Power, Technology and Empowerment

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Power, Technology and Empowerment:

A Case Study of Community Health Workers in India

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Abstract. This paper addresses the importance of using a power perspective to understand the social impact of technology in society. We use the Foucauldian concept of technologies-of-the-self to highlight the dialectical relationship between dominating structures of power and the individual capabilities of human actors, as mediated through technology, within a given context. This is done by studying the use of an mHealth intervention by health workers within a PHC (primary health care) centre in India. The study generates theoretical implications for understanding the processes of empowerment through technology within a developing country context.

Keywords: mHealth, power, self, empowerment, Foucault,

1 Introduction

Community health workers (CHWs) in developing countries build bridges between the formal health systems and rural communities, working to improve the relevance, acceptability, and accessibility of formal health services. Functions of CHWs include conducting home visits, assessment and preventive treatment of disease, data collection and reporting, education and counselling and referrals for further care [1,3]. By directly visiting households, CHWs increase access to healthcare for groups which are particularly difficult to reach, such as secluded women, the extremely poor, or the lowest classes of society subject to stigmatization [3].

The introduction of information and communication technologies (ICTs) to rural CHWs has been shown to bridge lacunae in their work environment resulting from under-capacitated facilities, constrained access to information and delayed responses to emergencies [1, 3]. From a health systems and practitioner's point of view, mHealth research focuses more on problematizing the existing inefficiencies of the health system and sees technology as a solution to improve the workflow of the CHWs which could lead to an improvement in health outcomes [1, 3, 4, 17, 27].

Such studies have shown that health workers could easily learn how to use mobile phones and apps and, once trained, found the tools available via a mobile to be useful in relation to reinforcing and improving the services they already offer [1]. Some other studies reported that the use of mobile technologies improved CHW motivation and

improved their credibility in the community [5, 11, 21]. In contrast, ICT4D research on mHealth often focuses on the failure of technology's ability to deliver its outcomes and becoming largely a medium of control and surveillance for the CHWs [18, 21, 26].

In this paper we seek to explore these contradictory effects of mHealth through a case study of health workers in a public-private partnership managed primary health care (PHC) centre in Karnataka, India. The study focuses on the perspective of CHWs [5, 11, 21] and how technology shapes their relations with the health system and their sense of the self. Using the Foucauldian concept of *technologies of the self*, we will be explicating the complex relationship between technology and empowerment of individual health workers, or the lack thereof, as situated in existing power structures. We argue that *technology simultaneously shapes the individual sense of self of CHWs and the structural reproduction of power, while mediating the dialectic relations between the two.*

In the rest of the paper, we will first review existing research on CHWs and mHealth, then introduce Foucault's concept of *technologies of the self* as our theoretical perspective, before presenting the case study and discussion.

2 Community Health Workers in India

In India, the foundation of the rural health system is grounded in the network of PHC (primary health care) centres and is also the main link to India's CHW programs [9, 27]. The CHW program includes 3 cadres of health workers. The ANM or the *Auxiliary nurse midwife* is the first cadre of health workers and provides care at the sub-centre level (housed under the PHC level). Their main responsibilities include providing preventive, curative care to beneficiaries in the villages she visits, collecting beneficiary information from the field and reporting it to the PHC centre [21, 27]. The second is the *Anganwadi* Workers (AWW), who work solely at the village level and focus on the provision of health education and nutritional supplementation to young children, adolescent girls, and lactating women [11, 21, 27]. The most recently created cadre is the *Accredited Social Health Activist* (ASHA), who also work at the village/community level. ASHA workers are given performance-based incentives and aid in facilitating institutional birth deliveries, immunizations, provision of basic medicines, referral of patients to the sub-centre and assisting the ANMs/AWWs whenever required [27].

