A STUDY OF CHALLENGES FACED BY ASHA WORKERS IN USING DIGITAL HEALTH PRODUCTS

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Master of Business Administration (MBA)

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Hospital and Health Management

By

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Under the Supervision and Guidance of

Dr. Alok Kumar Mathur

2024

Internship cum dissertation completion certificate

Letter No : KB Admin/HR 2024-25/237 Date : July 02, 2024

This is to certify that Ms. V.Vaishnavi, a student of MBA in Hospital and Healthcare Management academic year 2022-2024 at IIHMR University, Jaipur has completed her internship with Khushi Baby from 15th march 2024 to 15th june 2024.

During the internship, Vaishnavi did her dissertation on the topic of "**Challenges faced by ASHA workers in using digital health products**" under the project titled "**Community Health Integrated Platform**".

Throughout the internship, she sincerely worked on all her assignments, and her overall performance was observed to be very good.

We wish her success in her future endeavors

Sincerely,

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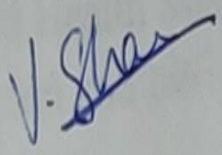
DECLARATION BY STUDENT

I hereby declare that this dissertation titled "The study of challenges faced by ASHA workers in using digital health products" is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



V. Vaishnavi

29 June 2024

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that dissertation titled "**A Study of Challenges faced by ASHA workers in using Digital Health Products"** is a record of the research work undertaken by **V.Vaishnavi** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.

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Abstract

"A study of challenges faced by ASHA in using Digital Health products"

V.Vaishnavi

Advisor: Dr Alok Mathur

Over the last decade use of technology and digital health applications have become the prime strategy to capture information and data about individual and public health and to manage public health systems accordingly. Many digital health application have been put to use by governments to improve their understanding and knowledge about individual and community health in their areas. Government of Rajasthan has been using application like PCTS, NCD, FPLMIS etc. all over the state through the ASHA workers who are the first point of contact for the community to avail the public health services. These ASHA workers are mostly from rural areas with a very simple social background. It is expected that these ASHA workers would be encountering many challenges in the use of technologically e advanced digital health applications. In this background, this study attempts to understand and asses the challenges faced by ASHA workers in the use of digital health applications. The data was collected through individual telephonic conversation based on a predesigned questionnaire. 50 ASHA workers from Pali district of Rajasthan were selected randomly for the study. The study finds that financial burden on procurement of smartphones, technical issues and duplication of work are the major challenges faced by ASHA workers in the use of digital applications.

Keywords: *Digital Health applications, ASHA workers, PCTS, public health.*

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I would like to express my sincere gratitude to all those who have contributed and guided me in the completion of this report.

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I am especially thankful to the Khushi Baby Organisation for providing me with the opportunity to get along with their team and also to gain further knowledge and practical skills. My deep gratitude goes to Ajay Sharma, Dr. M. Shahnawaz, Dr. Ruchit Nagar, for their support during the internship.

I wish to record my thanks to the Policy Department, particularly to Dr. Rajeev Singh, Dr. Kartik Sharma, and Dr. Megha Sharma, whose guidance and support in the completion of this research were invaluable. Their inputs and expert counsel were most helpful at all stages of this project.

I would also like to extend my appreciation to the product, technical, and implementation teams for their support throughout this internship. Their efforts contributed greatly to adding quality and breadth to this research.

I am deeply indebted to all the ASHA workers who participated in this study. It was their strengthened cooperation and willingness to share their experiences that made this data collection process realized.

