

# Piloting Innovations in Nepal’s Community Health Worker Program



## PROJECT DATA

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## Introduction

In the 1990s, Nepal was a poor country in need of a stronger health system, especially in rural areas. Service delivery was difficult, particularly due to the country’s geography. For example, many people had to travel up to four hours to reach their nearest health facility (Zulliger, 2017). A civil war that ran from 1996 to 2006 made this already difficult situation even worse. The conflict disrupted the delivery of health services, as it destroyed community health posts, forced health workers to leave their posts, and led to the deaths of health workers (Singh, 2004). Despite these challenges, Nepal made substantial progress in health outcomes. The under-5 mortality rate dropped from 140 per 1,000 live births in 1990 to 45 per 1,000 in 2011, according to World Bank data.<sup>1</sup> The maternal mortality rate fell from 851 deaths per 100,000 live births in 1991 to an estimated 328 in 2011.<sup>2</sup>

One factor contributing to those positive health trends was the creation of the Female Community Health Volunteer (FCHV) program. The Family Health Division of Nepal’s Department of Health Services introduced the FCHV program in 1988 (Ministry of Health and Population, 2014). At its inception, the program focused on voluntary family planning activities, but it expanded over time to include a variety of other activities, including health promotion, health services, and the collection of demographic data (Kandel & Lamichhane, 2019). By 2014, these volunteers offered services including: treatment of diarrhea and acute respiratory infections, immunization, family planning counseling, nutrition activities, counseling for pregnant women, knowledge of pregnancy complications, pregnancy and newborn services, and recognizing and referring

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1 World Bank data available at: <https://data.worldbank.org/indicator/SH.DYN.MORT?locations=NP>  
 2 World Bank data available at: <https://data.worldbank.org/indicator/SH.STA.MMRT?locations=NP>

for newborn complications (Ministry of Health and Population, 2014). Government health care initiatives used the FCHV network for their own community-based programs, owing to the trust that FCHVs had built over time (Kandel & Lamichhane, 2019). More than 52,000 women were active in the program as of 2017 (Khatri, Mishra, & Khanal, 2017).

The FCHV program had made an impact by connecting people in difficult-to-reach areas to the health system, but by the 2000s the Nepali government wanted to accomplish more. Neonatal and infant mortality remained high in the country and preventable infant- and child-specific diseases, such as diarrheal diseases and respiratory infections, were among the top 10 leading causes of death in Nepal. Mortality rates were higher in rural areas compared to urban areas, and particularly high in mountainous regions of the country, due to limited health infrastructure and challenging terrain (Merchant, Devlin, & Egan, 2016). Socioeconomic inequities were also apparent in the health system, as better-educated and wealthier women tended to have access to better maternal healthcare.<sup>3</sup>

In 2008, a Nepal-based non-governmental organization called Nyaya Health Nepal (*nyaya* could be translated as “justice” in Nepali) began working with the national health ministry to improve health services in one Nepali district.<sup>4</sup> To improve health outcomes in the area it targeted, Nyaya soon began looking for ways to strengthen community-based health services and improve the FCHV program.

## Development Challenge: Providing Health Services, and Reducing Maternal and Child Mortality

The core development challenge that Nyaya’s pilot program aimed to address was strengthening the health system. There was low utilization of available health services and the morbidity and mortality rates in rural areas were high relative to urban areas (Ministry of Health and Population, 2010a). A related challenge was the variable quality of community health services across

Nepal’s districts, which the Nepali government hoped to address in order to provide quality health care to all Nepalis (Schwarz, et al., 2014).

## Context

FCHVs were non-salaried community health cadres, working almost exclusively in rural areas. There was roughly one volunteer for every 500 people, or at least one in each ward (the smallest local administrative unit). The local mothers’ group for health (a volunteer non-governmental civil society group made up of women involved in social and health activities) selected each volunteer (Khatri, Mishra, & Khanal, 2017). The program required that new volunteers be married women between age 25 and 45. Preference was given to those who were literate, but in practice volunteers were often illiterate (Zulliger, 2017). After selection, volunteers received 18 days of basic training on family planning; maternal, newborn, and child health; and nutrition (Khatri, Mishra, & Khanal, 2017). They typically worked 6 to 10 hours a week, providing services in their spare time on their own schedule (Perry, 2016).