Today many aspects plague the ANM and ASHA workflow processes [4, 9, 11, 18, 27, 29]. A systematic review done on the ASHA program [9] looked at the various individual, environmental (health systems), and community level factors that affected CHW workers. At an individual level and community level, what motivated CHWs were the aspects of altruism and social responsibility of their job role. Being able to participate in community meetings, receiving peer support and receiving recognition of their work in the eyes of the community. At the level of the health systems however, CHWs appeared to be demotivated due to increases in workload, changing and overlapping health programs, limited autonomy to move around and execution of responsibilities, poor training and incentivization [1, 9, 11]. For instance, the unavailability of drugs at the sub-centre due to the stockout and long replenishment times grounded in

the poor communication between the ASHAs and ANMs and their supervisor at the PHC centre, would lead for community members/beneficiaries to resort to informal private health care providers. Then poor training and supportive supervision would render the CHWs having inadequate level of knowledge. Being asked to constantly attend refresher trainings at health centres to remote areas took away their personal time, making them feel overburdened. This also led to them having a sense of limited autonomy at work to perform their social responsibilities beyond the specified guidelines [4, 9]. Subsequent studies across India have consistently found similar issues and have called for reforming the CHW program to enhance their motivation and capability to contribute to PHC system's performance [11, 20, 27, 29, 30]. As Som [30] points out, "one of the more salient of these was exemplified by the thwarting effect that public blaming and shaming and reprimands have upon CHWs' motivation and job (dis)satisfaction. Over the years, CHWs have ended up as the last link in the health workforce" [30].

Consequently, CHWs are undermined in their ability and credibility to represent the community, while being expected to meet the targets and demands of the health system [29]. For rural women becoming an ASHA/ANM/AWW is seen as an opportunity for empowerment – individually, socially and to some extent financially. Yet because they are placed at the nexus of the health care delivery system and their community, existing problems from both sides affect their efficacy [4, 9, 11, 27]. Meanwhile, many studies show that the involvement of locally based NGOs and community-based organizations to aid state governments through public-private partnerships have been a complimentary mechanism to support and empower CHWs [1, 9, 11, 27], and external norms such as rewards, incentives, and positive feedback, among others, can also improve health worker motivation [1, 27].

3 Community Health Workers and mHealth

In the Indian context, many PHC and district centres through public-private partnerships have prevailed, wherein NGOs with/and external funding agencies or private companies in partnership with the respective state health governments intervene with mHealth interventions to provide support for health workers in their workflow processes. Some examples include ICTCCS in Bihar [4] mSakhi in Maharashtra [23], ImTecho In Gujarat [17], ReMind in UP [24], CPHM in Karnataka [19] and MfM in Jharkhand [11].

The ICTCCS [4] mHealth application in Bihar was used to increase the coverage, quality, and coordination of maternal, child and reproductive health services. The use of the mHealth application did improve certain behaviors amongst the beneficiaries in terms of prenatal and antenatal care registrations and follow ups. But, while for the ASHAs the mHealth application became a medium of increased knowledge and increase in self-confidence, however due to the equalizing of the roles in the process of task shifting as brought by the technology, the AWWs felt less confident and the need for more training. This had a direct effect on the reinforcement of existing coordination

problems between the ASHAs and AWWs. Another aspect that led to the weak reception of the mHealth application was the parallel continuation of the paper-based system which lead to an increase in burden of the workflow for the CHWs [4].

While there are some improvements in the workflow processes and an increase in self-efficacy cited by CHWs using mHealth interventions, they are also plagued with several social and infrastructural constraints [4, 11, 17, 18, 19, 24, 26]. Infrastructural barriers include poor electricity, lack of mobile connectivity, faulty hardware, lack of charging points, theft, security, poor roads, poor PHC facilities. Social barriers include the existing lack of trust in the public health care system by communities, prevalence of traditional and religious beliefs/practices of giving birth at home, poor credibility of CHWs due to lack of knowledge, training, and poor communication with their PHC supervisors leading to data discrepancies in the PHC system [1, 3, 11, 19, 21, 27].

