes). In 2005, SATHI evolved as an independent organization, and is currently headquartered in Pune. In the words of Trupti Malti, SATHI aims to reinforce the "Health for all" movement by advocating for health rights and strengthening the existing public health systems through systematic action research. This is done in partnerships with Civil Society Organizations (CSOs) and governments at local, district, state and national levels. When asked why SATHI involves so many players at so many levels, I was told that one cannot promote and ensure a community's right to health by acting alone. Most importantly, the element of accountability is often lost in all efforts made, and therefore SATHI's approach has been to bring it to the forefront. "We believe that comprehensive primary health care services have to be not just affordable, acceptable and accessible, but also accountable. And it is the end-user who needs to monitor all these aspects. In this case, it is the community. While the national health programs are conceived, designed and implemented by the Government and the various departments, the onus of monitoring quality of delivery, effectiveness and end-result cannot be left to them alone. It is quite evident that the current monitoring frameworks (NRHM/NUHM) are inadequate, and do not meet the requirement of an optimal analysis of accurate, ground level data of key indicators. To achieve accountability and ensure that the services are reaching those that most need them, community based monitoring strategies are gaining importance. This strategy involves the organization of local beneficiaries such as voluntary organizations, local government bodies such as the panchayat, community based organizations to monitor and provide feedback about the facilities and services. And it is this need that led us to design the Community-Based Monitoring and Planning model

[14] National Family Health Survey - 5 State Factsheet: chrome-extension://oemmndcbldboiebfnladdacbdfmadadm/http://rchiips.org/nfhs/NFHS-5_FCTS/FactSheet_MH.pdf

(CBMP) which we currently implement across 17 districts of Maharashtra in collaboration with the National Health Mission (NHM).

Accountability along with accessibility, affordability, and acceptability is the key to a successful PHC. To ensure that the ideal of 'health for all' is actualised, those responsible for its delivery need to be accountable to the end-user.

Community-Based Monitoring and Planning

As I learnt about Community-Based Monitoring and Planning, the first question that came to me was how does it all work? The SATHI team explains:

Community-Based Monitoring and Planning is not just another monitoring tool. The backbone of this initiative is the community, who is fighting for their right to health. Therefore, the starting point for SATHI is strengthening the community's understanding of their rights and responsibility to partner with the local government to effectively plan and be accountable for public health services.
The CBMP model thus focuses on capacity building of the committee members (representatives of the community, members of the Gram Panchayat, the ASHA worker, the Anganwadi worker, the ANM) providing clarity about their role in keeping the local health services accountable. For example, while reviewing the Village Health Register, if the committee finds lack of entries/incomplete entries (example Below Poverty Line families not updated) it is brought up at the monthly meeting and remedied immediately. This committee also reviews challenges in accessing care (example immunization not completed for children) or denial of care that the community members may have experienced during the course of the past month. This creates strong community ownership of the local health resources resulting in an increased quality of health facilities and services. The concerns arising out of the report cards are then discussed with the relevant stakeholders at community level meetings called Jan Sanvad/Jan Sunwai. To me, as a public health practitioner, this model has an outcome that is most desirable: An empowered community that is not only cognisant of their right to health, but also able to question, challenge and mitigate barriers that deny them this right.

How does increasing community participation and ownership of nutrition programs lead to improved rates of malnutrition?

Unfortunately, malnutrition continues to be most prevalent among the Scheduled Tribes in our country, with almost half of the children under age five being stunted. Stunting refers to children being too short in height for their age. The direct implication of stunting is the impact on brain development, which means children who are stunted are unable to catch-up with their peers in education, learning and later on in career choices. Further damaging is the fact that stunting is virtually impossible to reverse after age two, and is primarily impacted by maternal malnutrition, leaving us with a very small window of opportunity to ensure the child in question grows up healthy.

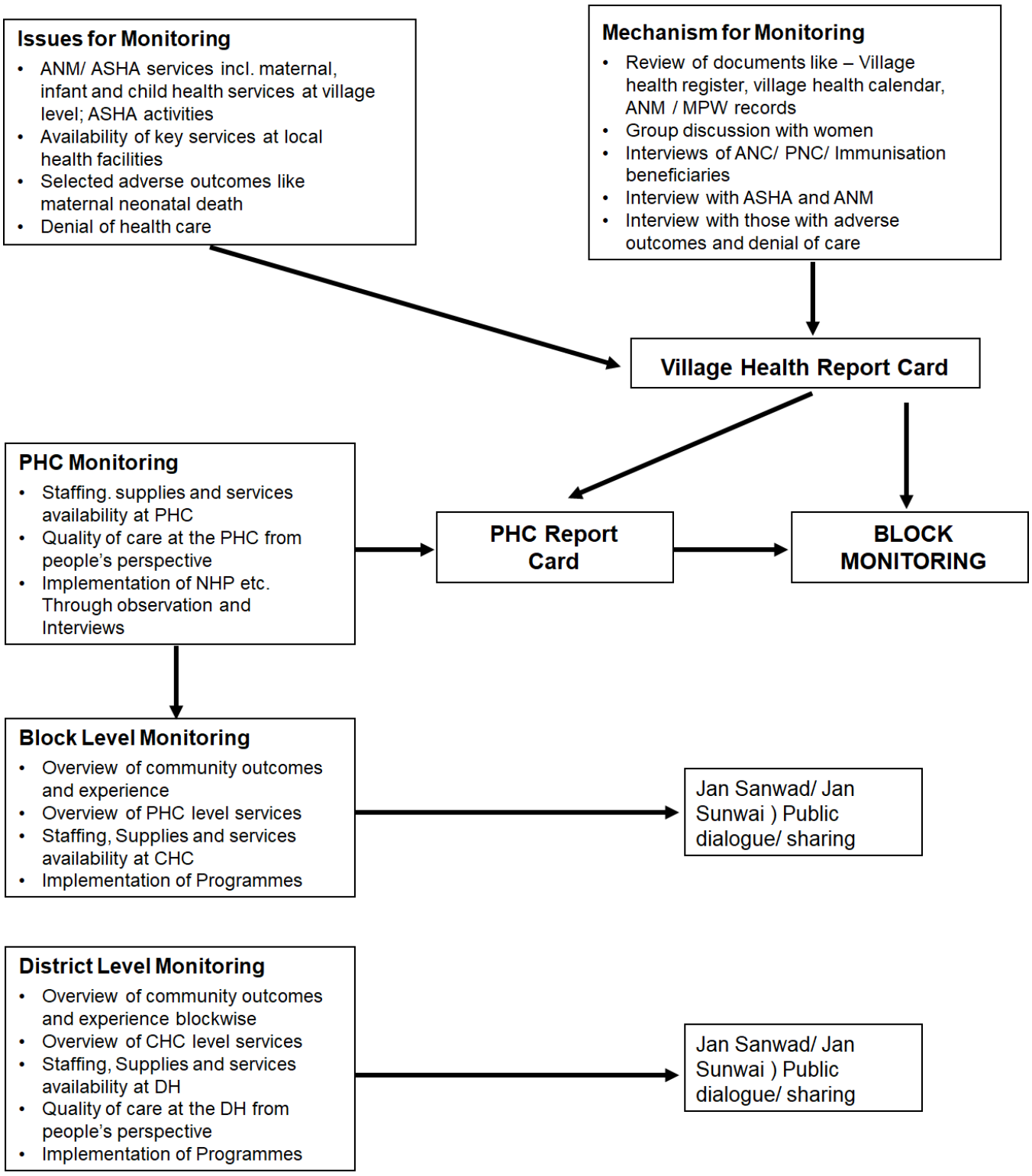

Figure 6: CBMP Monitoring framework

"There are 3 reasons why we see less community participation in these programs or government schemes, one is a lack of awareness in the community about these .. (programs), the other is when they are aware of the programs but are unsure of the way to realize the benefits for themselves and finally a lack of ownership of the facilities and services being delivered to them"

Trupti Malati

As the tribal population in India continues to face severe food insecurity (due to multiple conditions including unemployment, continuous migration, and poor health facilities), mitigating generational malnutrition becomes a mammoth task. This is further complicated by low quality foods supplied through schemes such as Mid-Day Meals and Take-Home Ration. Back in 2015, the Indian government had introduced the Amrut Ahar Yojana to provide pregnant and lactating women in tribal areas with a nutritious meal that included rice, roti, dal, two vegetables and an egg on a daily basis. However, poor implementation and accountability of these schemes has watered down the potential positive effects of nutritional supplementation. Anganwadi workers (AWWs) face multiple issues such as limited training, delayed monthly honorariums, and inconsistent raises and reimbursements which makes the delivery of these services more difficult. Moreover, remote location and lack of accessibility in terms of infrastructure adds to the challenge of delivering good quality meals in these areas. And finally, with loss of traditional livelihood options, changing food habits (availability of junk food and soda) in these remote corners of the country also add to growing malnutrition among its population.

