

STUDY ON CHALLENGES AND ACCEPTANCE OF HEALTH ATM IN 10 DISTRICTS OF RAJSTHAN

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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Harsha Tomar** student of MBA Hospital and Health Management from IIHMR University, Jaipur has undergone internship training at **WISH Foundation, New Delhi from 23 January 2015 to 12 May 2015.**

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



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**STUDY ON CHALLENGES AND ACCEPTANCE OF HEALTH ATM
IN 10 DISTRICTS OF RAJASTHAN**

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WISH Foundation

She comes across as a committed, sincere & diligent person who has a
Strong drive & zeal for learning
We wish her all the best for future endeavors

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled '**Study on Challenges in implementation and acceptance of Health ATM in 10 districts of Rajasthan**' and submitted by **Dr. Harsha Tomar** Enrollment No. **IIHMR/PGDHM/2013-15/18-1447** under the supervision of **Dr. Vinod Kumar**, Associate Professor, the IIHMR University for award of MBA Hospital and Health Management/ MBA Hospital & Health Management of the university carried out during the period from July 2013 to May 2015 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.


(Harsha Tomar)

Abstract

Keywords: Health ATM, tele-consultation, medicine dispensation, door step diagnostics

Background: Health ATM is a 3 in 1 concept offering early door step diagnostics, consultations and medicine that ensures reduction in travel, time and other OOP costs for patients; thereby, reducing abnormally high patient loads at higher level facilities. Health ATMs will be owned and managed by local entrepreneurs under the Public Private Partnerships, located within Sub-centers under the supervision of ANMs.

Objective:

1. To analyse the provider perspective to identify the challenges in implementation of Health ATM
2. To assess the challenges in acceptance of Health ATM among healthcare beneficiaries

Methodology: This study focuses on the challenges while implementing this technology led innovation to strengthen the Sub-centers, to be piloted at 10 sites of Jhalawar, Churu, Sawai Madhopur, Kota, Baran, Bundi, Udaipur, Rajsamand, Chittorgarh and Pratapgarh districts. Face to face interviews were conducted through semi structured questionnaires.

Results: The major challenges identified were unavailability of uninterrupted supply of electricity and internet connectivity along with unavailability of space to place the Health ATM safely. More importantly, another challenge that this study revealed was though the rural population is in the dire need of better health facilities there is a lack of motivation to take additional responsibilities among healthcare providers to add to services for the resident population.

Conclusion: This study being an exploratory one builds the base for the subsequent study which will be conducted in the coming months that will confirm the suitability of the on-ground implementation plan.

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Executive Summary

Health ATM is a 3 in 1 concept offering early door step diagnostics, consultations and medicine that ensures reduction in travel, time and other OOP costs for patients; thereby, reducing abnormally high patient loads at higher level facilities. Health ATMs will be owned and managed by local entrepreneurs under the Public Private Partnerships, located within Sub-centers under the supervision of ANMs. This study focuses on the challenges while implementing this technology led innovation to strengthen the Sub-centers, to be piloted at 10 sites of Jhalawar, Churu, Sawai Madhopur, Kota, Baran, Bundi, Udaipur, Rajsamand, Chittorgarh and Pratapgarh districts. Face to face interviews and FGDs were conducted through semi structured questionnaires. The major challenges identified were unavailability of uninterrupted supply of electricity and internet connectivity along with unavailability of space to place the Health ATM safely. More importantly, another challenge that this study revealed was though the rural population is in the dire need of better health facilities there is a lack of motivation to take additional responsibilities among healthcare providers to add to services for the resident population. This study being an exploratory one builds the base for the subsequent study which will be conducted in the coming months that will confirm the suitability of the on-ground implementation plan.

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List of Abbreviations

AIIMS- All India Institute of Medical Sciences

ANM- Auxiliary Nurse Midwife

ASHA- Accredited Social health activist

ECG- Electro Cardio Graph

GNM- General Nurse Midwifery

LT- Laboratory Technician

MCHN- Mother & Child Nutrition day

MN- Male Nurse

MO- Medical Officer

NA- Not Available

NRHM- National rural Health Mission

OPD- Out Patient Department

PHC- Primary Health center

PPP- Public Private Partnership

TB- Tuberculosis

SC- Sub Center

USA- United States of America

WHP- World Health Partners

Introduction

Health ATM:

Health ATM is a technological innovation designed to provide simple and cost effective solution to the rural population. It is a combination of diagnostic hardware and software. The software can measure various vital parameters which can then be transmitted to a remote doctor. The system provides point of care diagnostic testing and facilitates remote consultation through video conferencing. It can measure parameters such as body temperature, pulse, blood pressure, blood sugar, urine, blood-DC, and ECG. It also conducts test for malaria and tuberculosis. Attached is also the medicines vending machine which is under the control of the doctor in teleconferencing. After the tele-consultation, the doctor shall direct the machine to vend necessary medication.