Interviews with community health volunteers revealed a number of challenges that impeded their work. Volunteers in remote areas faced punishing physical obstacles, including washed-out bridges and deep rivers to ford. “Walking to some villages takes more than a day, with nowhere to spend the night,” said one volunteer.<sup>5</sup> Volunteers’ workload had also increased due to the accrual of additional responsibilities (Ministry of Health and Population, 2010b). Accomplishing additional tasks could be difficult in the limited time the volunteers had to spend on their health work. They might devote significant portions of their schedules to paid work (not related to their FCHV roles) or other responsibilities, leaving them only about three hours per day or two days a week for FCHV tasks (Maru, et al., 2018).

Volunteers received daily allowances of about US\$4 when they attended mass immunization days, trainings, and meetings, and money to buy a blue sari designed with the FCHV logo and official name badge (Merchant, Devlin, & Egan, 2016). Volunteers also received intangible incentives such as an annual day of honor recognizing their services. While most FCHVs did not request regular salaries for their work and attrition was very low,

<sup>3</sup> Author correspondence with Ryan Schwarz, Nyaya Health Nepal, July 2019.

<sup>4</sup> Nyaya Health Nepal was founded by a group of American and Nepali medical students.

<sup>5</sup> Anup KC, 2017 interview with a female community health volunteer.

less than five percent annually, there were some demands for more benefits (Zulliger, 2017).

In response, the health ministry tried to provide FCHVs with additional financial incentives. In 2001, the government created an FCHV endowment fund to generate local financial support for volunteers and ensure that some local funds were available for FCHVs. In 2006, however, a study found that the fund was not working as expected because the interest generated was too little to be useful and FCHVs had no access to the principal (Nepal Family Health Program, 2012).

Globally, there was evidence that creating more professional community health worker cadres could increase utilization of reproductive and neonatal health care services (Maru, et al., 2018). A 2010 World Health Organization report, for example, reviewed global community health worker programs and recommended measures to strengthen them – such as hiring workers full time, implementing minimum educational requirements, and providing stronger supervision of these workers – in order to make better progress toward achievement of the health-related Millennium Development Goals (Bhutta, Lassi, Pariyo, & Huicho, 2010).

The cost of professionalization was a challenge for Nepal, however, with a nominal per capita gross domestic product of roughly US\$370. The country spent around US\$40 per capita on health care, a figure among the lowest in the world. Health expenditure was 5.8 percent of gross domestic product (GDP)—much less than the global average of 9.9 percent (Maru, et al., 2017).

In 2008, Nyaya began its work in Achham, a poor and remote district in the west of the country that had seen major fighting during the civil war. Its human development indicators were the lowest among Nepal's 75 districts and more than 40 percent of the population lived on less than \$3.10 per day (Maru, et al., 2017).

## Delivery Challenges

To make the community health worker system in its area of operation more effective, there were several challenges that Nyaya had to address.

### Human Resources & Organizational Capacity (Training)

Training for female community health volunteers was limited. The Department of Health Services at the health

ministry created a health training curriculum and used a train-the-trainer model, working with regional trainers who trained district-level personnel, who in turn trained lower-level personnel, who trained the FCHVs (Perry, 2016). The program provided 18 days of initial training to volunteers, plus five days of refresher training every five years (Ministry of Health and Population, 2010b). A 2003 Nepali government report found that the training curriculum generally focused more on providing knowledge to FCHVs rather than building up the skills they needed to do their jobs. For example, FCHVs did not receive training on interpersonal communication, how to provide counseling, how to conduct meetings, or how to teach and present information – all activities essential for performing their responsibilities as FCHVs (UNICEF, 2004). Volunteers regularly received new responsibilities without adequate training and reported feeling inadequately trained to perform those services. The required refresher trainings did not occur regularly in all wards. Illiterate FCHVs felt further constrained due to their inability to read (Perry, 2016). There was also a backlog in training, mainly affecting volunteers appointed to replace others who left the program (Ministry of Health and Population, 2010b).

The only requirement for the selection of an FCHV was that the candidate be a married woman who lived in the community she served. “Previously, there was no minimum education requirement,” said Ryan Schwarz, a medical doctor who served as chief operating officer of Nyaya until 2018. “This means that while some FCHVs have bachelor’s degrees or more... other women are illiterate. It’s hard to standardize a national community health system when you have no standard for what the baseline education is.”<sup>6</sup> A 2014 survey indicated that 67 percent of FCHVs had attended school and 14 percent had graduated from high school (Ministry of Health and Population, 2014).