SATHI, however, shows the pathway to mitigate some of these challenges. As Ms. Trupti shares: SATHI runs the Community Action for Nutrition (CAN) process in collaboration with the Tribal Development Department of Maharashtra to increase awareness of the tribal communities in the state. My understanding, based on this interview with Ms. Trupti, is that CAN plays a significant role in improving nutrition services available to the tribal population. Ms. Trupti explains to me that Community Action for Nutrition evolved from the CBMP model, and specifically caters to the nutrition-related challenges at the community level. This means the village committee gives special attention to the utilization, acceptability and efficiency of the rehabilitative nutrition programs run by the government.

Any health intervention derives its legitimacy from the population concerned. Thus, popular control manifested in the form of village-level committees helps in efficient planning and implementation of intended interventions.

However, simply ensuring community ownership and participation does not solve the problem. Therefore, SATHI set out to strengthen the government services as well, by enabling regular dialogue among the community about the nutritional services at local, district and state levels. The CAN process also works towards reshaping household nutritional practices through various dialogues and activities. With the help of ASHA

workers and AWWs regular monitoring of the children and expectant mothers is carried out. This includes ensuring all children under age five are registered with the local anganwadi center and monitored on a monthly basis (monthly anthropometric measurements) through the ASHA and anganwadi workers. Where malnutrition is evident or imminent, the committee ensures services are made available with the support of the ASHA and Anganwadi workers.

As the interview came to close, I could not help but feel hopeful about the outcomes of this process. As a community, our health and wellbeing remain not just our right but also our responsibility. To be able to have a say in how our children and expectant mothers are provided for by the government gives tremendous power to the community. To be able to demand accountability and witness changes, small or big, gives credibility to this sense of ownership and action. And for this, I thank the SATHI team for giving this model to the world as an EXEMPLAR to be noticed.

Contributors

Ms. Trupti Malati
Action Staff at SATHI

Trupti Malati is a part of the Action Staff at SATHI and has been leading implementation of the Community Based Monitoring and Planning process in the state of Maharashtra.

Piyasree Mukherjee (Author)
Director - Programs at Swasti

Piyasree Mukherjee has a Masters in Social Work, from the Tata Institute of Social Sciences, Mumbai. Piya has been working as a public health professional for almost two decades. She is passionate about community health, and the role of nutrition in prevention of long-term disasters such as generational malnutrition among women and children.

Low-cost Technology to High-level Impact: Using Simple Tele dentistry for Wellbeing at Manipal Academy of Higher Education

Bhumika Nanda

Do you remember the feeling of sitting at a movie theater and waiting for the movie to start, while they show some terrifying visuals of oral cancer patients in the last stages of their life due to prolonged substance abuse?
Yes, me too.
The dentist in me asks the question, how could it progress to this level, when oral cancer is easy to diagnose, just look into his mouth.
The public health specialist in me asks a different question. Did the person have access to healthcare? Were they aware and had full knowledge of their condition and how it could be reversed/prevented?

Oral potentially malignant disorders (PMDs) are the precursors for oral cancer and can be identified in the early stages to prevent progression into malignant cancers. Oral cancer is one of the **top three** cancers in the country with almost 77,000 new cases and 52,000 deaths reported annually. Yet these numbers are a far cry from reality since the cancer registries do not cover all the states.

So, if people were not going to dentists until too late, perhaps dentists could find a way to the people. Doctors at Manipal Academy of Higher Education conducted an extensive outreach program providing oral care in and around Udupi. They noticed that people presented with advanced symptoms of oral cancer that required aggressive management, but these communities did not have access to a specialist who could accurately diagnose the lesions. Not only was the prognosis worse for advanced stages, but it was also very expensive with a higher cost of care per unit. Consumption of tobacco, alcohol, areca nut, poor diet and low socio-economic status are all risk factors for oral cancers and there is some evidence that suggests these precancer lesions may be reduced by ceasing tobacco smoking which means it is an excellent window for opportunistic screening. So, the team at Manipal set out to design a visual screening method for diagnosing oral cancer (premalignant lesions) that was inexpensive, scalable and with a sensitivity rate of 98.5% as compared to a traditional clinical examination rate that is 99.04%.

MCODS Tele dentistry Implementation Model

The Swasti team spoke to Dr. Shashidhar, Professor at the Department of Public Health Dentistry at Manipal College of Dental Sciences (MCODS) to find out if this solution had traction and if it benefitted members through early detection.

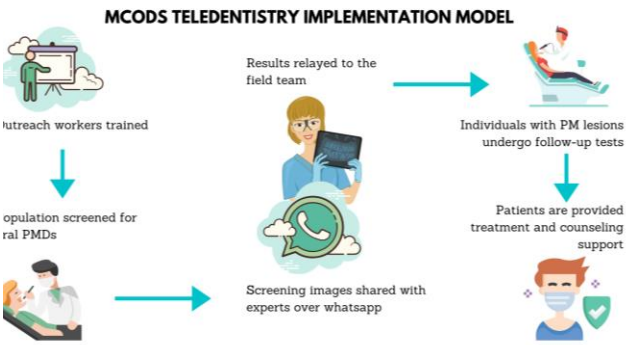

Figure 7. MCODS tele dentistry implementation model

Dr. Shashidhar oversaw the design of the entire program while postgraduate students, in particular Dr. Kalaiselvi Vinaayagamurthy from Manipal College of Dental Sciences built the process summarized above and was given the responsibility to oversee training and implementation on the ground. The outreach workers, who were interns at the same college, were trained in communicating with community members, ensuring that individuals understood this effort, how it was important to their health, and how easy it was to participate.

They would take photos of the patient's oral cavity in the population surrounding the hospital and relay this to experts over WhatsApp. The experts could then give a quick diagnosis to the individuals or outreach workers who would help those with PM lesions to undergo follow-up treatment and counselling. This design lent to some key successes:

- **Trained and motivated human resources**: The team consisted of interns from the dental school equipped with smartphones and trained in the study protocol. By choosing undergraduate students who are aware of normal and abnormal oral health, the team ensured that there was no bias when screening patients by taking pictures. Also, the use of students ensured that there was no shortage of trained human resources. The team of specialists was also available at Manipal to immediately look at the pictures.
- **Technology that is simple, inexpensive and needs no additional adaptation time:** The team used WhatsApp Messenger, a widely available free text and photo messaging software to transmit the images and patient history to the specialists. Since WhatsApp messenger and camera phones are widely used, the students adapted to it easily and no additional effort was required to train them.
- **Consistent Follow up and referral**: The field team then communicated the screening results to the patients and urged them to follow it up with a specialist consultation and biopsy at the hospital if the results were suspicious. The field team also provided behavior change communication and counselling support to the communities.