The system comprises of four components: knowledge management for the analysis of ailment patterns and disease outbreaks, electronic health records for the maintenance of patient histories and transfer of data, and workflow management to manage consultations, doctor's workflow, referrals, and patient registration and medicine dispensing mechanism.

Review of Literature

Telemedicine may be defined as ‘Medicine practiced at a distance. It therefore encompasses diagnosis, treatment and medical education [1]. The benefits of telemedicine involve the facilitation of access to health services and medical information regardless of time and place. In this context, there is abundant literature on applications in rural settings; however, there is a lack of evidence supporting its clinical and cost advantages relative to traditional services [2]. One report of well-functioning telemedicine services comes from the state of Maine, USA, where there has been a rapid growth in state-wide telemedicine systems in rural, economically disadvantaged areas [3]. Despite the increased interest perhaps bordering on excess-in some individual programmes, in low-and middle-income countries the e-health field is still relatively nascent. Few programmes have gone to scale and implementation has typically been fragmented and uncoordinated [4].

A brief history about the evolution of telemedicine: The first generation (pre 1970) recorded the first professional telemedicine set up in 1967 when a telemedicine link was established between Boston Airport at Logan and the Massachusetts General Hospital [5]. The second generation saw the use of satellite and microwave communications, which saw around 30 veteran and administration and 8 non-veteran hospitals linked through the use of these channels [5]. In the third generation, technologies such as ATM and IP were developed which helped connect to the rural settings [5]. The fourth, or the previous generation, saw the gaining popularity of the store-and-forward methodology. In this, “the relevant data of the patient is stored for the specialist in the other hospital to use on a later date for diagnosis” [5]. There were “standards developed for the kind of equipment being used as also for the images being used” [5].

India currently is in a dire state when it comes to healthcare. It is not in a state to meet the rising demands of the growing population. The number of state of the art healthcare delivery centers is low in number. There is a shortage of resources (doctors, staff or equipments), except in institutions such as the All India Institute of Medical Sciences [5]. “In 2002, there were around 15,400 hospitals of which two-thirds were public. Also, these hospitals were able to provide only basic care. The number of such public health care facilities is inadequate in India, which has less than half the 74,150 community healthcare centers per million population. Around 11 states in India do not have laboratories for testing drugs or have inadequate testing facilities. 80% of the public funding for healthcare is provided by the state governments, while the central government provides around 15% of it” [5].

Astonishingly, private sector provides 82% of \$30.5 billion of spend on healthcare from a 2003 statistic. The number of beds in the urban areas is higher compared to the number of beds in the rural areas [5]. “90% of the country’s secondary and tertiary healthcare facilities are in the urban areas. 68% of the population is in the rural areas...75% of households have no toilet facilities... 25% have water piped into their dwelling, yard, or plot” [5]. The absence of healthcare facilities in the rural areas has led to a rise in the importance of quacks and semi-skilled professionals [5]. “The number of doctors in India is currently 70 lakh which implies that there is a doctor for every 180 citizens in India” [5]. Compounding this problem is that “80% of the total healthcare expenditure comes in the private sector” [5], thus profitability takes the center stage and rural masses suffer.

The solution then becomes telemedicine for the rural poor. “Telemedicine’s major objectives lie in making healthcare facilities available to the rural population and remote areas. There are no legislations which ensure that the specialists in the private sector are to be available on

the rural areas. Telemedicine is aimed at providing quick, effective and precise opinions to both the patients as well as the doctors in the rural/remote areas who might not be specialists in that field” [5].

A success story from the field about the use of telemedicine: A three-year program called “Universal Access to TB Care” is underway in Patna to provide quality TB care with support from the Central TB Division and the Government of Bihar. Over 1000 healthcare providers in Patna are involved in the project. Over 3,000 TB cases in the city have been initiated on free drugs and beyond 71% of the TB patients notified under the program are reporting treatment adherence [6]. World Health Partners, a non-profit Indian Society, harnesses the large resources already available in a range of sectors to address the urgent needs of primary health care, especially of rural communities and the urban poor. These sectors range from public sector to NGO and private sector with additional opportunities arising from corporate social responsibility. Depending on the sector being used, WHP develops appropriate structures and implements with a focus on sustaining impact. In Bihar and Uttar Pradesh, where WHP is currently active, it has used public and private sector collaboration to deliver care on a large scale.