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V.Vaishnavi

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LIST OF ABBREVEATIONS

1. SC: Sub Centres
2. ANM: Auxiliary Nurse Midwife
3. NRHM: National Rural Health Mission
4. PHC: Primary Health Centres
5. CHC: Community Health Centers
6. MNP: Minimum Needs Program
7. BMS: or Basic Minimum Services
8. FRU: First Referral Units
9. ASHA: Accredited Social Health Activists
10. EHR: electronic health records
11. ABDM: Ayushman Bharat Digital Mission
12. HPR: Healthcare Professionals Registry
13. PHR: Personal Health Records
14. HFR: Health Facility Records
15. GoR: Government of Rajasthan
16. MOIC: Medical Officers In-Charge
17. PMO: Project/Program Medical Officers

CHAPTER 1

INTRODUCTION

At the core of human well-being and societal progress lies healthcare, which extends well beyond cure to embrace a wide range of services such as those aimed at preventing diseases, those for managing diseases and the holistic preservation of mental and physical well-being in general. These essential services are offered in partnership with doctors, nurses and other health professionals. Let me start by emphasizing one point; if there's something that affects us all in one way or another, it must be healthcare that whose impact is felt in every sphere of life real from personal quality of life to national productivity, growth and development

The healthcare sector, as wide and complexed as it is, plays a big role in delivery of these key services. Its main components are contributors who offer health services, contributors whose main activity is manufacture and sale of drugs and their distribution, contributors whose main business is research and development of various medical devices as well as insurance providers, that is why the medical industry is so multifaceted and can be looked at from different perspectives. The healthcare industry greatly influences the economy and is an important sector for job creation. It also provides a platform for innovation, promoting advancements in various fields of study, besides safeguarding public health

In the context of India, the way health care system is structured can be characterized as peculiar in that it blends long-established customs and innovations that currently exist in our times. Historically, charitable work and indigenous medical practices have formed the core of any medical system in India. In India, traditional medical knowledge has always been cherished by millions of people because it has been passed down from generations to generation. This has been despite the embrace by the country of modern medicine as many people get help they need thanks to these herbalists in Indian societies living even today.

The Indian Healthcare System: A Three-Tier Structure

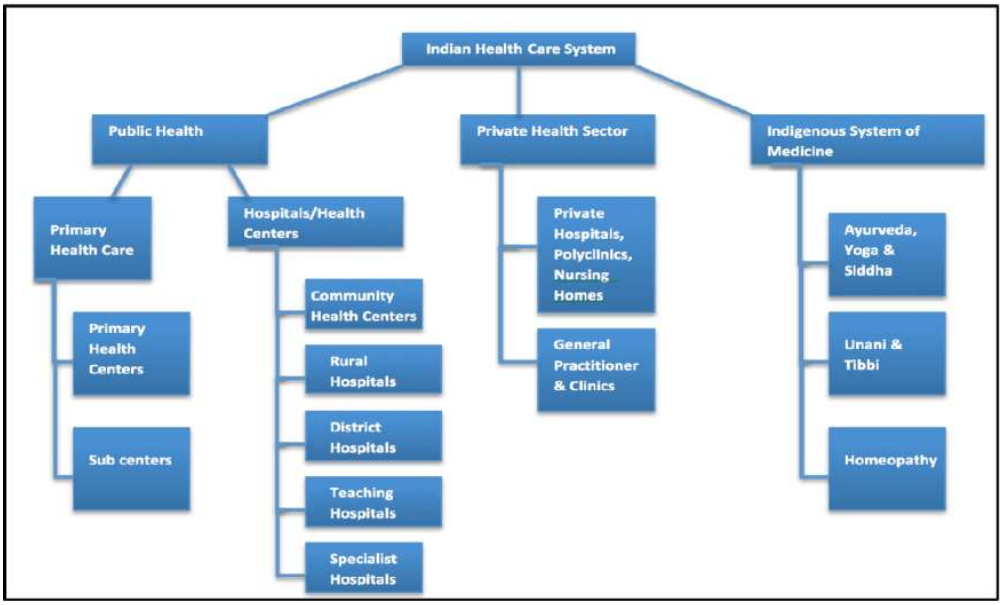

Fig – 1.1 , Indian Healthcare System

It is a 3-tiered social system which has 3 main levels of care that are based on the population. Its main objective is to bring healthcare services to more than one billion people who live in India, have very different needs in terms of health services provisioning—with strong emphasis placed on accessibility rather than second-line qualification