Visual screening for oral precancerous lesions has long been shown to be a cheaper and non-invasive technique as compared to other imaging methods, especially useful in resource-constrained locations. By clicking pictures of the patient's oral cavity and carrying them back to the college campus, where a specialist would have to verify the diagnosis, this innovation took visual screening one step further through technology. Although this idea is not new, technology perhaps had not allowed it to be utilized efficiently. The Manipal team often faced difficulties relaying photos back and forth because of poor resolution of the mobile cameras, resulting in poor picture quality and inadequate information to diagnose the lesions. But as the technology has improved and the reach of good quality mobile phone cameras and mobile connectivity increased, this method seemed to be more and more cost effective and easy to use.

Screening in itself cannot be a holistic approach and screening always has some spillover effects. Individuals who screen positive for the disorder might experience severe anxiety related to the cancer diagnosis, whereas those testing negative might feel self-assured and go back to harmful health habits.

" Counselling, support and provision of appropriate and affordable treatment is crucial in any screening program to truly support the community members in their wellbeing. "

Dr. Shashidhar Acharya, Professor at the Department of Public Health Dentistry at Manipal College of Dental Sciences (MCODS)

From my experience of working with marginalized communities in very low resource settings, I believe this program's success comes from the backing of core Health Systems Strengthening principles i.e. work with what works, build a solid referral system,

and don't create parallel systems where they might not be required.

Context for Success:

- ***Trust of the communities and Institutional support is critical***: The program was backed by a strong institution, in this case Manipal Academy of Higher Education. Association with Manipal Academy of Higher Education provided the team with technical and financial resources needed to implement the study and also enabled access of the team to a large community that trusted the institution and its capacity.
- ***Demand generation is a necessity before program implementation***: The immediate community had been working with the Institution for a period of time before the program was implemented. Therefore, there was a demand generated within the community for advanced services which was a product of positive behavior change communication leading to health awareness and trust of the community towards Manipal Academy of Higher Education. The community showed enthusiasm and eagerness towards the program as there was a perceived need in the community for preventing and treating oral cancer.
- ***Social participation by the target population is critical for success***: When cancer screening policies are implemented, the success of the program will depend on participation by the target population. In this case, the communities had a clear ask from the healthcare community with regards to primary dental care.
- ***Quality of healthcare infrastructure determines the success of the program:*** Udupi district tops the state on maternal health indicators. In 2015-2016 the district reported only two maternal deaths. Two-thirds of its facilities are in the "good" and "above average" categories by the government's own assessment[15]. There is a healthy competition that exists between public and private healthcare providers that enables improved quality of specialists and care.

Impact and scale up:

The program was successful in detecting premalignant lesions and thus improving the prognosis for these patients through conservative and low-cost treatments. The sensitivity of this method in comparison with clinical oral examination was 98.5% (Examiner 1) and 99.04% (Examiner 2) whereas the specificity was 72% and 64%, respectively. Conservative treatments significantly improve the quality of life and the nature of nutrition, which has a huge impact on the overall wellbeing of an individual.

"Digital Innovations coupled with task-shifting are key to providing equitable access to primary health care in resource constrained settings due to their capability to deliver care without the need for additional infrastructure and human resources."

However, given the highly transient nature of the environment that we are living in today, an

[15] https://drsylviakarpagam.files.wordpress.com/2016/07/maternal-death-analysis-2015-16-9-06-2016-2.pdf

innovation as simple as visual screening also needs careful consideration for sustainability. The COVID-19 pandemic halted healthcare services across the world, including a strict restriction on oral health services. While tele dentistry is still a valid option in these cases for screening, oral health management and treatment cannot be done without a physical examination and care. Moreover, outside of a medical institution, it would be a challenge to gather a group of motivated specialists who would be willing to screen from pictures. Evidence suggests that oral cancer screening by visual inspection costs less than US$6 per person in a screening program; this has an incremental cost-effectiveness ratio of US$835 per life year saved[16], however the indirect costs borne by the patients may be particularly challenging among those in the lower socioeconomic strata. These are the very individuals likely to be at higher risk for developing oral cancers; it is, therefore, vital that identifying approaches to encourage and sustain participation among this potentially hard-to-reach, high-risk population be given high priority.

"The most cost-effective and affordable option in the limited-resource setting is to offer oral cancer screening to high-risk individuals, for example, tobacco and alcohol users."

This innovation therefore would be useful, especially in a low resource setting, but the quality of care provided and access to a hard-to-reach population would still be a huge challenge given the diversity of settings. In spite of some unresolved issues, the potential of tele dentistry is immense, provided they don't function in silos and there is a constant culture of cross learning and knowledge exchange with other tele dentistry and telehealth programs.

[16] Subramanian S, Sankaranarayanan R, Bapat B, Somanathan T, Thomas G. and others. 2009. "Cost-Effectiveness of Oral Cancer Screening: Results from a Cluster Randomized Controlled Trial in India." Bulletin of the World Health Organization 87 (3): 200–06.

Contributors

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Shashidhar Acharya is a Professor at Department of Public Health Dentistry at MCODS Manipal. He has a total of 18 years work experience in dentistry and has expertise in Research, Oral Epidemiology, Behavioural Sciences, Social Inequalities, Inequities in health, Oral Cancer.

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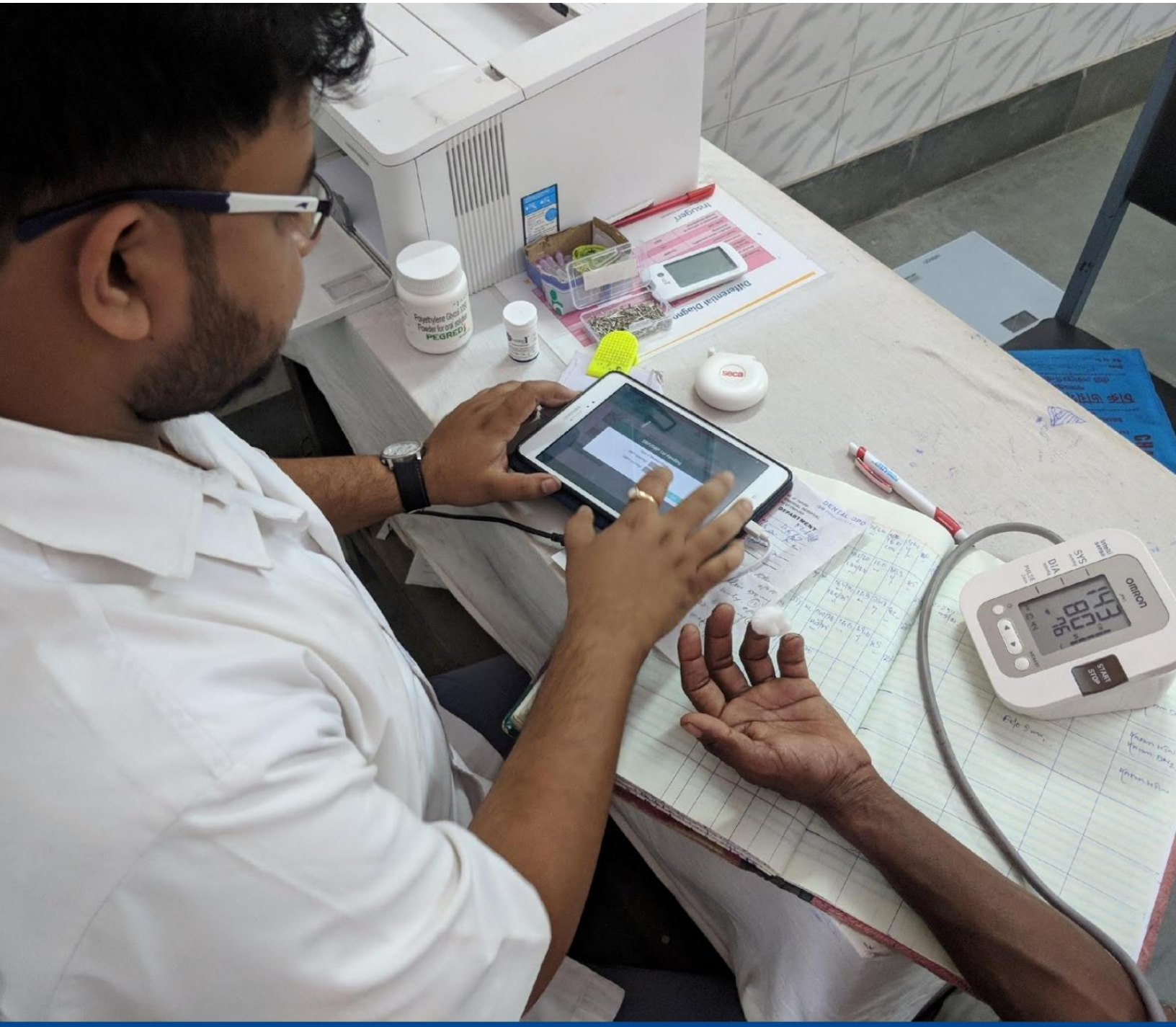
Bhumika Nanda is a dentist and a public health specialist working with vulnerable communities at Swasti Health Catalyst. She has worked with Health systems in India and Nigeria. She is a Global Health graduate from SDA Bocconi, Milan. Bhumika is interested in Health System frameworks and contextualization of the same in various resource settings.