Urban Patna is witnessing a high incidence of tuberculosis, including a significant number of cases in the pediatric age group. There is a lack of awareness among private provider on Standards of TB Care in India. WHP provides e-vouchers to TB patients for free diagnosis and treatment on the basis of improving the quality of diagnosis, treatment and follow up in the private sector and improving patient care to achieve high cure rates for TB [6].

TB is a chronic infectious disease that kills almost two million people per year in the developing world. It is caused by the airborne bacillus *Mycobacterium tuberculosis* and primarily affects the lungs. India accounts for nearly one-third of the total global TB burden. *Mycobacterium tuberculosis* is a microbe that is latent in a large section of the Indian population. Low immunity causes it to come to the surface and afflict the carrier with active TB. 5 to 10% of those infected with TB develop the active form of the disease at least once in their lifetime [7]. The scenario in Bihar is no better due to reasons like poverty, overpopulation, poor nutritional status, bad sanitation and weak healthcare infrastructure.

In the private sector, market forces counter appropriate behaviors in TB care. Private health providers, whose primary interest is curative care because of the higher financial gain, are driven by high margins associated with spurious diagnostic tests and inappropriate cocktails of daily drug regimens that may consist of an irrational drug combination and/or may contain insufficient or dangerously excessive drug doses with little or no supervision. Another practice observed in the private sector is delay of treatment initiation. TB-infected patients generally consult multiple providers and are subjected to rounds of inaccurate testing and treatment before receiving appropriate care [8].

A study conducted in Delhi found that over 60% of patients had visited 3 or more (up to 6) providers before arriving at appropriate TB care [8]. The spurious tests often recommended by doctors include antibody-based blood tests (IgG, IgM, IgE) that have been banned. Tests such as ADA, TB gold, TB platinum and IGRA are often used for the diagnosis of active TB disease by providers, when they are meant only to detect latent TB infection. The irrational drug combinations prescribed to patients include medicines like fluoroquinolones, aminoglycosides, or macrolides when their TB status is unknown [8].

The daunting scale of India's TB epidemic cannot be fought by the public sector alone. An inclusive approach focused on private sector engagement in TB control is imperative, together with stringent measures to mitigate malpractices in TB care and ensure mandatory notification of TB cases. WHP as Private Provider Interface Agency aims to strengthen TB control efforts in Patna by engaging and networking existing qualified and informally qualified providers, chemist shops and diagnostic facilities in the private sector using a carefully designed and implemented technology-based reporting platform, and an inclusive system of financial and service incentives, to motivate appropriate delivery of TB diagnosis and treatment [6].

To strengthen tuberculosis control efforts in urban Patna, a pilot program called Universal Access to TB Care has been initiated by WHP in association with the Central TB Division (Government of India) and Government of Bihar. This program is aimed at reducing delays in the initiation of TB treatment by engaging significant numbers of private sector providers, chemists, and diagnostic facilities to perform timely and appropriate TB diagnosis and treatment. Another objective is to generate community demand for high-quality TB care by creating awareness in vulnerable sections of the population [6].

The Universal Access to TB Care program offers TB patients free diagnostic services such as sputum microscopy, X-ray and CBNAAT (a PCR-based diagnostic test for detecting drug resistance) in close proximity of their locations within the private sector. Once diagnosed, patients receive free anti-TB drugs from chemists in their neighborhood. In addition, a dedicated team of counselors from WHP provides counseling to patients, sends out drug dose reminders, keeps a track of treatment progress and issues automated reminders to patients at

the time when sputum re-testing is due or when transition from intensive phase to extended phase is scheduled [6].

In the reporting period of July-December 2014, WHP has established a network of providers across urban Patna with qualified MBBS doctors trained as per national Standards for TB Care, refreshed on the negative recommendation regarding serological tests for TB diagnosis, and acquainted with new diagnostic technologies. Informal providers are trained and activated to perform and report TB case-finding, facilitate early diagnosis, and referral for treatment. Chemists are engaged to provide free drugs, report H1 notification, and refer presumptive cases to formal providers and diagnostic facilities oriented to provide free sputum tests, X rays, and notify cases [6]. Accordingly, this project demonstrates a replicable model for private sector engagement designed for adoption by the public sector.

On the other hand, failures have compounded a couple of frontrunners in the telemedicine foray. The Apollo Telemedicine Networking Foundation of Apollo Hospitals has been a forerunner in the field of telemedicine and has centers in various cities such as Delhi, Gandhinagar, Bengaluru, Chennai, etc. The Foundation works with the Central and State governments to provide healthcare to the needy. It also partners with public and private sectors to champion the concept of telemedicine. The Gandhinagar center caters to eight districts in Gujarat. The issue faced by Apollo's telemedicine facilities is the churn rate of technicians due to the monotonous nature of the job. Thus, Apollo faces a huge investment in training and re-training of technicians in efficient handling of equipment. "Although the education requirements of the technicians are not high and it is easy to find replacement, training represents a huge chunk of the costs which is unaccounted for" [5].