1. Sub-Centers (SC):

The Sub-Centers lie at the foundation of this structure, and they stand as its outermost peripheries and the initial points of contact between the primary healthcare system and the community. These sites are strategically located; either on flat lands where there are five thousand people or up in hills, out-of-the-way regions-generally known for isolationism or population of three thousand. In general, Sub-Centers (SCs) are operated by a minimum of one Auxiliary Nurse Midwife (ANM) or women health worker along with one man health worker. An additional ANM has been appointed on contract under the National Rural Health Mission (NRHM) which strengthened these facilities.

The role of SCs in rural healthcare delivery is pivotal. They are responsible for interpersonal communication aimed at promoting behavioural change and delivering vital services such as maternal and child health, family planning, nutrition, immunization, diarrhoea prevention, and programs for controlling communicable diseases. Acknowledging their significance, the Ministry of Health & Family Welfare provides full

central assistance to all SCs nationwide, which includes funding for salaries, rent, contingencies, medications, and equipment.

2. Primary Health Centers (PHC):

The next tier in this hierarchical structure is occupied by Primary Health Centers. These centers are designed to serve a population of 30,000 in plain areas and 20,000 in hilly, difficult to reach, or tribal areas. PHCs represent the first point of contact between the village community and a medical officer, embodying the principle of bringing healthcare closer to the people.

PHCs are conceived to provide integrated curative and preventive healthcare, with a strong emphasis on preventive and promotive aspects. A typical PHC is staffed by a medical officer supported by 14 paramedical and other staff. The NRHM has further bolstered these centers by providing for two additional staff nurses on a contract basis. Each PHC serves as a referral unit for 5-6 Sub-Centers and is usually equipped with 4-6 beds for inpatients. The activities of PHCs span both health promotion and curative services, making them a crucial link in the rural healthcare chain.

3. Community Health Centers (CHC):

At the apex of this three-tier structure stand the Community Health Centers. These centers are established and maintained by the State Government under the Minimum Needs Program (MNP) or Basic Minimum Services (BMS) program. CHCs render services to a population of 120,000 in plain region and 80,000 in hilly, difficult to reach, or tribal areas.

CHCs represent a significant elevation in terms of medical expertise and facilities. As per minimum norms, a CHC is required to be manned by four medical specialists: a surgeon, physician, gynecologist/obstetrician, and pediatrician, supported by 21 paramedical and other staff. These centers are well-equipped with 30 beds, an operating theater, X-ray facilities, a labor room, and laboratory facilities. CHCs serve as referral centers for PHCs within their block and provide facilities for obstetric care and specialist consultations.

4. First Referral Units (FRU's)

Besides these three levels, there are also First Referral Units in the healthcare system. Any functioning facility such as a district hospital, sub-divisional hospital, or Community

Health Centre can be an FRU provided it meets certain standards or specifications. This would mean being fully functional for providing services on a 24/7 basis for emergency obstetric and newborn care, with the requisite responses to all medical emergencies. Other key requirements that would classify one as an FRU include the capacity for providing emergency obstetric care, care of the premature or sick newborn, and continuous blood storage facility.

ASHA workers: India's first line of health care

But the most disruptive and probably the most effective element institutionalized in healthcare in India is the introduction of ASHA workers—trained female community health activists who would work as an interface between the community and the public health system. The selection of the ASHA worker from among the people whom she is going to serve in the village, and the accountability being made to panchayati raj institutions or institutions of local self-government at the grassroots level, ensures a strong local connect and engenders trust.