mPower'ing primary care delivery for NCDs - The case of mPOWER Health a tech-enabled approach

Ahana Chatterjee

Non-Communicable Diseases (NCDs) like Hypertension and Diabetes Mellitus are major contributors to the cardiovascular disease burden in India[17],[18]. It's a terrifying concern that an 80% rise is predicted for hypertension by 2025 and a 95% rise in diabetes mellitus by 2040[19],[20]. Our healthcare system catering to the needs of 1.38 billion people is inadequate to address this exponential increase in Non-communicable diseases (NCDs) and the patient to physician ratio in rural areas only adds to the woes of the communities struggling to find quality primary healthcare.

The urgency and the gravity of this public health crisis called for a proactive and preventive approach, a low-cost, early warning model that could screen a large number of people. Task shifting is one such cost-effective strategy addressing the acute shortage of healthcare providers, by distributing primary care duties from physicians to non-physician healthcare providers such as nurses and community health workers. Although task shifting is not a new concept, a lack of competence of the non-physician provider to manage cardiovascular risk factors, and a lack of infrastructure for collecting and monitoring clinical information on a regular basis pose a significant barrier.

" NCD Care in India is still in hospitals and large clinics. PHC is the gatekeeper for tertiary care. Major focus for Hypertension and Diabetes should be in the primary care system."

Prof. Dorairaj Prabhakaran, Director, CCDC

The mPower heart project is a multilayered innovation that tackles these challenges through a feasible and sustainable intervention to screen for hypertension and diabetes mellitus in primary care settings, a shift from the conventional tertiary care environment, with technology as the backbone. A conversation with the PHFI team who launched the mPower Heart project, brings out how an interplay between clinicians, nurses, communities and technologists is absolutely essential to successful digital health innovations. The mPower project consists of a mobile-based clinical decision support system (CDSS) used by a trained nurse care coordinator to screen patients and generate a personalised treatment plan which is then vetted by a physician. Deviating from a care pathway that is still highly specialist doctor-led, the introduction of robust, and reliable digital support can lead to decentralization of specialized cardiovascular care and promote early detection of hypertension and diabetes mellitus.

A key element to a digital health product is having an unbiased set of users for alpha testing. More often than not, early versions of the software are plagued

[17] Prabhakaran D, Jeemon P, Roy A. Cardiovascular diseases in India. Circulation. 2016;133:1605–1620, https://www.ahajournals.org/doi/full/10.1161/CIRCULATIONAHA.114.008729

[18] https://drive.google.com/file/d/1OKx_QJbJsPr9IHi7CrbW-BTKC2Wmmced/view?usp=sharing

[19] DF Diabetes Atlas. 7th ed. Brussels, Belgium: International Diabetes Federation; 2015

[20] Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. Lancet. 2005;365:217–223

by bugs and unfriendly interfaces, testing them out by real users in field settings is crucial to ensuring a smooth user experience.For the actual design of the decision support tool, PHFI brought together a group of experts- cardiologists, endocrinologists, primary care physicians and nurse coordinators. The software was edited and shortened as per feedback from the Medical Officers and then incorporated into the routine workflow at the 5 community health centres.

Nurse Coordinators screened patients over 30 years of age using the mobile-based CDSS. The system was fairly easy to use with the nurse coordinators entering patient information such as demographics, medical history, symptoms, screening results (diastolic blood pressure or DBP and Fasting plasma glucose or FPG levels). This information was simultaneously stored in a database automating the patient medical record storage and entry. The algorithms were backed by vetted clinical management guidelines for hypertension and diabetes mellitus and could thus generate personalized prescriptions, including counselling services, recommendations on diet, tobacco, physical activity and medication compliance to promote self-management. People diagnosed with either hypertension or diabetes mellitus or both had a personalized care plan devised, available to them via a custom NCD card which was then approved by the Medical Officers. If rejected, the patients were redirected to the nurses who incorporated physician recommendations into the electronic patient record generated in the mobile-based CDSS for future reference. Digitization of health history and secure electronic records reduced duplication of efforts and streamlined information sharing across providers and disease management systems.

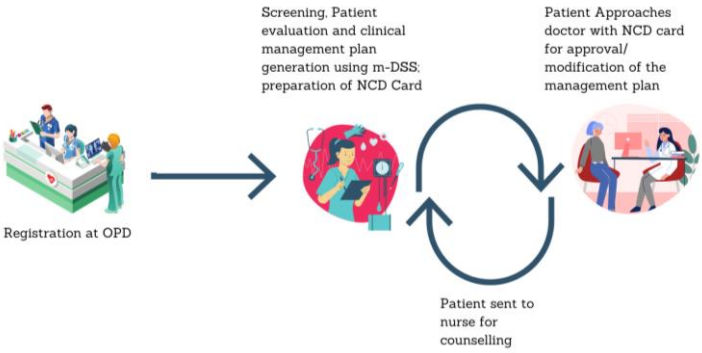


Figure 8: Workflow at the CHCs using the CDSS[21]

Screening services were offered to over 2 lakh people with expansion of services to include commonly occurring comorbidities such as back problems, acidity and other gastrointestinal issues. The inclusion of other comorbidities is a logical next step. I find it fascinating how this model is not just limited to hypertension and diabetes mellitus but can be contextualized and layered to any initiative to create an integrated screening model providing benefits to a larger segment of the population.

" By eliminating duplication of efforts and ensuring targeted use of human resources, digital innovations like mPower help in building the HRH capacity. This helps in widening the healthcare delivery net both in terms of increased beneficiaries as well as increasing the number of health services delivered. "

[21] Ajay, V. S. et al. "Development of a Smartphone-Enabled Hypertension and Diabetes Mellitus Management Package to Facilitate Evidence-Based Care Delivery in Primary Healthcare Facilities in India: The mPower Heart Project." Journal of the American Heart Association: Cardiovascular and Cerebrovascular Disease 5 (2016):

I believe that the success of PHFI's mPower project hinges on building acceptance of technology as a support to clinical care. There is no denying that multi-faceted technology has revolutionized how healthcare systems work and how patients access services. However, as with many digital health interventions, medical practitioners have remained wary of letting technology take the centre stage- a skepticism that's largely unfounded and needs to be effectively managed. Task-shifting to nurses and primary care physicians who are equipped with digital aids will reduce the burden on specialty care. Sadly enough, a recent study reports 45% of Indian doctors expressed high levels of occupational burnout. Creating a funneled system where the nurse coordinators are the first point of contact for people coming into the CHCs will allow doctors to spend less time on non-specialized screening and documentation.

" In India, with poor patient-to-doctor ratio, it is crucial to lift burden from specialists and employ technology to share the patient load. Task shifting and deployment of technology driven methodologies like CDSS through trained lay health workers can help in improving the quality of healthcare delivered. "

What excited me the most was how the mPower team didn't deem technology to be the hen that laid golden eggs- technology was an integral part of the model, however, there was equal impetus on training (including refreshers training) and protocols, making it a comprehensive solution to address primary healthcare needs.