The AIIMS telemedicine facility caters to the following specialties: Dermatology, Medicine, Orthopaedics, Nephrology, Cardiology, Cancer Treatment and Neurosciences. At AIIMS telemedicine facilities, the barrier remains a lack of incentives for doctors and administrators. The doctor's salary remains the same irrespective of the number of consultations on a given day. The only positive interpretation is branding, namely peer recognition and resume building. According to Ramesh, "for the facility as a whole, only altruism can be seen as a possible gain" [5]. In addition, there is a severe shortage of doctors which implies that they are over-burdened and a lack of monetary returns makes the situation worse. Furthermore, internet connectivity problems have led to poor quality of audio and video capturing at the centers. Hardware updates had not been provided since the inception of the project, thus tools have become obsolete. The telemedicine faculty heading the centers have not had a secure tenure and constant moving has been a deterrent to the success of the program [5].

Aims & Objective of the Research

Problem Statement

Acute manpower shortage, weak management & non-functional health facilities at primary level lead to increased travel, loss of time and high OOP costs for patients to avail healthcare which leads either to abnormally high patient load at higher level facilities or poor health seeking behavior at preventive & promotive levels due to high expenditure.

Research Questions

1. What are the challenges in implementation of Health ATM among healthcare providers?
2. What are the challenges in acceptance of Health ATM among healthcare beneficiaries?

Objectives

1. To analyse the provider perspective to identify the challenges in implementation of Health ATM
2. To assess the challenges in acceptance of Health ATM among healthcare beneficiaries

Study design and methodology

Type of study –

Qualitative study (Exploratory study).

Location of study –

10 Districts of Rajasthan namely Baran, Bundi, Jhalawar, Kota, Churu, Chittorgarh, Sawai Madhopur, Rajsamand, Pratapgarh and Udaipur which are high focus districts as per government criteria were chosen.

Study subjects –

Service Providers including innovator, ANMs, Doctors and district coordinators.

Beneficiaries (who are residents of these 10 districts and will be using the facility of Health ATM).

Sample Design –

Non probability convenience sampling.

Sample size –

All the 10 districts where Health ATM will be established were included in the sample. From each district one of the high focus blocks was chosen at random to be included in the sample. From these blocks one PHC and its attached Sub Centre was chosen at Random making it a sample of 10 PHCs and 70 SCs. All the doctors from 10 PHCs were included in the sample. All the ANMs of PHC and its attached Sub centre were included in the sample. One district coordinator from each district and the innovator of health ATM. However facility assessment was conducted for only district due to shortage of time. Beneficiaries were chosen at random restricted to be 5 from each district making it 50 beneficiaries in total.

So numbers of the providers in the sample included are:

- 1) Innovator of the Health ATM and his team at the district level -1
- 2) ANM at the Sub-centre where the Health ATM will be placed- 70
- 3) The physician at PHC who will be doing the tele-consultation.-10
- 4) District coordinator responsible for the implementation of the program- 10

Technique –

Primary data was collected by conducting face to face interviews.

Data collection tools –

Semi-structured questionnaire for face to face interviews

Data Process and Analysis –

Data collected were cross checked for any incomplete or partial filling. A qualitative thematic analysis was performed on the collected data by reviewing the data and understanding the perspective of various stakeholders.

Findings

1. Facility Assessment of two PHCs and seventeen Sub-centers

Two PHCs - Jaipala and Pali - and its seventeen Sub-centers, namely, Bhulon, Bhilwaraneecha, Bhuakhedi, Kotrapar, Chanchoda, Shankar Colony, Godiya Mehar and Titarkhedi of PHC Jaipala. Ghatakhedi, Hanyahedi, Pachpada, Semli, Nipaniya, Madnakhedi, Bhanwar, Telni and Jharkhedi of PHC Pali. These centers of Chhabra block of Baran district, Rajasthan, were visited for facility assessment to place Health ATM and assess the validity and reliability of information collected from ANMs and Doctors. 4 out of 8 Sub-centers, that is, Shankar Colony, Bhilwaraneecha, Chachoda and Titarkhedi of PHC Jaipala, and 4 out of 9, that is Pachpada, Semli, Madnakhedi and Telni of PHC Pali did not have government-owned separate building. They were being run in Anganwadi centers, school buildings, or huts. Nipaniya from Pali and Bhuakhedi from Jaipala were the only Sub-centers with electricity connection inside the sub centre building. None of the Sub-centers had internet connection, landline, or 24x7 water facility. None of the ANMs were residing at the Sub-center because most of the buildings were falling off (except Gatakhedi of Pali which had been recently reconstructed), leaked during rainy season, lacked electricity supply and there remained a threat of theft.