Similar findings were established through the Mobile for Mothers (MfM) project [11]. The mHealth application was conceptualized by two NGOs in collaboration with the state of Jharkhand for use by CHWs to improve the delivery of maternal services and the health awareness regarding maternal knowledge. Low literacy levels, technical and infrastructural problems affected the effectiveness of the MfM application. On the other hand, the app also facilitated improvement in sharing of health knowledge between CHWs and community members [11].

Existing infrastructural and local health system level problems can be both limiting or enabling factors to mHealth intervention effectiveness [10,18, 30]. Overall, these factors point to the complexity of introducing mHealth technology within the Indian public health care system. We will be using the Foucauldian concept of technologies of the self, to bring to light, the dialectical interplay between the individual capability of health workers and the health system that governs their role.

4 Technologies of the Self

Studies conducted on power within IS and ICT4D, emphasize firstly, on how technology further reinforces the status quo and solidifies institutional structures of overt power [2, 6]. Secondly, they make visible the struggles and politics amongst the users, designers and the senior management or people in positions of power, when in theory these technologies were meant to empower the workforce or the underprivileged by the so called enlightened leaders [2, 6, 18, 26, 31]. While the above studies explain how technology becomes a medium of control and reinforcement of power, they do not delve deeply into the subtleties of the power processes that arise at the individual level. Technology is developed, implemented, and used within the prevailing rationale [6]. Human actors constantly find themselves being further subjected to dominating rules and norms of the organization they are a part of, while using technology [2] – yet many studies also show unintended consequences arising from technology use [22]. What requires more attention then, is to unearth the various subjectivities a human actor enacts, during technology use. On the one hand an individual is subjected to reproduction of power, ascribing technology use to the norms and rules of the dominant rationale. On the other hand, technology can be perceived and used in an unanticipated manner due to various

social factors or interpretive flexibility at an individual level [2, 6, 31]. It becomes imperative then to also explicate this dialectical relationship between structural reinforcement of power and individual capability during technology use to understand organizational/institutional change.

Foucault's theory of relational power is a useful starting point to study technologies-of-the-self, as the *self* is embedded in relations of power, of everyday practices [14, 16]. For Foucault 'human subjectivity' is constituted within and through social practices. Here, subjectivity is taken to be something that varies according to, more or less, what one might call a social role [13]. Where human actors in different contextual situations act in accordance with the role they imbibe as embedded in social and power relationships. However, this does not mean that every time there is a change in a situation, human actors transform into a different constitution of themselves [16]. "We acquire our practices, and so they are habitual; thus, even though subjectivity is relative to social practices, since practices are themselves repeated habitually over time, this implies the continuity in subjectivity" [13].

By *technologies of the self,* Foucault [7] does not really refer to technological artefacts but *techniques* or processes, i.e. relationships. He stipulates that the human actor operates simultaneously in two terrains: the inside and the outside. Dimensions located 'outside' of the human subject are those that revolve around how knowledge and power are subjected on human actors and how human subjects act upon each other [7, 14, 16]. However, in his later work he focuses more on the 'inside' terrain i.e. relationship which human actors have with themselves - how the 'ethical' and 'moral' relationship with oneself can be derived from power and knowledge without being dependent on them [13, 16]. Foucault conceptualizes this relationship as the 'double' which is the interiorization of the outside, doubling of one's own relations with others, termed as 'subjectactivation' [13].

He advocates subjectactivation involves ethical self-care, aesthetic self-stylization, and critical self-awareness [7, 13, 16]. The ethical self reflects the aesthetic concern in which individuals hold the 'will to live a beautiful life' by applying certain values, reproducing certain examples, and depicting a virtuosity in their lives [13]. He then defines morality as encompassing a moral code and the behavior in relation to that code, between which there are varying degrees of compliance in practice [13, 16]. Moral codes act as guiding principles that shape the individual's self-assessment on how they should go about their lives and conduct themselves [7]. "It is through the practices of these moral codes that individuals become ethical agents and in such ethical work, subjectivity is approached" [14]. For Foucault, the need for ethics today is not to develop a tool to gain mastery over others, but for something that would help human actors to obtain their own freedom. He argues that freedom from governmentality of individualization can take place through an everyday aesthetic stylization of the self: "a constant reinvention of the self at the level of the micro-physics of existence" [16]. Foucault emphasizes that only through a critical awareness of the limitations of the self in one's cultural conditions can the outside be folded into the inside to create change [7, 13].