We often overlook the **power of multilateral collaboration** between diverse stakeholders- government, software developers and public health experts, a non-negotiable need for the success and sustainability of a community health intervention. As pointed out by the PHFI team, the target of the intervention was not just the patient but also the provider, necessitating action from a system to change lenses. Government buy-in was sought early and the continuous involvement and support of the government officials played a critical role in the success of this project. In our conversation with Dr. V.S Ajay, the Project Director in Himachal Pradesh, emphasized the importance of conducting monthly meetings with the district's Chief Medical Officer and Block Medical Officers of the 5 government Community Health Centers selected for the study to ensure the health system's cooperation and support.

The mPower Heart model was also taken up by other state governments; Tripura[22] (40 health facilities) and Mizoram (16 health facilities) adopted this innovation and implemented it from primary to tertiary care. This model's success can be attributed to the co-design and community-centric approach PHFI adopted- a textbook example of how ownership of technology lies with the users. This was the very reason it could be scaled and seamlessly integrated not just in other geographies but also across other health conditions.

Technology, when coupled with efficient governance can transform how primary healthcare systems work at a grassroots level. As someone who devotes most of my time on exploring the power of technology as

22 Jindal, D., Roy, A., Ajay, V., Yadav, S., Prabhakaran, D., & Tandon, N. (2019). Strategies for Stakeholder Engagement and Uptake of New Intervention. Global Heart, 14(2), 165-172. doi: 10.1016/j.gheart.2019.06.002

an enabler for last mile reach, I come across several promising tech-enabled innovations, however the mainstream adoption is still far and few. Technology communitization is similar to the long march to freedom. While some have worked, and many failed, there are some that have significantly altered how we perceive and use technology in primary healthcare.

PHFI's pilot highlights the evidence of how effective utilization of personnel and technology can address the systemic public health challenges in low to middle-income countries. It also shed light on issues like limited availability of medicines in health centers, which deterred people from partaking in the study over a period of time. Though mPower was one of the earliest technology-enabled interventions in India, rolled out in a public health setting, and backed by the government, the evidence and lessons remain of utmost value in an evolving primary healthcare context. Creating technology backed interventions without appropriate upskilling and mindset change will lead to poor adoption. Before jumping onto the bandwagon of technology deployment, there is a need to to map out existing competencies and align providers to the purpose. As electronic health records and smart clinical tools become more acceptable and part of routine care, it is vital to relook at the mPower Heart story and strategize how we effectively train and utilize our care resources- nurses and primary care physicians to battle the growing NCD burden in our country.

Contributors

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On Games and Well-being- A Case story of POD Adventures, an innovation in mental health among adolescents

Radhika Chabria

Pattie Gonsalves leads a national public engagement initiative "It's Ok To Talk" (www.itsoktotalk.in) and digital program development for PRIDE , one of the world's largest adolescent mental health research programmes at Sangath, a mental health research organisation in India. Talking to her about PRIDE's problem-solving app, POD Adventures, gives me hope that through the use of technology, we might be able to break down the stigma associated with mental health and offer accessible and engaging interventions to adolescents.

As a young Teach For India fellow, in an under-resourced school in Mumbai, I experienced the crushing helplessness brought on by the lack of understanding of mental health by the ecosystem of stakeholders that surround children. School administration that viewed mental health as an extracurricular activity, other teachers who attributed behaviour challenges to the environment in the slums and parents who were often so busy making ends meet that providing for empty stomachs became more important than troubled minds.

Mental health problems are a major worldwide concern but progress especially in low and middle income countries (LMICs) has been slow. The burden of mental issues on the adolescent and young adult population is especially severe[23]. Stigma and lack of awareness about the importance of good mental health are major obstacles in uptake of mental health services in healthcare settings in India. Some other barriers include the existing public-health priorities and funding, impaired delivery of mental health care in primary-care settings, the low numbers of trained personnel, and the lack of mental health perspective in public-health leadership[24].

These systemic issues are reflected at the school level, with academics taking precedence over mental wellbeing, lack of funding for school based counsellors, the lack of physical space for counselling and most importantly, teachers and management who have little understanding of child development psychology. Pattie shared how Sangath's methodology works at a whole school level with "everybody in school and all young people'', creating an enabling environment for children to seek mental health support. Conversations around the different problems and challenges we face and stress management create a pathway for students to access either the app or face-to-face counselling services by trained counsellors.

Having implemented Sangath's POD face-to-face counselling programme in the schools we work with at Swasti, I've seen first-hand how perceptions of not just children, but the counsellors themselves change over a period of time. Trainees who came in being prescriptive and teacher-like now spend their sessions

[23] Gonsalves PP, Hodgson ES, Kumar A, Aurora T, Chandak Y, Sharma R, Michelson D and Patel V (2019) Design and Development of the "POD Adventures" Smartphone Game: A Blended Problem-Solving Intervention for Adolescent Mental Health in India. Front. Public Health 7:238. doi: 10.3389/fpubh.2019.00238

[24] Srivastava, K., Chatterjee, K., & Bhat, P. S. (2016). Mental health awareness: The Indian scenario. *Industrial psychiatry journal*, *25*(2), 131–134. https://doi.org/10.4103/ipj.ipj_45_17

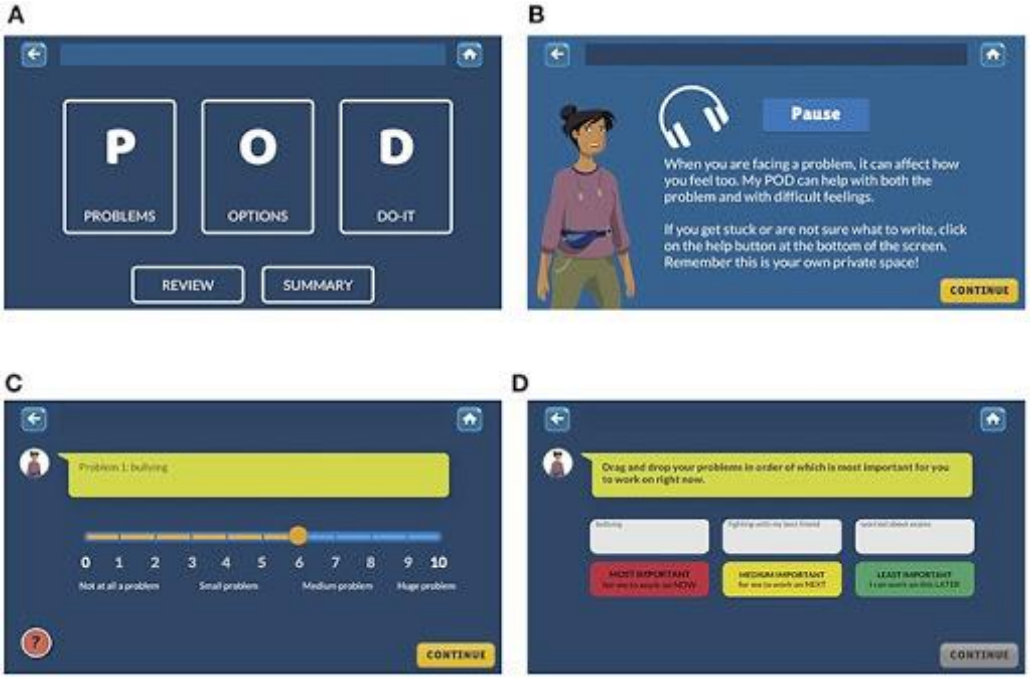

Figure 9. Screenshots of the POD Adventures Application

engaging in friendly banter with the children, making counselling a safe, non-judgmental space. I was interested to know more about the design process that went into the development of POD Adventures and how technology complemented the work of lay-person counsellors.