Interaction with the community and staff at the PHCs and the Sub-centers revealed that there is a serious threat of dacoits in Chhabra from the communities of Kanjar, Lodha and Mogya.

So, in this context, security of health ATM becomes a challenge. The road connectivity to all the PHCs and Sub-centers is extremely poor. During the rainy season, the connectivity to PHCs from the Sub-centers is completely lost; so reaching these places would be challenging. The equipments were lying unused. Only BP instrument, Haemoglobinometer and urine strip test could be seen in all the facilities. None of the ANMs were conducting deliveries in the Sub-centers; they referred all of them to PHCs. The Sub-centers were non-hygienic and none of the sterilization protocols were being followed.

Infrastructure wise PHCs had all the necessary equipments and building, but there was shortage of manpower. Pharmacists and full time doctors were not available. Lab technician were out-sourced.

Table 1: Table showing infrastructure availability and condition in PHCs and SCs

Characteristic	PHCs	Sub-centers
Main building		
Availability	Govt. building available	For 7 SCs out of 17 building NA
Condition	Good	Poor
Staff Quarters		
Availability	Available	NA
Condition	Good	
Laboratory & Labour room		

Availability	Available	NA
Condition	Non hygienic. Sterilization protocols not followed	
IPD		
Availability	Available	NA
Condition	Poor	
Equipments		
Availability	Semi auto analyzer, digital BP instrument, autoclave NA	Only Haemoglobinometer, Stethoscope, BP instrument were available
Condition	Moderate maintenance & usage done of equipments available	Low maintenance and use of available equipments
Waste disposal		
Availability	Available colored bins	Not available in 12 SCs out of 17
Condition	Used	Not used wherever available
Consistent electricity & Power backup	Available at both PHCs	NA
24*7 Water	Tube well available	NA
PC and Internet	NA in both PHCs (data was fed at BCMHO office in Chhabra)	NA
Phone	Govt. phone NA	NA
Road Connectivity	Extremely poor	Very poor for almost all the SCs

Table 2: Table showing the human resources availability at PHCs and SCs

Human Resource	PHCs	Sub centers
Medical Officer	Pali: 1 MO deputed from PHC Dhingaradi. Jaipala: 2 MO available	Not sanctioned
Paramedics	NA in both PHCs	Not sanctioned
Health workers	Pali: 1 GNM, 1 MN Jaipala: 1 GNM (Deputed from Kotrapar SC)	1 ANM or 1 MN were positioned in all the SCs.
Others	Pali: 1 LT (outsourced) Jaipala: 1 LT, driver, sweeper	NA

2. Perception of Providers

Innovator

Interview with the innovator revealed that the idea of Health ATM came to his mind when his mother fell ill on a railway station while they were waiting for the train to arrive. There was no facility of a doctor or pharmacy inside the station. He happened to see money ATM at the railway station and thought there should be something like this so that people can avail the facility if needed. This thought kept on boggling his mind. It took 5 years for him to develop a model which could provide tele-consultation with a doctor, perform fifteen non-

invasive diagnostic tests, and dispense medicines just as money is dispensed from an ATM. This model is successfully running in an IT hub at Hyderabad. The challenges faced while developing the model were shortage of funds and support from the family. The minimum requirements for deploying a Health ATM are: 15x15 square feet of unused space to provide sufficient space required to keep the Health ATM safely from environmental hazards, consistent supply of electricity, and alternative arrangement of power back-up, persistent high internet connectivity, and a well-trained operator (preferably a lab technician) with decent computer skills.

There could be many challenges if this Health ATM is to be implemented in rural India because the basic requirements of deploying Health ATM might be missing in such a setting. In addition, working conditions in rural area is a big concern, which further needs to be verified by visiting and conducting facility assessments. Furthermore, the service providers of the community can be interviewed as they should be able to describe in detail which challenges might vary from place to place.

ANMs/Male Nurse of 70 Sub-centers from 10 districts of Rajasthan

Thirty percent of the Sub-centers did not have a government-owned building; they were being run in Anganwadi centers, school buildings or even huts. 5 percent of the total Sub-centers (7 out of 70) were only mentioned in the papers, but had no existence at all in the real world. Only 15 percent of the Sub-centers had safe unused space inside the building to position a Health ATM. 66 out of 70, that is, ninety-five percent of Sub-centers did not have consistent electricity supply. Moreover, none of the Sub-centers had a power back up option.