ASHA workers play a multidimensional role in the health system. Quite often, they are the first point of contact for all needs pertaining to health among rural populations, particularly women and children. Some of the important roles played by ASHA workers include generating awareness related to health and its social determinants, mobilizing the community for local health planning, and promoting the use of services available to them. They also disseminate very vital information concerning health determinants on issues like nutrition, sanitation, and hygiene, as well as healthy living conditions. Moreover, they are also engaged in giving out very important counseling to women concerning preparing for childbirth, safe delivery practices, and breastfeeding and complementary feeding; they are counseled on matters such as immunization, contraception, and prevention of common infections.

The Advent of Digital Health in India

The advent of digital health in India: How technology, especially digital health solutions, can play a role in solving this formidable challenge of providing quality healthcare to the vast and diverse population of India, has assumed unprecedented significance. The concept of digital health may seem not integrally new, but the remarkable developments it has undergone in the recent past are catalyzing a transformation in the landscape of healthcare delivery.

Digital health is born as a multi-discipline area, one that resorts to information and communication technologies to make processes in healthcare more efficient. Here, one will find a vast number of tools and technologies, including telemedicine, mHealth, wearable devices, biosensors, EHRs, big data analytics, augmented reality, virtual reality, and multiple aspects of machine learning and artificial intelligence.

Various other factors have also pushed the adoption of digital health in India. The first is the realization of the ever-increasing healthcare burden, accentuated by a growing population in relation to increasing healthcare professionals and facilities. This situation is also coupled with surging healthcare costs, hence putting more emphasis on the need for a more effective and cost-efficient approach. These challenges placed the electronic transformation of public health at the level of a national imperative.

Digital health interventions have already shown some promise in specific areas of primary care in India. Innovative programs in smoking cessation, maternal health, and vaccine supply chain management return encouraging results using digital health solutions. These successes underscore the critical role that digitalization could play in strengthening the Indian public health system.

The impact of digital health is more felt in rural areas, where access to good healthcare has traditionally been observed. For instance, telemedicine initiatives have enabled remote consultations that bring specialist care to underserved regions. mHealth applications have given people the power to track their health and make access to health information available at their fingertips, thereby enhancing preventive care and creating health awareness.

Ayushman Bharat Digital Mission: Spearheading the Digitalization of Healthcare in India

The Ayushman Bharat Digital Mission takes the lead in the digitalization of India's health infrastructure and is one of the Government of India's pet programmes. ABDM, launched in 2020, shall develop the backbone that will support the country's integrated digital health infrastructure. This gigantic initiative reflects a paradigm shift in how health information will be collected, processed, stored, and shared in the future across the Indian healthcare ecosystem.

The fundamental objective of ABDM is to establish a comprehensive national digital health ecosystem that promotes universal health coverage efficiently, inclusively,

affordably, and securely. This initiative aims to bridge existing gaps among diverse healthcare stakeholders using digital infrastructure.

Key building blocks of the ABDM are:

1.Health ID: Every citizen is unique 14-digit Health Identification Number. This identifier allows for the maintenance of uninterrupted health records for the person which can be accessed and shared amongst the healthcare providers with implicit consent of the individual.

2. Healthcare Professionals Registry: It is a living register of all healthcare professionals involved in delivering healthcare services. The scope includes those who have formal-degree-diploma certification in any recognized, system of modern or traditional medicine.

3. Health Facility Registry: This registry is created to be a single repository of all health facilities across the country and different systems of medicine; this will include all public and private health facilities.

4. Personal Health Records: A system that empowers citizens to view health data and permit them to share the same with health care providers thereby promote continuity of care.

5. Telemedicine: The scheme will also support the Why do telemedicine services need to be extended in order to increase access to care?

The ABDM irrelevantly stands only for the reason of its brilliance in technology; it has definite potential to transform healthcare delivery in India. It envisions bringing efficiency, effectiveness, and transparency into delivering health services on some untapped online seamless platform. This move thus can empower patients, giving them more control, thereby making more informed choices in their healthcare.