Pattie explained how increasing mobile phone penetration rates and the challenges of providing counselling to many students in need in schools, culminated in the design of POD Adventures. POD Adventures was developed as a part of PRIDE research programme that aims to develop 'trans-diagnostic' interventions (meaning a solution that can be applied for a range of mental health disorders) for school-going adolescents. . The app was built around three problem-solving steps that had been developed and evaluated for use in non-digital intervention formats through PRIDE: (1) '**P**roblem identification'; (2) '**O**ption generation'; and (3) creating a '**D**o it' plan. This intervention, she said, is a unique blend of digital innovation and a counselor-led problem-solving model that will help adolescents to both cope with stressors and improve their problems. POD Adventures is delivered during school hours in school-allotted rooms and on devices provided by Sangath. During COVID, the programme was being offered online with telephone support. The app itself is divided in two sections; the 'Adventures' section aims to teach problem-solving concepts and methods through contextually-appropriate games while the second part, 'My POD' which prioritizes the problems of individual users.

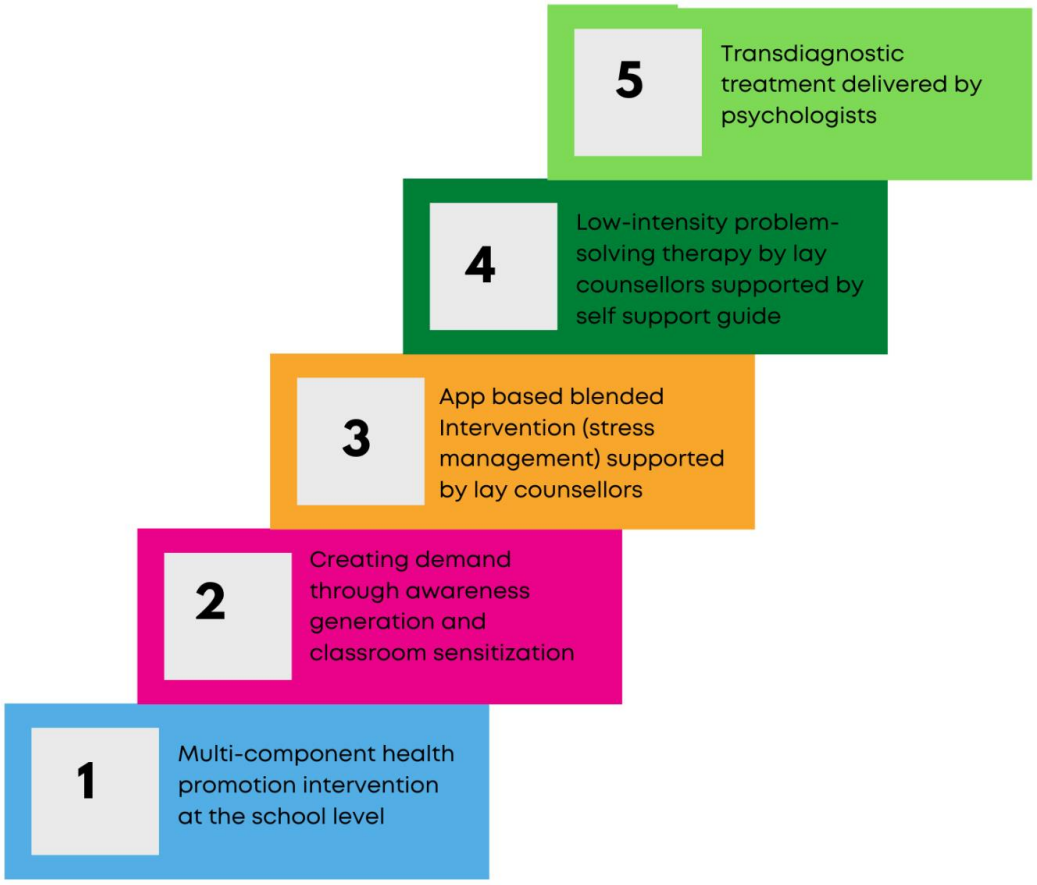

Figure 10. A stepped care approach delivering the PRIDE intervention depending on the level of stress/patient need including digital innovations and lay counsellor support. POD adventures sits at step 3.

The needs of children from low-resourced backgrounds can differ from those that come from more affluent households, so would such an app and its contents be applicable to them as well?

POD Adventures was developed to meet the rising demand for support faced by the PRIDE team delivering its face-to-face variant of POD in New Delhi.[25] Pattie emphasised that the intervention was designed using a person-centered and co-design approach and for low-resource settings and was contextualised to this setting.[26] The aim was to improve students' problem-solving skills using a medium that is highly popular among this age group. The spirit of this innovation was collaboration and participation from the students; the goal was to

[25] Gonsalves PP, Hodgson ES, Bhat B, et alApp-based guided problem-solving intervention for adolescent mental health: a pilot cohort study in Indian schoolsEvidence-Based Mental Health 2021;24:11-18.

[26] Gonsalves PP, Hodgson ES, Kumar A, Aurora T, Chandak Y, Sharma R, Michelson D, Patel V. Design and Development of the "POD Adventures" Smartphone Game: A Blended Problem-Solving Intervention for Adolescent Mental Health in India. Front Public Health. 2019 Aug 23;7:238. doi: 10.3389/fpubh.2019.00238. PMID: 31508404; PMCID: PMC6716539.

engage the users and get them invested in their own mental health.

Context for Success:

Pattie shared the results of a feasibility study Sangath completed for POD Adventures involving 248 students in 2019-20. The high engagement and satisfaction scores the application received stood out to me. 93% of all students completed all 4 sessions and 97% of students said POD adventures helped solve their problem! I was curious to understand those factors that contributed to the success of the application.

" Implementing this innovation in a school setting and as a "stress management" intervention also added to high uptake because of a conducive and judgment-free environment where the children received information on its benefits and significance."

Interestingly, the intervention was framed as a "stress management intervention" as compared to a "mental health" programme. Additionally, by administering the program in schools, Sangath was able to deal more effectively with challenges to uptake such as fear or stigma and access while at the same time providing counsellor supervision. Pattie recognises that implementing such programs outside of the school environment might be more challenging. The focus on self-guided help and counselor-led guidance at an impressionable age are key attributes of this app.

1. **Digital Innovation**: The mode of service delivery was unique at such a wide scale and considering the target group, school-going adolescents. POD adventures used graphic, audio-visual content about mental wellbeing, addressed myths surrounding counselling and provided a framework for problem solving on an easy to use, non-technical platform. These were key attributes of its success amongst adolescents. In fact Pattie mentioned that they found it challenging to accommodate all the children who actually wanted to participate in the programme!

2. **Non-specialist counsellors:** Pattie was quick to point out that the non-specialist counselors working in tandem with the application was crucial to the success of the intervention. When the application was trialed following Covid, with schools shut, the uptake of the application actually fell due to the absence of this in-person guidance. Counsellors play a critical role in bridging the digital divide and blended models saw more referrals, engagement and acceptability. Thus, it was seen that the presence of a counselor-aided in acceptability and uptake.

It's clear that this unique blend of human and digital components offers a feasible and sustainable solution to improving healthy coping skills and problem-solving attitude early in life. Designing a gamified platform and utilizing existing human capital (or training non-specialist

counsellors) also reduces the burden on trained mental health professionals.

"The POD adventures app allows students to explore issues affecting their mental health on their own. This intervention can be applied in conjunction with a counselor, a lay-counselor, or by themselves, freeing up time for counselors who already are heavily burdened due to staff shortages."

Lessons, next steps:

The pilot success and high acceptance of this gamefied, self-help application in schools paves the path for further rigorous evaluation and potential scaling up of such digital healthcare models. The increased awareness and cases of self-referral also shed light on the need and demand for mental health care among adolescents. Non-judgemental and personalized care, especially for mental health is needed and *can* be provided through innovations like POD Adventures. Why then shouldn't we jump into a full-blown scale up I asked? Pattie however pointed out the limitations of POD Adventures.