Internet connectivity had not been established by the government in any of the Sub-centers, but service providers like Airtel, Vodaphone and MTS reaches most of the remote places. 68 out of 70 ANMs refused to take the responsibility to operate Health ATM as they thought they were not competent enough to do so. 45 out of 70 could not use a computer and had not used a money ATM by themselves ever. They complained that they are already overburdened with responsibilities of OPD; conducting deliveries; conducting MCHN days every Thursday in all the villages of the Sub-center; cleaning & mopping of the Sub-center; and, conducting all the operational and management activities. Even the reporting to be done about ASHAs is the responsibility of an ANM and she is not likely to take additional burdens. In addition, a few showed concerns regarding the security of the Health ATM as people might steal medicines from the machine. If the Health ATM is kept inside the Sub-center building, people especially drunkards might unnecessarily trouble them at night and thus they questioned their own security. One of the NRHM's contractual ANM disclosed that the permanent ANM at the Sub-center does not work at all and plays political games to humiliate, or blame her, and now she might unnecessarily trouble her while sharing the additional responsibility. All of the ANMs were apprehensive about the fact that placing this machine inside the building might lead to increased monitoring and supervision which none of them really wanted. Furthermore, additional reporting will have to be done to private partners apart from the usual reporting to the government.

All of the ANMs were positive about the outcome when they were asked about the acceptance among the beneficiaries as the number of male patients coming to the Sub-centers is almost equal and in some cases even more than their female clients, and thus it would be good for them. 50 percent of the ANMs suggested that if the Health ATM is placed at Primary Health Centers, the possibility of success might double because the problems of

electricity and internet connectivity would be comparatively much less and also the doctors are not available 24x7 in most of these facilities.

Doctors

Most of the Sub-centers might not be able to fulfill the basic requisites to position Health ATM, so it is impractical to think about placing these machines at the Sub-centers. The infrastructure in most of the Sub-centers is disintegrating. Sixty percent of the doctors said if this is kept at Primary Health Centers, they will not have to travel to rural areas every day to serve the rural population, and thus a lot of time could be saved in travelling. On the other hand, 40 percent said it should be placed at Primary Health Centers without doctors so that some sort of consultation might be given to them. It is mandatory to have a doctor from the same region so that there are no language issues. There is acute shortage of doctors in the state, getting a doctor 24x7 online will be a challenge in itself.

The other serious challenge while doing consultation through telemedicine and medicine dispensation will be about who will take the responsibility in case of a drug allergy, or death, due to wrong drug prescription without a signed prescription. In addition, how one or two medicines out of the entire packet will be dispensed if needed; otherwise it might favor irrational use of drugs among patients, which is already a major concern in the country.

Rural people are used to scolding of doctors, so in terms of acceptance among beneficiaries there could be a resistance as people might miss the human touch that they are used to. Also, a serious challenge would be the informal providers present in the community. This might

hamper their business and since they are trusted by the community they can badly publicize the entire concept.

In order for this innovation to be a success, it should be manned by two people - one who can do the diagnostic tests (lab technician) and a senior ANM who can talk in the regional language, coordinate between doctor and patient, and also provide the human touch.

SCALE District Coordinator

Intensive training of the caretaker of Health ATM is to be done. It cannot be a paid model if it is placed in the government facility. Also, noteworthy is that the fact that if it is free, the model cannot be self-sustainable, or scalable.

3. Perception of beneficiaries

Interview with the beneficiaries demonstrated that it was difficult for people to imagine such a high end technology concept, and thus they could not foresee the challenges in acceptance. All that could come out was that they are in need of better healthcare facilities and would support for making the facilities available in their vicinity.

Discussion

There are not many studies done in the past studying challenges in implementation and acceptance among the rural beneficiaries of technology led innovations. The current study highlights the challenges could be divided primarily into technological challenges, that is, the supply of electricity and internet connectivity. But more important were the challenges of personnel, that is, the lack of motivation among the health care providers to take additional responsibilities for the welfare of the community.

The purpose of this research study is justified by the findings, which prove that technological innovations are hard to implement in rural-interior settings. Although India has improved economically, there are still those who are in desperate need of medical attention. Urban poor are worse off, but more so the rural poor for whom healthcare is almost inaccessible and monetarily cumbersome. It is with this forethought that WISH has joined hands with the Government of Rajasthan and through its partners will provide a platform to the broken healthcare system. Its technological partners through know-how provided by WISH will penetrate the tough rural environment and bring healthcare to those in dire needs. Health ATM is one such initiative – although there needs to be a change in mind-set – but WISH strongly believes in the positive outcome the initiative can provide. Although not many papers have been published on Health ATMs, as it is new innovation; there is speculation that it will grow dynamically in the near future depending on its success stories and a rational sustainable model.