The ABDM is both a promise and a poser—let's just say for healthcare workers, not forgetting those within the ASHA program. It is claimed to promote efficiency in processes through paperless works, comprehensive health records of patients, great decision-making, and patient care. Simultaneously, it has called for real sea change in the way healthcare professionals, especially at grass-root levels of healthcare, engage with technology in everyday life.

ABDM will go a long way in changing the healthcare landscape of India. It will support Universal Health Coverage by creating an online platform without any discontinuity to

serve all the health-related information needs of the stakeholders. It will also ensure security, confidentiality, and privacy of health-related personal information through open, interoperable, standards-based digital systems.

Especially while digitization takes over, one needs to make sure that it is an inclusive process and doesn't add on to health disparities. This becomes especially relevant while discussing the role of ASHA workers since they, most of the time, are the only contact between the health system and rural villages. How well they adapt to and utilize such new digital tools will matter a great deal for making ABDM a success and, more comprehensively, the digitization of healthcare in India.

Digitalization and ASHA Workers: A Paradigm Shift

The wave of digitalization sweeping through the Indian healthcare system has not spared the ASHA workers either. Indeed, this has heralded quite a considerable change in what they do or are supposed to do. Conventionally, ASHA workers depended on pen-and-paper methods for record-keeping, collection of data, and information dissemination. That has, however, changed with the inroads that smartphones and mobile apps have made into their daily work.

This transition from offline to online work is perceived as both an opportunity and a challenge. On the one hand, digital tools can bring improvement in the efficiency and effectiveness of ASHA workers. Mobile applications will help in smoothing data collection, provide real-time access to health information, and help establish a better communication line with other healthcare providers. Digital platforms can also facilitate continuous learning and skill development among ASHA workers to keep them abreast with the latest health information and best practices.

This would involve certain challenges in this shift towards digital tools. A large majority of ASHA workers have rural roots with limited formal education. The adoption of a smartphone-based application would require a certain level of digital literacy, which would vary from one ASHA worker to another. More precisely, the problems add to issues like poor connectivity in rural areas, the cost of a smartphone, and data plans.

Digitalizing ASHA workers' roles is, however, considered to be a fundamentally essential social step in the modernization path taken up by India's rural healthcare system. In relation to the above, it connects with broader initiatives at the national level, popularly known as 'Digital India', aimed at transforming the country into a digitally empowered

society and knowledge-based economy. With digital empowerment embedded within ASHA workers, it is possible for healthcare systems to make available and more accurate data, enhanced decision-making, and fundamentally drive better care to rural populations.

eHealth Initiatives in Rajasthan and Applications Used by ASHA Workers

In India, healthcare is primarily a state subject, allowing each state to develop and implement its own healthcare initiatives in addition to those mandated by the central government. Rajasthan, in particular, has been at the forefront of adopting various digital health solutions to enhance healthcare delivery and management.

The Government of Rajasthan (GoR) has developed several in-house digital health solutions, while also incorporating some developed by private organizations. These initiatives form an interconnected system that facilitates data capture, organization, and analysis for meaningful insights into public health. Some of the key eHealth initiatives implemented in Rajasthan include:

1. CHIP (Community Health Integrated Platform)
2. PCTS (Pregnancy, Child Tracking & Health Services Management System)
3. OJAS (For JSY scheme)
4. CHRIS (Computerized Human Resource Information System)
5. e-Sushrut (Hospital Management Information System)
6. IMPACT (Integrated System for Monitoring of PCPNDT Act)
7. ASHAsoft (for ASHA worker management and incentive calculation)
8. IASPMS (Integrated Ambulance Services Payment Monitoring System)
9. eUpkaran (for medical equipment management)
10. NiKshay (for TB patient management)

These diverse initiatives work in tandem to provide a comprehensive digital health ecosystem in the state, enabling better data management, monitoring, and decision-making in healthcare delivery.