Limited trained human capital

The innovation does demand some personnel as the uptake and impact was greater among counselor-assisted users as opposed to only application users. From my personal experience with the problem-solving framework, working through pre-existing biases and behaviour patterns and then modifying them takes a significant amount of time, effort and training and therefore needs to be factored into program timelines and budgets. However, the involvement of lay-counselors also points towards a promising trend of involving non-medical personnel and increasing the reach of mental health care in India.

The digital divide

The need for digital resources such as smartphones and/or internet can be an obstacle in some regions; but with the increasing number of mobile phone users in India, especially among adolescents and young adults, such digital delivery models can prove to be a sustainable option for care integration. The gendered nature of uptake though was not clear through the evidence and would be an interesting trend to monitor.

"Involvement of end-users in the design of any digital intervention is important to make sure that the technology being designed is fit-for-purpose and is acceptable to the audience it is intended for.

We designed the POD adventures app through a collaborative co-design process over 1.5 years to make sure that it was reflective of young people's context and reality and that they find it engaging and easy to use"

Pattie Gonsalves

The beauty of Sangath's POD Adventures lies in the simplicity of its POD framework, it's easy for children to understand, recall and retain. The transferable nature of the POD framework

makes it a life-skill that builds resilience and coping mechanisms in adolescents, a skill-set that will take them a long way as well-functioning adults. The means of delivery of the POD framework can be compared to teaching strategy through chess, once you've understood the rules and contours of the game, the same set of skills will take you through multiple permutations and combinations of the board itself. POD Adventures, through its engaging user interface will hopefully leave children with an invaluable skill-set that is complemented by a sustainable and truly grassroots approach of non-specialist counselling.

Contributors

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A stepped-care design to improve equitable access to specialised care - The case of MANAS

Catherine Cove

India is the second most populous country in the world and has the youngest population globally. One of the major challenges facing the country's healthcare system is the fact that doctor density is highly inequitable across urban-rural demographics and the public and private sectors. Over the past five years, I have witnessed firsthand the implications of this inequity while working to improve health outcomes for under-resourced communities across the country. There is a sizable gap in the publicly funded and managed healthcare facilities, such as primary healthcare centers (PHCs). Additionally, there is a severe shortage of trained professionals providing adequate mental health care, especially in PHCs. Despite efforts to improve access to quality healthcare services for all, this shortage of personnel and resources has often felt like an insurmountable barrier. I have often asked myself 'how can one facilitate equity in healthcare when resources are so unevenly distributed?' Adding to the challenge of limited resources is the stigma surrounding mental health, which exacerbates the lack of attention given to this field by both authorities and the patients. Awareness about Common Mental Disorders (CMDs) is largely lacking among people availing services at PHCs, while most primary care physicians are not trained adequately to diagnose and treat Common Mental Disorders. Fortunately, where resources are lacking, human ingenuity has time and time again worked to fill the gaps through innovative and community-centered interventions to improve care.

About MANAS

In order to address the challenges of a lack of human resources and informational gaps related to mental health, Sangath implemented a stepped-care intervention called MANAS (MANashanti Sudhar Shodh, which means "project to promote mental health" in Konkani) in Goa. Recently, I was fortunate enough to explore the MANAS intervention through conversations with Mr. Bhargav Bhat, a key researcher and implementer from MANAS' earliest days, and learned more about how the innovation worked to address the problem of limited personnel and resources to address mental health in communities. I found the MANAS trial to be innovative in both concept and design. It addressed the lack of trained mental healthcare professionals, spread awareness about mental and emotional wellbeing, and incorporated a stepped-care design that attempted to reduce the burden on caregivers.

The core premise of the innovation was employing and training Lay Health Counsellors (LHCs) to provide mental health care to patients with support from primary care physicians and a trained mental health professional. To begin, Lay Health Counsellors screened a randomly selected treatment group for Common Mental Disorders. The Lay Health Counsellors were responsible for case-management of the patients and development of the initial care plan. They provided psychoeducation to all patients with a focus on educating the patient about their symptoms and the effect of Common Mental Disorders on daily life and their relationships with others, and dispelling the stigma and shame associated with sharing emotional difficulties with their doctor. Lay Health Counsellors were charged with equipping patients with the skills to understand and address their symptoms using a non-medication-based approach, such as breathing exercises for anxiety or other activities for depressive symptoms. Adherence to treatment was a key aspect of the psychoeducation provided by Lay Health Counsellors. Medication was prescribed only to those with moderate or severe cases of Common Mental Disorders. The main responsibility of the physician was to oversee the care plan, approve it and review and approve any adjustments made. The cases that called for greater expertise were overseen by a clinical specialist. These cases included patients that were seen as high-risk for suicide at any stage, were unresponsive to any treatment, had other

comorbidities due to substance use, or the patients whom the primary care physician requested a consultation with. This clear role delegation was essential for ensuring seamless execution of the intervention and allowing each patient to be given the time and care required.

Insights from the intervention

There were two key components of this intervention that stood out to me as being essential in facilitating the success of the innovation. The first is the involvement of lay health workers. As previously mentioned, one of the key challenges facing India's healthcare system is the lack of trained medical practitioners, specifically the lack of practitioners in rural areas and the public sector. There is so much talent present in communities that can be leveraged through programs such as MANAS that allow those outside of the trained medical field to deliver care and connect with patients. The involvement of Lay Health Counsellors as the first point of contact and case managers for patients not only improved adherence to care, but also reduced the burden on primary care physicians. This structure benefited both the system and the recipients as the Lay Health Counsellors were local youth who did not have a medical background and received a structured, 2-month-long training. Through my own work in public health, I have noticed that there is often a perceived divide between medical professionals and communities. There is frequently an inherent distrust of the healthcare system, particularly among vulnerable and marginalized communities, due to a range of factors, including bias and discrimination. This innovation employed local human resources while aiding the primary care physician in care provision, which provides an opportunity to increase the trust of communities in the care they are receiving. This is one of the reasons why task shifting is often successful. Several patients also reported that Lay Health Counsellors provided encouragement for care adherence and regularly checked-up on them and helped them understand that mental health and emotional wellbeing is not something to be ashamed about. Care adherence, particularly for mental health, is often one of the first casualties of an overburdened system, so the fact that this structure promotes not only care delivery but also adherence is critical. Overall, these reports show that the benefits of using Lay Health Counsellors were multifold. Benefits include increased bandwidth for in-depth support to patients, increased trust in the system, increased provision for adherence, decreased stigma surrounding mental health and increased community engagement.

" The model exhibited team based care than a single professional (doctor or nurse centric care) by involving lay health workers to improve access to health care. It also ensured policies were in place to ensure efficient utilisation of resources. "

The second component of this intervention that I found particularly striking was the policies employed that facilitated efficient utilization of resources and greater awareness building among patients. The stepped-care design resulted in minimizing expenses and reducing wastage of resources. Anyone who works in mental health will tell you that it is a complex area, dependent on a range of factors that often requires a multifaceted approach to address at the patient level. The issue is that when time and resources are limited, patients often do not receive the care they need or receive solutions that can be delivered quickly, such as drugs that they may or may not be able to afford over time and which may not be required for addressing their specific problems. In the MANAS program, the only patients that received antidepressants were those suffering from moderate

to severe Common Mental Disorders or those advised to do so by the clinical specialist. All other patients were educated about their symptoms and taught methods to address them. This psychoeducation component encouraged the patients to take ownership of their own care. Lay Health Counsellors raised awareness about Common Mental Disorders and their effects on daily activities and interpersonal relationships in order to encourage patients not only to talk about their mental health, but also to understand the importance of addressing mental health challenges at an early stage. This type of education is critical for facilitating patients to be able to maintain their mental health overtime, yet it is frequently unavailable in low-resource settings. On top of that, stigma associated with mental health is prevalent and difficult to shift. So often mental health is viewed as something to hide or ignore. Combatting this perception requires time, care and cultural sensitivity, which lay health workers were able to provide through this structure. This intervention worked to address mental health in a sustainable manner by providing patients with the tools they need to manage their mental health, which fosters inclusion, community and individual resilience and enhanced wellness.