While Foucault's earlier work has been critiqued for ignoring the human actor's ability to resist practices of domination i.e. the exercise of agency [31], his work on

technologies-of-the-self does try to address change arising from the human actor's ability. As Foucault [16] focuses more on the local, intimate operations of power, it is possible to examine how everyday reproduction of power can affect capabilities of human actors [16, 31], and provide a useful lens to study contestation of the subjectivity at an individual level. Through this lens researchers can study how the individual becomes a subject of power within the dominant discourse of the organization while also having some individual capacity at the level of the ethical/moral self.

When it comes to linking Foucault with technology use, Bloomfield [2] stresses that in seeing "reality as materially heterogeneous and relational, it becomes valuable to employ Foucault's relational notion of power. This is because technology increasingly mediates how power circulates, is exercised and what it produces".

5 Methodology

5.1 Research Site

The PHC (primary health care) centre where this study was conducted is located at the foothills of the Biligirirangana (BR) hills in the Yelandur taluk within the Chamrajnagar district of the southern state of Karnataka, India. It has a relatively high population of indigenous people and is one of the worse-off districts with respect to health and development [12, 28]. Most of the indigenous people in this district live in and around thickly forested and hilly areas, that are not typical of the most other regions in Karnataka. The hills are also a home to the Soliga tribal population of 23,000 individuals that have dwelled in the forests of BR hills for centuries [28].

The PHC centre there is managed through a public private partnership model, where the state government of Karnataka in collaboration with a local NGO is responsible for the provision of the required human resource and logistics to deliver preventive, promotive, curative, and rehabilitative health care services to the Soliga tribal population, within the National Health Mission guidelines [12]. The NGO employs health workers, namely ANMs, ASHAs and AWWS, to go on field visits, perform ante-natal care (ANC) and pre-natal (PNC) registration, educate expectant mothers about maternal health and children on hygiene, follow up each patient throughout their pregnancy until delivery and follow up on child immunization [12]. The PHC centre consists of medical rooms, one medical officer, one administrator, one dentist, one block health education officer, four staff nurses, one pharmacist, one laboratory technician, a supervisor, five ANMs, and two male health workers (MHWs) [12].

Despite the integration of the PHC system, much of the rural population still suffered from acute chronic diseases and did not primarily depend on the PHC due to their existing faith in traditional medicine and practices. Even with involvement of the health workers who are chosen from the community, much of the population found it 'inconvenient' to travel to the PHC center. It would cost 30 rupees (0.03 GBP) to go from the BR hills to the foothills, which is where the PHC centre is located, to get medical treatment or advice. Hence health workers become pivotal in providing this population with preventive services and for linking them with the PHC centre. In 2015, an mHealth intervention i.e. an android tablet was launched to assist and streamline the health

worker's workflow which was plagued with issues (discussed in detail in the findings). The tablet is mainly used by the ANMs and few ASHAs who assist them and is mostly centered around maternal and child health services. It houses a plethora of specialized features relating to ante-natal care registration, post-natal care registration, child-birth registration, child immunization record maintenance, record maintenance on follow-up care, treatments and tests of maternal beneficiaries and beneficiary ID records. The tablet contains features of storability and retrievability of information, smoother interface to feed in and view the data, the aspect of connectivity and syncing of the data from the tablet to the computer systems in the PHC centre, automatic collation of data through the inbuilt software, GPS functionality and a reminder system. The ANMs were also provided with training on how to use the tablet by the engineers. Even today the ANMs continue to have monthly sessions with the engineers for training and provide feedback on the tablet use [12].