Community health workers in Rajasthan, popularly known as ASHA (Accredited Social Health Activist) workers, play a crucial role in the implementation of these digital health initiatives at the grassroots level. ASHA workers are extensively using various

digital applications to capture health-related inputs from the field. The primary applications used by ASHA workers in Rajasthan include:

1. PCTS (Pregnancy, Child Tracking & Health Services Management System)
2. ASHA Digital App
3. NCD (Non-Communicable Diseases) App
4. FPLMS (Family Planning Logistics Management System)
5. Ayushman Bharat App

These applications build in ASHA workers capabilities for doing a lot, from registering and tracking pregnancies to managing family planning logistics and monitoring non-communicable diseases. The intent of these digital tools is to increase the efficiency and effectiveness of ASHA workers in the provision of primary health care services to rural and underserved populations.

The challenge lies in the fact that the shift from paper-based applications to digital health applications poses a challenge of its own, particularly with the ASHA workers who are exposed less to technology or are infrastructurally challenged in rural areas. The present study has been done to understand, assess, and analyze the problems and challenges faced by ASHA workers in using these digital health applications.

The present study takes into consideration the experience of ASHA workers in Pali district, Rajasthan, to instill reality into how digital health solutions are operational at the community level. This can turn very essential in enhancing design and implementation lines of such a digital health initiative for its better functioning and making an ASHA worker capable of providing efficient health services at the community level.

The results of this study will not be pertinent to the state of Rajasthan alone but also have the potential to build digital health strategies of other states of India and comparable developing contexts globally. In the face of a continued advancement of the digital health agenda in India, attention to ensuring frontline health workers like ASHAs are able to effectively use these tools appropriately becomes paramount to the success of these initiatives and overall improvement in public health outcomes.

Rationale for the Study

This state of Rajasthan is characterized by diversified demography and varied geographical landscapes, adding to large healthcare disparities prevailing in the state, particularly with respect to remote and underserved areas. Digital health solutions will thus be very potent in this regard in bridging these gaps in an attempt to ensure better health delivery. Such integration of solutions into effect is not that easy, given the different challenges they pose, right from technological barriers and infrastructural limitations to institutional resistance and variable digital literacy levels of healthcare workers.

This research was therefore necessitated by the need to understand in detail these challenges, more so in relation to the ASHA workers, who stand out in terms of being very critical at the first point of contact in a healthcare system. By knowing what really lies beneath these challenges, this research aims to contribute in a real way to building strategies that might help both smoother adoption and more effective use of digital health solutions, and thereby, in fact, lighten the burden on our ASHA *behen*. This may realize the transformative potential of digital health in improving health outcomes across Rajasthan.

Scope of the Study

The digital health landscape of the healthcare system of Rajasthan is diverse, with different solutions fielded at different levels—right from sector to state. These vary from being used by different healthcare service providers at community, block, state, and other levels, including community health workers, block-level officials like the MOIC, and state-level officials like PDs and PMOs, for direct service delivery, monitoring, and evaluation purposes.

Given this wide array of digital health solutions against their diversity of applications across the hierarchy of healthcare, what this study has done is zero in on the solutions relevant to the primary point of contact with the general population: the ASHA workers. This research allows a much-needed exploration at the grass-roots level about the challenges in which the impact of these digital health solutions directly impacts patient care and the outcomes pertaining to it in community health.

In conclusion, The Indian health care system is at the verge of a digital transformation with its peculiar three tier structure and the innovative ASHA worker program. While the country is embracing digital health solutions such as the game changing Ayushman Bharat Digital Mission, it is contending with two challenges, namely exploiting technology to enhance healthcare services delivery and ensuring that these improvements reach everyone even

people in the most outlying parts. Understanding the problems ASHA workers have using digital health products is a matter of utmost significance as far as realizing the future of health care in India goes, especially with respect to how successful this present era on digital transformation will determine what lies ahead in terms of India's healthcare system. On the same note, the accomplishment or failure of digitalization tasks for Indian healing sector depends upon but not limited only by technological adoption - it also depends on mastering all those challenges faced by local community health workers while handling new digital solutions.