Learning Insights

The MANAS trial was a highly successful innovation in the field of mental healthcare and care provision in low-resource settings. There are several key learnings that we can take away from this intervention, including:

1. Using existing infrastructure and involving the community is essential to promote sustainable well-being.
2. Task-shifting is a powerful tool that allows for enhanced care for more people and greater trust in the process.
3. A comprehensive and holistic approach is essential to address mental health concerns in a sustainable manner.

While the MANAS trial focused on mental health, the principles that it employed and the learnings from the intervention are applicable across a range of areas in primary care. Training community members to work with patients on receiving and adhering to care can be employed for a number of high burden conditions, including communicable diseases like TB and HIV/AIDS and noncommunicable diseases like obesity and hypertension. The design is replicable and can be integrated and employed in existing government and private healthcare facilities. The government's launch of the ASHA program reflected a similar principle of community outreach and role delegation, and the MANAS intervention provides another opportunity for the government to pursue an innovative method to enhance wellness and improve trust in the health system among communities. Moving forward, I believe that this innovation shows just how powerful creative program design can be to address the existing shortcomings in India's healthcare system. It is easy to be discouraged while working to improve health outcomes in low-resource settings where it feels as if circumstances are stacked against progress, but the MANAS trial demonstrates that that progress can be made when thoughtful innovations are employed.

Contributors

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APPENDIX I

PHC Exemplars Case Study Methodology

To begin our case study narratives, we first needed to ensure that we select case studies that are promising and will provide learnings that are truly needed for the Indian PHC system today. We first took the results of a previously conducted systematic review of health innovations and a desk review of comprehensive primary healthcare models and put these through multiple readings to reach a consensus of 16 models and 10 innovation case studies to reach out to.

PHC Models Selection

The Institute of Public Health had conducted a desk review of all comprehensive primary healthcare centers in India. Their parameters of search were similar to the systematic review of health innovations and followed the same definition of CPHC outlined above. Their search resulted in 76 CPHCs and they chose to reach out to 16, to further study them in detail. To prevent duplication of efforts, we were able to utilise their data and further select from the remainder of 60 CPHCs for our case studies. These 60 models were researched and their data extracted in order to discuss among team members and senior management which ones would be chosen with which criteria. Each chosen case study was selected based on their ability to deliver comprehensive care for a selected population over a long period of time, showing that they have been able to deliver care sustainably and successfully. These resulted in the following 16 selected models:

PHC Models Case Studies

1. **ANANYA** -CARE India- (Bihar)
2. **KC PATTY PHC** - The Palani Hills Health Development Trust (Tamil Nadu)
3. **COMMUNITISATION PROGRAM** (Govt. of Nagaland)
4. **PACHOD**- Institute of Health Management (Pune)
5. **COMPREHENSIVE RURAL HEALTH SERVICES PROJECT**- Ballabgarh-AIIMS (Haryana)
6. **JAMKHED MODEL** - The Comprehensive Rural Health Project (Maharashtra)
7. **HOSPITALS & OUTREACH**- Emmanuel Hospital Association (EHA)- (India)
8. **VHS HOSPITALS** -Voluntary Health Services (Chennai)
9. **SEWA RURAL-** Society for Education Welfare and Action (Gujarat)
10. **VHAI NETWORK**- Voluntary Health Association of India (India)
11. **MOBILE CLINICS**- (Govt. of Delhi)
12. **SNEHA RMNCH**- Society for Nutrition, Education and Health Action (Mumbai)
13. **ASHWINI**- Association of Health Welfare in the Nilgiris (Tamil Nadu)
14. **RANGABELIA PROJECT**- Tagore Society for Rural Development (West Bengal)
15. **GUMBALLI PHC** -Karuna trust (Karnataka)
16. **COMMUNITY ACTION FOR NUTRITION**- Sathi-Cehat (Maharashtra)

PHC Innovations Selection

Swasti Health Catalyst conducted its own systematic review of health innovations in India within the primary healthcare system and yielded a total of 239 impact evaluations detailing a plethora of innovations, with positive, mixed, or no real impact. In order to fairly assess and select innovations, they were clustered into PHC building blocks (governance, financing, etc) and chosen proportionately, and then vetted through an advisory committee as detailed below:

Clustering and Evaluations

239 impact evaluations were extracted into its innovations and impact, and further categorized into PHC health system building blocks from our framework to analyze. These are summarized in the results below. Categorizing these innovations, allowed us to critically assess the types of innovations and choose a representative sample of promising innovations from all building blocks of a PHC system. Our internal team reviewed each building block and chose unique innovations that showed potential for scale, were unique in their

design or application, and demonstrated positive impact. HSTP and Swasti deliberated and finalised innovations (and models included in this list), reported in the results, to be taken up with a PHC advisory group to validate and/or refute our literature review recommendations.

PHC Advisory Group

A PHC advisory group was created to enhance our results and selection of case studies through on the ground experience and a workshop was hosted by HSTP and Swasti. The group consisted of top experts both in PHC system theory, policy, and practice. Many had spent years in growing their own PHC programs and could assist in referencing other primary healthcare program exemplars that may have been missed through an academic systematic review. These individuals would also provide a network to connect the research team to PHC stakeholders for case study programs along with avenues for dissemination of research results. The following individuals participated in the PHC advisory group and offered valuable input:

- Dr Anand Krishnan, AIIMS, New Delhi
- Dr. Anuradha Jain, USAID
- Dr Chandrakant Lahariya, WHO
- Pavitra Mohan, Secretary, Basic Healthcare Services, Udaipur
- Dr Raman Kumar, Founder, Academy of Family Physicians of India
- Dr Rajani Ved, Independent
- Dr Rajesh Kumar, former PGI Chandigarh
- Rajeev Sadanandan, Health Systems Transformation Platform
- Shiv Kumar, Swasti
- Dr Vijayakumar, Amrita Medical College, Cochin
- Dr Yogesh Jain, Public health physician, Chhattisgarh

Case Study Tools Development

To create detailed case studies narratives, tools for interviews were developed to encompass the vision, motivation of the innovation, the problem they looked to solve, and what was successfully implemented and has potential to be scaled up. These tools were developed for interviews with CEOs, program managers, implementers, and also included checklists for observational, operational, and quantitative data. Depending on the program and what would be feasible during Covid-19, we would collate all the information into one narrative case study. These tools were created and submitted to Swasti Health Catalysts' IRB board and were approved on the 19th of October 2020.

Case Study Process

We then developed a tracking tool for all 25 case studies and a team of three researchers set to reach out and contact the director or implementer of each of these programs. We focused on interviewing higher level staff who would have a broader understanding and big picture focus of the vision and mission of the program. Each of these interviews were conducted by a team of mid-level and senior-level staff and was recorded and transcribed for accuracy. These conversations and data points were read by at least 2 members of the team to reduce bias and a round table discussion was conducted to analyze and come to a consensus of the direction of the narrative. These decisions were recorded via google sheets and processed by the writing team to

create draft 0 of the case study that was then processed again to include secondary data and build an understanding of how this program fits into the Indian PHC, how to strives to make it more comprehensive and what are the key innovative solutions and learnings that can be taken away.

If the interviewing team was unable to glean a complete picture of the program, further contracts and names were snowballed from the first interviewee to conduct our second round of interviews where we fill out gaps within our narrative.

Case Study Structure

- Begin with a clear definition of CPHC
- Introduce the PHC model system framework
- Introduce model/innovation and what they believe their most important tool is towards building CPHCs (training of GPs, creating surveillance of community needs, adaptable systems over time) and how their program or innovation is moving towards this goal
- Identify which building blocks will be focused on, highlighted, discussed.
- Work through narrative of why these building blocks worked and it's resultant overall impact
- End with discussion on ability to scale within other CPHCs

APPENDIX II

Detailed PHC Framework