5.2 Data Collection and Analysis

Data collection centered specifically, around the use of the mHealth intervention by the ANMs and few ASHAs and by the PHC staff and was done during the implementation phase of the mHealth app. Data collection methods included semi-structured interviews and field observation [25]. Field observation was used to shadow health workers and observe what a typical routine day looked like for them. This helped as an indirect guide to develop the interview topic guide, as the observation gave an understanding of the points at which the interaction with the tablet by the ANMs was the deepest. Visual aids in the form of photographs, video and audio recordings were taken during the interview and observation process, which later assisted in creating iteration in the thematic coding process. Secondary material was also collected in the form of paper health records that the health workers used as an original template to compare and match up the electronic data.

Interviews were conducted, whilst the ANMs and ASHAs were conducting their routine day to day duties. The staff at the PHC centre were interviewed separately whilst the health workers were not around. The interviews have been organized in a semi-structured way, for the health workers to develop their own recounts of how they felt about the use of the tablet in their existing work processes. Field observation was used to cross-reference and helped understand the link between the health worker's account with the accounts given by the PHC staff. Thematic coding was performed to visualize patterns. Patterns regarding health workers correlated along codes such as 'self-confidence' 'happiness' 'burden' 'workload' whereas patterns regarding the PHC staff's account correlated along keywords such as 'trust' 'accountability' 'improvement' 'tracking' 'timely'. Codes were created, and later categorized into broader themes. Similar or repetitive codes were merged. The analysis process was informed by an inductive approach, wherein the researcher was able to identify certain emerging patterns and themes based on the answers by the interviewees and link it to the appropriate constructs of power.

Please note that the focus of this study is purely around the use of the mHealth android tablet by the ANMs, few ASHAs and the PHC staff. While the data from the

tablet is synced into the MCTS (HIS) platform, through the PHC centre, that is not the focus of this study. Next, as this mHealth intervention is implemented only in this particular PHC centre, it is not representative of other mHealth interventions or PHC centres in India. The actual name of the tablet has been anonymized, but it has been acknowledged that all the data collected and stored in the tablet is fed into the MCTS (governmental HIS) platform via the PHC centre computer systems once a month. The data for this study was collected during the implementation phase of the mHealth app.

6 Findings

The original method of data collection and reporting on maternal and child health such as: ante and post-natal care registration, childbirth and immunization registrations and follow up on treatments and care, would entail the health workers (ANMs) to manually write and record data in paper-based registers. Each health worker would be allotted a set of household visits to conduct within their given radius. The health worker during these house visits, would have discussions with the beneficiaries about their health, ongoing treatments, registration and follow ups. She would then manually fill the required health information in the register. Sometimes the health worker would conduct 20-30 household visits in a day and the data would be filled in 25-30 registers. This would then be reported to the PHC centre at the end of the week. This process of manually filling up registers and collating the data, alongside doing the house visits, and then reporting to the PHC centre (which was based at the foothills) was time consuming and cumbersome. This was also, many times, impossible for a one ANM to do at a single time, so other junior health workers (ASHAs) would assist them. The pressure of collecting data from many households and reporting it on time often lead to errors in the data. There would also be a time lag in the reporting process. The lag and error in data would especially prove to be problematic during emergency cases, when the PHC centre would be unequipped to provide the right kind of treatment or care, and there would be delayed response times, sometimes even resulting in patient mortality. This inadequacy would be attributed to the health workers, thereby damaging their credibility both from the PHC staff's and communities' perspective.