### Reporting, Supervision, and Coordination

Monitoring and supervision of volunteers was weak and FCHVs were only loosely integrated into the management of the public healthcare system (Maru, et al., 2018). “The supervision aspect is minimal and highly variable across geographies,” Schwarz said. “In some areas there is some

<sup>6</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

degree of supervision, but in other areas it can be quite limited.”<sup>7</sup>

Local government-employed health workers supervised the volunteers that worked in their catchment areas. They were responsible for providing volunteers with essential commodities and first aid supplies and for offering support, advice, and feedback during monthly supervision visits (Zulliger, 2017). Volunteers, however, reported a desire for more regular feedback or support from their superiors. A survey released in 2014 suggested that some knowledge of danger signs in pregnancy was not being learned or retained by FCHVs, indicating possible gaps in supervision (Ministry of Health and Population, 2014).

There were also shortcomings in data collection and challenges with the health management information system. The registers used to collect data were complicated, featuring 30 to 40 indicators; this placed a significant burden on the FCHVs, especially considering shortcomings in training and supervision. That burden, along with the low literacy levels of the volunteers, could negatively affect the quality of data collected (Zulliger, 2017).

Many government health care initiatives relied on the FCHVs for implementation and different units within the health ministry managed different aspects of the volunteers’ work. This led to programmatic fragmentation, with volunteers performing multiple tasks for similar activities in different programs. Multiple recording and reporting tools were confusing for the FCHVs (Khatri, Mishra, & Khanal, 2017). As vertical programs added activities, the FCHVs struggled to successfully implement them. The divided administration of the program led to challenges, including lack of coordination and gaps in support and supplies, and the quality of FCHVs’ work varied across the country (Maru, et al., 2018).

The supply chain was a particular challenge. “There is limited to no supply chain support, and as the 2014 survey demonstrated, this frequently results in limitations to service delivery,” Schwarz said. This resulted in volunteers often not distributing basic health commodities that they were supposed to provide to communities (e.g., contraceptives).<sup>8</sup>

## Information and Communication Technology

Nyaya saw the use of electronic data systems as key to a more effective community health worker cadre. Since the end of the civil war in 2006, Nepal had become more technologically connected. The number of mobile phone subscriptions went from less than one per 100 people in 2005 to 20.9 per 100 in 2009, and would rapidly grow in the coming years.<sup>9</sup> In 2006, only 1.1 percent of Nepalis used the internet, but by 2010 that figure had jumped to 7.9%.<sup>10</sup> The spread of mobile phones and cellular data networks, and this technology presented opportunities for the health system (Maru, et al., 2018). The Nyaya team wanted a digital platform that would serve as a reliable data collection source for monitoring community-based care and tracking patient outcomes at the local level, integrate with a hospital-based electronic records system, and identify and track patients (Citrin, et al., 2018). The challenge was to build a system that could be easily used in the field. Nyaya would have to acquire technology that health workers – who might have low computer literacy – could easily use in the field to share information with local health facilities.

## Opposition and Lack of Consensus

Nyaya believed that professionalization of community health workers would increase their effectiveness. “Over time, what we have learned as a global community, and certainly in Nepal, is that volunteers can be tremendously valuable to improving public health, but have a glass ceiling,” Schwarz said. “Especially when those volunteers are women living in poverty, there’s a very real opportunity cost for every hour they put into health promotion and volunteer work relative to gainful employment.”<sup>11</sup> The volunteers had limited time to carry out their community health work and often prioritized other responsibilities over their FCHV activities.

But there was resistance to professionalization in Nepal when the organization began its work in 2008. “When we discussed potentially paying FCHVs or paying another community health worker cadre, and enabling them to work more full time, this was not always

7 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

8 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

9 World Bank data available at: <https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=NP>

10 World Bank data available at: <https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=NP>

11 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

well-accepted,” Schwarz said. The prevailing opinion was that the community health system was working well and did not need to be fixed. Nyaya wanted to demonstrate that better-compensated health workers who were well-supported and worked full time could benefit the health system.<sup>12</sup>