It is clear from the interviews of stakeholders that the challenges are many and varies from person to person based on their perspective. Thus, the urban model of Health ATM cannot be

placed as it is in the rural settings rather a customized version of Health ATM has to be developed depending upon the needs of the residing community and availability of resources. To understand better the challenges, both technological and personnel, WISH Foundation has planned to run the pilot prototype of Health ATM in the rural Rajasthan so that the actual model can be tailor made as per the requisites to make it acceptable, sustainable and scalable.

Recommendation

It is proposed that a basic prototype model should be placed at the Sub-centers to gauge the reaction of providers and beneficiaries and then a final model as per the findings of the research should be designed based on needs, acceptability and sustainability.

The proposed research would aim to better understand the health needs and the context of the residents of the selected district. As a part of the research, a basic prototype of a simple tele-consulting system with medicine distribution would be put in place to learn more about the resident's behavior and the practicality of the basic model. The prototype experiment will be to evaluate the challenges and benefits of seeking medical consultation and medicine through virtual presence of doctors.

Duration of the Pilot:

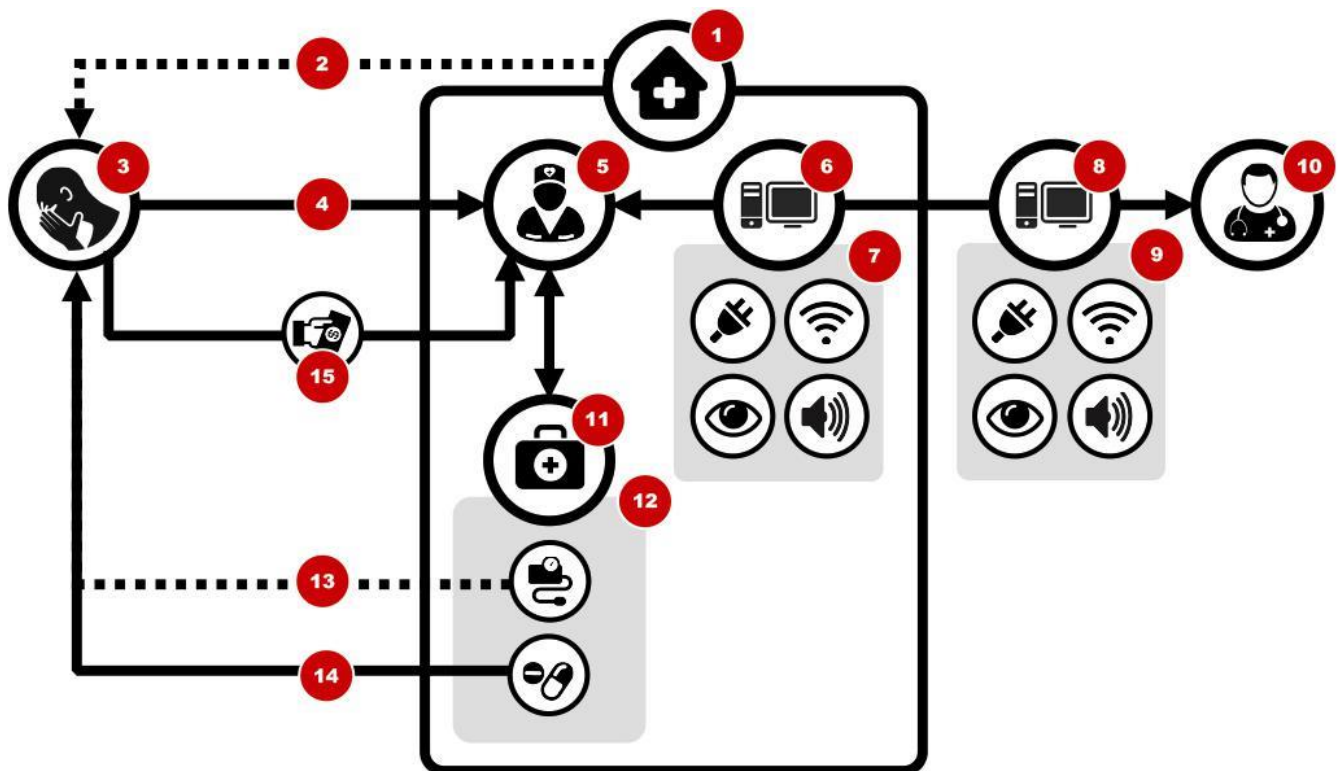
The SCALE districts are categorized into four categories based on the assumption that all these categories will have their own challenges in implementation and acceptance of Health ATM. The categorization is as follows:

1. Extreme Climate: Churu, desert place.
2. Tribal area: Dungarpur, Baran, Udaipur and Banswara.
3. High Human Development Index and better health seeking behaviour shown by better health indicators: Jaipur and Kota.