6.1 Psychological Empowerment of CHWs

Streamlining of data collection and reporting

. The introduction of the tablet has considerably streamlined the above processes. The tablet affords the aspect of portability, automatic data collation, ease of data retrievability, storability and an easier interface to view the data. The tablet comes with an inbuilt software that contains various features to assist the health worker in filling out data systematically. It contains different categories and sections for different kinds of (pre-natal, post-natal and child immunization) registrations, symptoms, and follow up. This aspect of the tablet made it easier for the health worker to fill in the correct information in the right section, which was then automatically collated by the in-built software. Just like the registers, the tablets are also amenable to being physically carried

to different households. They are easy to carry and store all the information in just one tablet instead of multiple registers. These process changes inadvertently affected the relationship between the health workers and the PHC staff. Their supervisor at the PHC centre was noted saying:
"although we always trusted the judgment of the health workers as they are the ones who directly interact with the community, but due to the poor data quality it was difficult to take their judgment on the patients seriously…the data was of poor quality because of them… the registers reported to us would be filled with mistakes and delays.

But today they are the primary users of the tablet itself and are also the ones who put the data in it which is then reported to us. This improvement in reporting has increased our trust on them, the data has less errors and as soon as the tablet catches connectivity it syncs the data collected by them into the PHC computer system"

Aiding in high risk cases

. The automatic collation feature of the tablet has helped in improving the response time for tending to high-risk pregnancies. In the former case, a high-risk patient would not get the immediate attention or care, due to the delayed response time caused by the delayed and errored data reporting. This would render the PHC staff unequipped to provide the correct treatment to the patients. But the in-built feature of the tablet, automatically collates the data and starts beeping red in front the beneficiary name, who might need immediate assistance. This notifies the health worker who then notifies the PHC staff by calling them from their mobile phone. And, if there is good internet connectivity in the region then the tablet automatically syncs this information into the PHC system as well. This aspect of streamlining the process of providing care in emergency cases, has made some health workers feel acknowledged for the work they do for the community today, one of the ANMs was noted saying: "*We feel motivated to do our job now. Before, even the community members would blame us for not being able to deal with emergency situations. But today we have more confidence when it comes to dealing with emergency cases. We feel happy to be able to serve our community and get recognized for it"*.

Health Workers were noted saying that they felt *happiness (khushi)* with this change in perception by their PHC staff. Today they feel that they are relied on for their feedback, as they are the ones who feed the data in the tablet. They feel important in the community and are taken more seriously – *"We feel more valued by the community for what we do today. The PHC staff take us more seriously now and sometimes the PHC staff now even ask for our opinion, especially when it comes to certain serious cases. They ask our opinion when they are going through the beneficiary information that has been put by us in the tablet"*. Here we see that the aspect of 'faulting' the health workers, for the inefficiency in the data reporting and collecting process, as being reduced. This is leading to a change of their own self-perception. They feel they are better perceived by their community and the PHC staff for what they do.

6.2 Infrastructural and Structural Constraints

Mobile connectivity and charging issues

. However, there are also several concerns that prevail surrounding the use of the tablet. For instance, mobile connectivity is a key aspect that is required to enable the data from the tablet to be synced to the PHC centre systems. Another important aspect is the tablet having enough battery charge throughout the process of the data collection by the health worker. Every time the tablet would run out of battery charge or the internet data pack, the ANMs would have to return to the PHC centre. As Chamrajnagar is a rural and tribal area, electricity issues are prevalent. The ANMs would have to constantly make an effort to make trips to the PHC centre, which is all the way at the foothills and far off from the beneficiary houses, to sync the data or charge the tablet. As noted by one of the ANMs, *"during busy period, it becomes quite tiring to go all the way back to the PHC centre to sync the data or charge the tablet as there is better connectivity and electricity there, especially when I am in the middle of collecting beneficiary information. Sometimes the tablet would have to be left there (PHC centre) overnight for charging which means I would have to travel all the way to the PHC centre again to pick up the tablet"*.

Increase in workload

. The ANMs were also asked to collect beneficiary identification (ID) information to have a digital repository of the IDs of the members of the village. One of them was recorded saying *"You see in the beginning of using the tablet, we were also going from one house to another to collect their identification information. So now if someone loses their ID card or forgets to get it to the PHC or sub-centre, they can still come and get treated as their identification information is digitally recorded."* However, ANMs were also noted that this process of collecting ID information in addition to their existing responsibilities was time consuming and cumbersome. Especially as many community members were reluctant to give their personal or family information.