## Intervention

After the civil war ended in 2006, the Nepali government became interested in experimenting with public-private partnerships to strengthen its health system. The health ministry would give money to a non-governmental organization to buy health services, allowing that organization to operate public sector health facilities. In 2008, Nyaya entered into the first such partnership with the Nepali health ministry. Nyaya began operating in Achham district, which had been a stronghold of Maoist fighters during the war. It had many HIV cases and experienced some of the worst health outcomes of Nepal's 75 districts. For example, Achham had the highest under-five mortality rates in the country at 82 deaths per 1,000 live births (Maru, et al., 2018). The nearest operating room was 10 hours away by bus (Basnet, et al., 2014). Nyaya and the health ministry established the Bayalpata Hospital in Achham, which Nyaya operated. The hospital was a regional training facility that treated over 100,000 patients a year (Citrin, et al., 2018).

Nyaya initially focused on facility-based expansion of health services and quality improvement, but factors such as the 23 percent of women who were still giving birth outside a health facility led to greater engagement in community-based health care (Maru, et al., 2018). From this base of operations in Achham, the Nyaya team decided to experiment with new ways to strengthen the FCHV program in the area the hospital served.

In 2010, Nyaya teamed up with the health ministry to pilot a project to strengthen the FCHV program in Achham. The pilot was intended to improve health outcomes of people in the catchment areas of Bayalpata hospital and ensure that patients who required additional support received comprehensive health care (Basnet, et al., 2014).

## Tracing the Implementation Process

The 2010 pilot gave Nyaya the chance to try out new ideas for managing and incentivizing FCHVs in Achham. The lessons learned from the pilot would in turn inform a subsequent program that introduced a new cadre of professional, full-time community health workers.

### Strengthening the FCHV program through an NGO-driven pilot

“The Achham local branches of the district health office were very interested in trying to experiment and see how we could make the local FCHVs even better,” Schwarz said. “We spent a couple years working closely hand-in-hand with the FCHVs, trying to identify ways that they could be better supported.”<sup>13</sup>

The pilot implemented a new village-level leadership structure to increase oversight and support for volunteers and improve ties between individual community members and their local health centers. The project hired a director of community health for the implementation area and created a new post, the Community Health Worker Leader (CHWL). The CHWL was nominated by the village mothers' groups and hired as staff by the local hospital. CHWLs met weekly with the volunteers to discuss patient encounters and provide trainings on specific needs of the community. Each CHWL oversaw around nine volunteers and could pass on guidance from the health ministry and the local hospital to the volunteers on the ground. CHWLs collected volunteers' data on patient encounters, which the health ministry could use for monitoring and evaluation (Schwarz, et al., 2014). The program also implemented weekly data collection on child health indicators using mobile phones. That data was mapped and recirculated back to the health workers and volunteers on the ground (Basnet, et al., 2014).

Staff at the Bayalpata hospital processed and reviewed community health data. The hospital hosted monthly trainings for FCHVs and weekly trainings for CHWLs. The CHWLs were the bridge to the FCHVs, meeting with them weekly to provide training and collect home-level health data from the villages. The volunteers went from home to home, collecting data about patients and the spread of disease and educating community members on

12 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

13 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

health issues and available services (Bright Funds, n.d.). At the end of each month, the director of community health presented data to the FCHVs, Community Health Worker Leaders, and Bayalpata hospital staff to help identify specific patient needs or areas for more general programmatic improvement (Schwarz, et al., 2014).

By 2012, the pilot program's community health network had expanded to include nine community health worker leaders and 93 FCHVs covering more than 20,500 people in nine villages. Under the pilot, when volunteers identified someone in the community with an illness that required treatment, the volunteer followed up with the person until the illness was cured or a health worker accompanied patients in need of financial and logistical support to a healthcare facility (Basnet, et al., 2014).

The pilot enhanced supervision through regular meetings and trainings. Under the rules of the national program, FCHVs had met with their local supervisor once per month. Under the pilot program, CHWLs met with the volunteers they supervised weekly to review patient encounters and any problems that arose. The CHWLs then shared information on patient encounters with the director of community health during weekly meetings and received guidance they could later convey to FCHVs. The regular meetings included training for FCHVs on health-related topics. Community Health Worker Leaders covered training materials with the director of community health in their weekly meetings, and the CHWLs then taught that material to the FCHVs. Every two months, FCHVs from multiple villages came together for day-long trainings (Basnet, et al., 2014).