4. Others: Sawai Madhopur, Jhalawar, Bundi, Chittorgarh, Pratnagarh and Rajsamand.

The pilot will run in 4 locations with the same prototype setup for a period of 30 days. The locations are Churu, Jaipur, Dungarpur and Jhalawar.

The key pieces of the prototype:



1. The PHC or Sub-Center
2. Communicating to the residents
3. The residents
4. Reaching the center
5. The center attendant

6. The communication system at the center
7. The needs of the communication center at the center
8. The communication system for the Doctor
9. The needs of the communication system for the doctor
10. The doctor
11. The kit at the center

The needs of the kit at the center

12. The diagnostics
13. The medicine
14. The payment

Ethical Considerations

Informed consent was taken before starting the interview. The separate audio consent for was also taken. If anyone who disagreed to become part of the data collection process they were not forced by any means. Prior information was given before visiting any health facility. Names of patients or providers were not taken in the research process and in the final presentation.

Conclusion

In lines with the objective of the study, the study could bring forth quite a few challenges which are to be taken care while implementing this technological innovation. Apart from the technical elements, personnel management by the implementers would be a key factor to the success of this pilot project. A key learning has been the work flow starting from the innovators to ANMs to the district coordinators and each of their respective roles in the successful implementation of the innovation. This study is an exploratory one and builds the base for the subsequent study which will be conducted in the coming months that will confirm the suitability of the on-ground implementation plan.

Tools

Questionnaire for interview of Innovator of Health ATM

Name:

Age:

Sex:

Contact No.

1. What is Health ATM?
2. Is your model of Health ATM implemented in India? If yes, then name the place.
3. What challenges did you face while implementing this innovation?
4. What are minimum needs to deploy Health ATM?
5. What challenges do you foresee if the Health ATM is to be implemented in rural India?

Semi structured Questionnaire to interview providers to study challenges in the implementation and acceptance of Health ATM

Name

Age

Sex

PHC / SC

Block

District

1. What all facilities are being provided at your facility as of now?
 1. Doctor consultation
 2. Diagnostics
 3. Medicine dispensation
2. What do you think is the need of your facility?
 1. Doctor
 2. Test
 3. Medicines/ treatment for diseases
 4. Management
 5. Others
3. Minimum distance in Kms that is to be travelled to consult a doctor from your center.....
4. which type of facility is it where the doctor is available: Public/private/civil society

Introduce the Health ATM concept in simple words to the provider: A machine with a combination of tele-consultation to the MBBS doctor, diagnostics and medicine vending machine under control of doctor on tele consultation.

Ask the following questions:

5. Do you think this model can be helpful to solve the issues of service delivery?
6. What challenges do you see in implementation of this technological innovation in your rural settings?
7. Does your sub centre have?
 1. An empty space of 10x10 sq feet Y/N
 2. Good internet coverage Y/N
 3. Mobile connectivity Y/N
 4. Name the Service provider of mobile services

5. Electricity supply for at least 10 hours daily
6. Power backup

Y/N
Y/N

- Do you think can there be challenges in acceptance of this innovation among beneficiaries? If yes what challenges do you for see?

Questionnaire for interview of district coordinator of Health ATM

Name:

Age:

Sex:

Contact No.

District

1. What is Health ATM?
2. What challenges do you see while implementing this Health ATM?
3. How do you plan to overcome these challenges?
4. What kind of support would you require from State and Head office level to overcome the challenges?

Questionnaire for Interview of beneficiaries

Name

Age Sex

District

Block

1. What all facilities are being provided at the health facility in your village as of now?
 - Doctor consultation
 - Diagnostics
 - Medicine dispensation
2. What do you need most in terms of health care from your facility?
 - Doctor
 - Test
 - Medicines/ treatment for diseases
 - Others
3. Minimum distance in Kms that is to be travelled to consult a doctor from your center.....
4. Which type of facility is it where the doctor is available: Public/private/civil society

Introduce the Health ATM concept in simple words to the provider: A machine with a combination of tele-consultation to the MBBS doctor, diagnostics and medicine vending machine under control of doctor on tele consultation.

Ask the following questions:

5. Do you think this model can be helpful to solve the issues of service delivery?
6. What challenges do you see in implementation of this technological innovation in your rural settings?
7. Do you think can there be challenges in acceptance of this innovation among the community? If yes what challenges do you for see?

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