Then the aspect of using registers and the tablet simultaneously, was also creating issues of duplication of data and dual entry of data. Health workers feared that they might be asked to show the registers by the district officers or PHC staff, or that the tablet might undergo a hardware issue. While health workers preferred using the tablet as it is easier to carry and automatically collates the information, they complained about feeling overburdened: *"initially we had to only fill in registers the information we collected in our routine visits. But now since the use of the tablet we had to take all the already existing information from the registers and put it in the tablet and also collect the beneficiary identification information, while doing our routine visits!"*. The health workers felt overburdened with the duplicity of the work.

Monitoring and Surveillance

. Lastly, the aspect of the reminder feature and the implementation of an electronic dashboard at the PHC centre would entail that the health workers could be monitored. If a health worker forgets or is running behind her schedule of conducting a follow-up

or house visit, the tablet would send her a reminder. The aspect of there being a probable dashboard would also help the PHC staff to keep an eye on the progress of health worker's workflow from the centre. Upon asking the health workers about these aspects, we received a twofold answer, some health workers were noted as saying that the reminder feature greatly helped them in remembering certain visits if they forgot, like immunization visits etc. However, some others showed disgruntlement on being monitored during their routine work processes and wanted the space and freedom to do their tasks at their own pace, time, and suitability.

7 Discussion

In this section we will use *technologies of the self* as a sensitizing lens to explain the inside and outside terrain of the health worker.

Outside terrain

According to Foucault [14], every individual is caught in a network of power relations through which they are constituted as a subject. "Power both subjugates and makes subject to as it applies itself to immediate everyday life which categorizes the individual, marks him by his own individuality, attaches himself to his identity, imposes a law of truth on him which he must recognize and which others have to recognize in him. It is a form of power which makes individual subjects" [14]. In our case, the social role or identity of the health worker is defined by the country's National Rural Health Program where they are historically seen as a link between the community and formal health services [27, 30].

However, over the years the role of CHWs has morphed more into one of a 'health data/information collector from the field' [3]. Technology in such a scenario, is only implicated in the existing norms and rules surrounding the health workers, so technology intervenes as a medium to assist the health worker in collecting information from the field. The various features of technology such as storability, retrievability, reminder facility, mobile connectivity, simpler user interface, and automatic data collation then become a medium of domination over the health worker. Structurally and institutionally, the 'health worker role' does not permit them to question the legitimacy of the use of the technology or its features. Therefore, they become docile users of technology and does what it tells them to do, even if they find certain aspects of it inconvenient for themselves. For instance, the health worker is compelled to conduct a house visit when the tablet reminds her, or visit the PHC centre when the tablet runs out of the internet data pack or battery, conscious of the fact that her activities might be monitored by the PHC centre through the electronic dashboard. Even when overburdened with the extra workload, she normalizes it as part of the work routine rather than to resist it. It short, while technology helped address the accountability of the health workers from PHC center's perspective, it also constituted a *disciplinary power* over them. Technology as implicated in existing rules and norms becomes a *technique of domination and discipline* governing the conduct/role of the health workers which produces their subjectivity.

Inside terrain

However, community healthcare work also has a *moral dimension* to it [10]. Existing CHW studies have highlighted the value that health workers attribute to their role and responsibilities [8, 9, 10, 15]. For instance, in Nepal [8], CHWs apparently resisted financial rewards, which they believed would undermine their social standing and detract from the purity of their altruistic motivation towards their work. In India, CHWs similarly felt a sense of pride and moral worth from their work [9]. Such institutional rhetoric arguably then "shapes CHWs' own political subjectivities, motivations, and capacities" [10]. Therefore, health workers imbibe more than one subjectivity towards their role. There is an aspect of selflessness and care of providing health care to their community. On the other hand, their role and duties are also subjected upon them by the broader health care policy norms and rules. In many countries, CHWs programs appear to be largely politicized and so CHWs are generally at pains to truly emphasize their 'passion' and desire to 'serve the people' [10, 15].