The pilot program also addressed the financial needs of FCHVs by providing a performance-based payment to volunteers for reporting household-level data, educating patients, ensuring patient referral, and providing follow-up for patients requiring long-term care (Basnet, et al., 2014). Volunteers received 200 rupees (around US\$2.25) for their weekly responsibilities, which required 8 to 12 hours of work per week. The program also provided non-financial incentives such as weekly meeting lunches, uniforms, health equipment, supplies, and community recognition (Schwarz, et al., 2014).

The pilot was funded through a mix of government and non-government financing. The health ministry provided around US\$35,000 each year for the operations of Bayalpata Hospital, while the majority of the money for the program, approximately US\$750,000, came from donors (Basnet, et al., 2014).

## Learning from the pilot

Nyaya felt that the existing FCHV structure constrained the extent of healthcare improvements possible under the pilot. The conclusion was that “you can't expect a community health system to operate on volunteer labor when people are living in poverty,” Schwarz said. “No matter how much support we offered, these women were working [around] three hours per day for the health system, then running down to a local shop [...] trying to make two dollars a day. That's not a sustainable health workforce.”<sup>14</sup>

Nyaya terminated the initial FCHV strengthening pilot in 2014, but there were positive takeaways. FCHVs reported that the pilot was a valuable addition to the preexisting volunteer program, specifically citing the enhanced learning through repetition and reinforcement of key topics. They also valued the feedback and guidance the pilot program provided and some said they would like to meet with supervisors even more often than the weekly meetings implemented under the pilot. The aggregate attendance rate of the weekly meetings between community health worker leaders and FCHVs was 99 percent. FCHVs in the pilot conducted an average of 183 patient encounters per village per month and the program cost approximately US\$1.74 per patient served per year (Schwarz, et al., 2014).

In addition to the question of volunteerism and compensation, a study carried out by Nyaya staff identified challenges affecting the success of the pilot. These included limited literacy of the FCHVs, which constrained the extent of detailed data collection, and the long distance between some of the villages and the Balyalpata Hospital, which limited the ability of volunteers to consistently attend group trainings and refer or transport patients from their villages to the hospital (Schwarz, et al., 2014).

Nyaya's next step was to fundamentally challenge the volunteer nature of the community health worker system in Nepal. “Yes, Nepal has excellent gains in health outcomes,” Schwarz said. “But what more could have been done in the same time period if this was a cadre that was paid, that was full-time, that was accountable to a manager, that had a basic educational requirement, was literate, could use a smartphone [...] and had a reliable supply chain?”<sup>15</sup>

14 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

15 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

## Professionalizing community health workers through a new pilot

In 2014, Nyaya ended the FCHV support program in Achham and redirected staffing and resources to a cadre of professional community health workers under a new pilot program in the same district. That year, the organization hired an initial group of 13 community health workers to serve a population of around 30,000 people. This was a head start that allowed the organization to collect some data and gain experience before expanding the program.<sup>16</sup>

“We didn’t reinvent the wheel,” Schwarz said. “A lot of what we did had been done in other settings.” The team learned from data and best practice experience from partners in other countries, such as the Jamkhed Comprehensive Rural Health Project in Maharashtra, India.<sup>17</sup>

There were several key differences between the new pilot professional community health worker (CHW) program and the FCHV program. All CHWs in the new pilot received a regular salary, met a minimum education level requirement, had strong supervision, benefitted from continuous training, and were closely integrated into the local primary healthcare system. CHWs provided a range of services focused primarily on reproductive, maternal, newborn, and child health, as well as non-communicable diseases and mental health.<sup>18</sup> The CHWs referred patients to government health facilities, including village clinics and primary hospitals (Maru, et al., 2018).

Nyaya spent two years engaging stakeholders and finding funding for this professional community health worker intervention. In 2016 it formally became a government-approved pilot program with funding from the United States Agency for International Development (USAID). A top health ministry official, Secretary of Health Pushpa Chaudary, served as the principal investigator for the pilot. In July 2016, the new pilot began a three-year period of enrolling new villages into the pilot and hiring community

health workers. The estimated target population of the program was 250,000 people. The Nyaya team prioritized close cooperation and coordination with local government as it expanded the pilot. “We didn’t do anything without the [local administration’s] explicit permission, a signed MOU with each local health office,” Schwarz said.<sup>19</sup>

As the pilot grew, Nyaya expanded the area in which it worked. “In 2015, there were two very large, devastating earthquakes in the northern half of the country,” Schwarz said.<sup>20</sup> Following that disaster, the health ministry asked Nyaya to expand health services through a public-private partnership in Dolakha district, near the epicenter of one of the earthquakes. In January 2016, Nyaya began managing Charikot Hospital in Dolakha (Maru, et al., 2018).

An essential aspect of the program was that all CHWs received a salary instead of performance-based payments. “One of the things we feel very strongly about [...] is that you should pay community health workers a flat salary, as you do with every other health worker,” Schwarz said. “That is in juxtaposition to many other models that have used task-based performance incentives.” The problem with performance-based incentives, according to Schwarz, was that people focused on tasks they were paid for and



**Community Health Worker Radhika Shah providing post-delivery family planning counseling**

*Image credit: Dharma Raj Kadayat, Possible Health*

<sup>16</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>17</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>18</sup> Author correspondence with Ryan Schwarz, Nyaya Health Nepal, July 2019.

<sup>19</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>20</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

put less effort into those for which they do not receive payments, which in the case of public health could lead to neglect of serious problems. Nyaya saw good management and supervision as the key to good performance. “CHWs get a salary, but in parallel managers support CHWs with the appropriate training and systems, and hold CHWs accountable for executing their responsibilities,” Schwarz said.<sup>21</sup>

While CHWs were not paid with performance-based incentives, Nyaya as an organization did have a performance incentive. Twenty percent of its partnership contract with the health ministry was linked to performance indicators (Maru, et al., 2017).

## Recruitment and training

Nyaya established a minimum educational requirement for CHWs equivalent to a 10<sup>th</sup> grade education. In practice, Schwarz said, some CHWs the program hired had higher levels of education, such as a bachelor’s degree or midwifery training. As with the FCHV program, the program only hired women.<sup>22</sup>

The organization also collaborated with local governments to recruit new CHWs. “We’ve established a rigorous selection and application process that’s been standardized across all geographies,” Schwarz said. Applicants took a written test and were interviewed. “There are certain criteria we encourage both Nyaya staff and the local government stakeholders involved in the recruitment and selection process to identify,” Schwarz said. “In the interview we look at behavioral and bedside manner. This is a healthcare worker and we stress that this is someone the local community needs to be able to trust, respect, and feel comforted by.”<sup>23</sup>

Once chosen, CHWs went through a 26-day training program, Schwarz said. Nyaya staff created curriculum materials and conducted the trainings. Once the CHWs began their work, the program emphasized continuing service training that was built into regular meetings



**Community Health Worker Pawan Pandey taking a woman’s blood pressure in a group antenatal care meeting**

*Image credit: Dharma Raj Kadayat, Possible Health*

between CHWs and their supervisors. These meetings provided opportunities for targeted training and feedback based on individual performance.<sup>24</sup>

## Supervision

The supervision system for CHWs was more robust than that of the FCHVs under the national program and built on the enhanced supervision Nyaya had provided FCHVs in the earlier pilot program. Each CHW was closely tied to a local health facility. The direct supervisors of the CHWs were community health nurses, who were trained clinicians.. CHWs met every week with a supervisor and twice a month with the supervisor and other CHWs in their area. Supervisors went into the community with the CHWs to observe them interacting with patients (Maru, et al., 2018).

Supervisors had digital dashboards that allowed them to review data for every CHW on a quarterly basis to provide targeted feedback. Data was collected in the field by the CHWs through an Android-based smartphone platform. In meetings, CHWs and their supervisors reviewed patient care data on high-risk pregnancies and referrals, performance data, and outcome indicators (Maru, et al., 2018). Supervisors could use these meetings

<sup>21</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>22</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>23</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>24</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

to identify areas such as institutional birthrate in which that individual health worker was struggling.<sup>25</sup>

Overseeing the community health nurses were program associates, who each covered a population of approximately 40,000 to 50,000. The program associate focused on training and ensuring outcome indicator targets were being met, along with management support for the community health nurses (Maru, et al., 2018).