The use of technology thus mediates the production of multiple subjectivities of CHWs. The relationships they have with other health workers, the PHC staff and the community also shape their perception and enactment of the technology. For instance, the decrease in data errors and improved syncing of data, inadvertently reduced the blame that the PHC centre landed on the health workers and this then (inadvertently) had a positive psychological effect on them. Health workers felt an increase in their self-efficacy; in being recognized for their work. There is a double inadvertence here and this is where the *subjectactivation* of the health worker emerges. The use of technology by the health worker is inscribed in the rules, norms and guidelines as stipulated by the state, designers, and national health policy rationale, giving them little or no space to ask for a change. However, even in this subjugated use of technology, the health workers find spaces of psychological empowerment, i.e. an increase in their self-efficacy and their moral sense of self arising from improved perceptions of them, by the PHC staff and community members.

While describing technologies of the self, Foucault [7] explains the relevance of the moral/ethical and aesthetic self and critical self-awareness. We focus only on the aspect of the moral self where the health workers by feeling an increase in their self-efficacy, attune to their altruistic and selfless aspect of their health worker role. They feel good in doing something for their community and in being appreciated for it, rather than being blamed for the inefficiencies. Here the emergence of the moral self does not necessarily give rise to a new or invented practice, but it is essentially the folding of the everyday existing practices to also recognize an '*other version'* of the self. While feminist literature talks about the relevance of the technologies-of-self lens as a way to counter structures of oppressive power, in our case, the lens reveals how technology mediates the reconciliation and tension between individual efficacy (capability) and the domination of power, where health workers feel a degree of psychological empowerment through the moral self, albeit situated within the larger reproduction of structural power. The technology artefact while perceived as a 'technology of domination' also helps negotiate new meanings for the job role of the health worker, who is placed at the crux of the contradiction between the two.

Foucault [13] states the aspect of 'subjectactivation' should be derived from existing power and knowledge, but without being dependent on them. However, in asymmetrical power relations [16] such as the one which the health worker has with the health system, the possibility of the formation of another ethical, moral or aesthetic self is unlikely to happen without drawing upon the very power that objectifies them. The sense of self is largely derived from the very political, cultural, and institutional structures holding the individual in its place [16], which is also then inscribed into the technology artefact.

8 Conclusion

The point of this paper is not to state that the mHealth intervention was a success or failure but to highlight the subtle localized nuances of power that come into play at the individual level during technology use. Our findings align with many of the other mHealth and CHW studies done in India and other developing countries [1, 3, 4, 5, 11, 19, 20, 24]. However, our theoretical lens brings a new perspective to understanding the impact of technology on health workers during their routine workflow. Through our study, we were able to see how health workers felt psychologically empowering changes at the individual level, but as grounded within the larger structural reproduction of power of the health system, both of which were mediated by technology. Foucault's concept of technologies of the self, becomes important in addressing how technology mediates the dialectical interplay between the individual self and structures of domination. Even within the everyday relational flows of power, technology can assist human actors to ascribe to a, other (version) self of themselves. However, it is also important to note that recognition of the ethical or moral self, itself does not challenge existing structures of power, or transform one's position within the dominant discourse [16]. According to Foucault [7, 14] only severe critical reflection about the paradoxes of one's life achieved through the moral and ethical self, in conjunction with other human actors can create resistance to challenge structures of oppression or transform practices. Thus, our theoretical insight can form a useful starting point to critically understand the processes of empowerment and its link with technology. Empirically it highlights the importance of recognizing the power and technology interplay in the digitization of community health work processes in developing countries like India.

While our study was conducted over one month, for future research it would be even more beneficial if a longitudinal study would be conducted. That would help map out the processes of transformative change as mediated through technology e.g. if the health workers now are informally or formally included in decision-making at the PHC level or if policy changes around health worker's roles have been institutionally made.

9 References

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