There were some problems in implementing this more rigorous supervision system. Supervisors worked at health facilities and had to continue their routine clinical or administrative responsibilities, limiting the time they could spend overseeing the CHWs. Training and incentives for these supervisors could also be less than optimal. Because of these shortcomings, supervisors might infrequently visit communities to observe CHW service delivery or lack the needed capacity to routinely review data, coach CHWs, and provide performance feedback.<sup>26</sup>

## The core functions of community health workers

The community health workers in the Nyaya CHW pilot performed a variety of functions, with a focus on maternal and child health. CHWs surveyed the population for new pregnancies and helped women obtain laboratory and ultrasound testing to identify high-risk pregnancies. They followed those pregnancies through the postpartum period. CHWs recorded patients in an electronic health record platform to remotely monitor each one's care over time (Maru, et al., 2017).

CHWs conducted home-based antenatal and prenatal care counseling and coordination, including monthly visits to the homes of pregnant women and screening for and referral of high-risk pregnancies. There was continuous surveillance for all reproductive-age women and children under age two, including the use of a GPS mobile application to geotag homes and visits to those homes at least every three months. CHWs carried out community-based integrated management of newborn and childhood illness, including monthly visits to homes with children under two. CHWs and government nurse midwives jointly conducted group antenatal and postnatal care visits at village clinics. CHWs also

provided postpartum contraception counseling (Maru, et al., 2018).

Community health workers detected cases of diseases both actively (by visiting homes) and passively (being available for community members to seek support and services) (Maru, et al., 2018). CHWs were trained to recognize “red flag” symptoms that required the patient to go to a health facility immediately for treatment.<sup>27</sup>

## Digital systems

Nyaya used a mobile Android-based platform called Commcare by Dimagi, a US-based software company. CHWs recorded data in the field and the system had the capacity to sync that data with health facilities, although as of 2019 some facilities did not yet have the capacity to interface with the system. The goal was for healthcare workers to be able to access a patient record with all the data collected by the CHWs in the field along with the patient's facility record. “Anything that the doctor or the nurse at the local facility did is available to the CHW and vice versa,” Schwarz said.<sup>28</sup>

In the field, CHWs used Android smartphones (with Commcare) to collect data. Many CHWs were not familiar with how to use a smartphone platform at the beginning of their training, but much of the training was conducted through the smartphone, allowing them to become familiar with the platform as they learned other aspects of the program.<sup>29</sup> CHWs could access the Commcare mobile application in the field offline and upload data at a later time. All CHWs received an internet hotspot device they could use to upload data from their own homes (Maru, et al., 2018).

Data collected by CHWs fed into DHIS2, a large open-source software platform for managing health information. Supervisors reviewed that data to provide specific feedback to CHWs and help to improve performance.<sup>30</sup> The facility-based electronic health record system linked to a digital inventory system that managed the supply chain.<sup>31</sup> The program also visualized summarized health data on topographical maps and provided those maps to CHWs (Citrin, et al., 2018).

These data systems allowed the program to set baselines and track progress for key metrics, including

25 Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

26 Author correspondence with Ryan Schwarz, Nyaya Health Nepal, July 2019.

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institutional delivery rate, antenatal care coverage, postpartum contraceptive prevalence rate, infant mortality rate, neonatal mortality rate, and under-two mortality rate. The program also began tracking non-communicable disease goal measures (Citrin, et al., 2018).

## Results

In analyzing program data over an 18-month period from 2014 to 2016, Nyaya saw good progress on several health outcome indicators within its area of operations. The institutional birthrate increased by 11.8 percentage points, completion of antenatal care increased by 6.4 percentage points, and rates of postpartum contraception increased by 27.5 percentage points. Infant mortality decreased from 18.3 per 1,000 to 12.5 per 1,000 live births (Maru, et al., 2017). Since 2016, monitoring data collected in the course of program operations has observed a further increase in the institutional birth rate in the catchment area to 96 percent.<sup>32</sup>

The program also expanded the community health system to encompass mental health (especially depression and psychotic disorders) and non-communicable diseases such as chronic obstructive pulmonary disease, diabetes, and hypertension. “A functioning community health system is not about any specific health condition,” Schwarz said. “It’s about building an integrated delivery platform that gives patients access to the care they need when they need it and making sure they have the right provider taking care of them. Whether that’s a community health worker at their house, or a community health worker helping them gain access to a health post or hospital.”<sup>33</sup>

In June 2019, there were around 115 CHWs working in the areas Nyaya served. Each CHW in turn served a population of around 2,000 people.<sup>34</sup> The pilot was scheduled to cease enrollment in the summer of 2019, but the Nyaya team hoped that analysis of the program would demonstrate enough value that the government would support scaling the model up to a national-level



**Community Health Worker Tara Thakulla leading an antenatal care group**

*Image credit: Dharma Raj Kadayat, Possible Health*

program. While Nyaya touted these positive results, it acknowledged that the results might not be exactly replicable throughout the country due to factors such as poorer-quality government health facilities in other districts.<sup>35</sup> As Nyaya engaged in conversations with stakeholders about expansion of the program, the ratio of CHWs to overall population was at the forefront of discussion. Nyaya wanted to have a manageable workload for each CHW so the program could achieve a large impact, but local government had an incentive to reduce the number of CHWs hired in an area to keep costs manageable.<sup>36</sup>

The average per capita cost of the intervention in one sample study was US\$3.05, of which 74 percent was personnel cost. Nyaya believed that the cost of scaling up the program was potentially feasible given the Nepali government’s commitment to increase healthcare spending to 7 percent of GDP in 2030. Nyaya also saw an opportunity for wider adoption of the model due to Nepal’s 2015 adoption of a new constitution, which established a more decentralized political system and in turn gave local governments more flexibility to make decisions about health resources.<sup>37</sup> The passage of a national health insurance law in 2017 also changed the landscape of health financing, potentially creating new

<sup>32</sup> Author correspondence with Ryan Schwarz, Nyaya Health Nepal, July 2019.

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<sup>34</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>35</sup> Author correspondence with Ryan Schwarz, Nyaya Health Nepal, July 2019.

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incentives for local governments to adopt public-private partnerships with Nyaya or other organizations (Citrin, et al., 2018).

## Lessons Learned

The program Nyaya piloted to create a more effective community health worker cadre suggested several potential takeaways that could inform efforts to create or strengthen such cadres in other contexts. The lessons Nyaya learned closely align with the World Health Organization's 2018 guidelines for optimizing community health worker programs.<sup>38</sup>

- Paid community health workers may yield better results than volunteer cadres

"You've got to pay people if you want them to work and if you want them to do quality work," Schwarz said.<sup>39</sup> In Nyaya's experience, a full-time, salaried workforce had a greater impact on health outcomes than a volunteer workforce.

How to scale up was an open question, however. In this case study, public-private partnerships and donor funding were the key to financing the professionalized system on a limited scale, but it was unclear whether this model could be brought to a national scale.

- Community health workers need strong and supportive monitoring and supervision structures to excel

"It's not an individual person failure when these things don't work, it's a systems failure," Schwarz said. "If you don't build the system around the staff you can't expect it to work well." The Nyaya pilot invested heavily in supervision, including weekly meetings between supervisors and CHWs and continuous training and professional development.

Nyaya saw community health workers as being similar to workers in any other field. Without decent pay and supportive management, they would not fulfill their potential. "You need good management and supervision systems," Schwarz said. "These are not CHW-specific

principles, these are basic human resource management principles."<sup>40</sup>

- Digital health tools can increase the efficiency and effectiveness of community health workers

"CHWs are a great example of where digital health [...] can really be a tremendous help in improving the efficiency and effectiveness of healthcare cadres," Schwarz said. Nyaya believed that Commcare and other integrated digital platforms added significant value to the healthcare system. "The ability to do monitoring and evaluation at a CHW-specific level [...] is tremendously powerful." That level of supervision was very difficult with paper-based systems, but much easier with digital tools.<sup>41</sup>

- A strong health system requires both community-based systems and facility-based service delivery

Community health workers were one part of a larger whole. The Nyaya pilot showed positive results in part because a well-resourced and supervised community health worker cadre cooperated with the well-functioning health facilities that Nyaya operated. When a community health worker brought a patient into the health system, she could direct that patient to a facility capable of providing quality health care. In the absence of such a facility, the program likely would have had lesser impact on health outcomes. "When you add effective community-based health systems to well-functioning facility-based service delivery, you end up with a truly exponential, multiplicative factor," Schwarz said.<sup>42</sup>

<sup>38</sup> The guidelines can be accessed here: <https://apps.who.int/iris/bitstream/handle/10665/275474/9789241550369-eng.pdf?ua=1>

<sup>39</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>40</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>41</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

<sup>42</sup> Author interview with Ryan Schwarz, Nyaya Health Nepal, June 19, 2019.

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