Research Question and Problem Statement

"What are the challenges faced by ASHA workers in the deployment and use of Digital Health Solutions?"

This question underlines the core problem that this research seeks to address. By focusing on ASHA workers, who operate at the point of connection between the healthcare system and the society, this study aims to uncover the practical, day-to-day challenges that impact the effectiveness of digital health initiatives at the most fundamental level of healthcare delivery.

Objectives

To comprehensively address the research question, this study pursues the following objectives:

1. Identify and study the existing digital health solutions in use by the ASHA workers: This step entails making a record of the existing digital tools and applications in use by ASHA workers in their routine activities.

2. To study key challenges to the deployments of digital health solutions: This would help in finding out the principal barriers to the ASHA worker's effective adoption and utilization of these digital tools. These might include technical, usability issues, or conflicts with other workflows.

3. Analyze the complex factors behind these challenges: This will involve a detailed probe of the latent reasons for the identified challenges. The factors that must be looked at are those of technological limitation, poor connectivity, devices, infrastructural deficiencies in the area of power, and regulatory complexities with provisions on data privacy, and many more on socio-cultural dynamics involving community acceptance of digital health interventions.

4. Current strategies and activities targeted at overcoming expected implementation barriers: This objective tries to identify from the literature different current methods in use that help in dealing with these challenges in the implementation of digital health. Such strategies range from training and support initiatives through policy-related activities that are supportive to ASHA workers embracing digital health solutions.

In these regards, the current study attempts to provide an overview of the challenges faced by ASHA workers while working with digital health solutions. The study would add value to the existing digital health initiatives in Rajasthan State of India and would also further contribute towards the design of effective strategies for implementing digital health in the entire country and also in other developing nations of the world in the near future. Ultimately, the study is to contribute to efforts currently directed toward developing digital technologies for healthcare delivery and improvement in health outcomes, particularly in underserved and rural communities.

CHAPTER 2

REVIEW OF LITERATURE

S. NO	Title and Authors	Sample size and Technique	Study Location	Salient Features
1.	Implementing National Digital Health Blueprint in India-The future opportunities and challenges Sudip Bhattacharya, Sheikh Mohd Saleem, and Md Mahbub Hossain (2022)	-	-	The National Digital Health Blueprint (NDHB) provides universal healthcare in India by utilising digital technologies to make healthcare delivery more efficient and effective. However, the implementation of NDHB faces significant challenges, especially in rural areas where poor availability, limited accessibility, and low digital literacy levels create a digital divide. To overcome these barriers, the NDHB suggests solutions such as ensuring consistent internet access, offering affordable mobile devices, developing user-friendly applications, and training skilled

				personnel. Prioritizing equity in digital health policies is crucial to avoid worsening social health inequalities and to ensure that everyone benefits from technological advancements.
2.	Digital Health Ecosystem in India: Present Status, Challenges, and Way Forward Kapoor, Suraj (2022)		India	This paper reviews the current state of digital health in India. The author highlights the importance of digital health initiatives such as electronic health records, telemedicine, and disease surveillance systems. The paper also identifies challenges to implementing digital health in India, including lack of internet access, data privacy concerns, and low health literacy. Finally, the paper suggests ways to improve digital health in India, such as by collecting better quality data and improving capacity building.
3.	ASHA Kirana: when digital technology	14 ASHA, 3 ANM ,	1 PHC in Karnataka	• Supported ASHAs with training, hands-on assistance, and regular

	empowered front-line health workers Srinidhi, Baneen Karachiwala, Aditi Iyer, Bhavya Reddy, Vinalini Mathrani, Neha Madhiwalla, Vani Periodi, Anuradha Sreevathsa, Lakshmi Viswanatha, Gita Sen (2021)	349 pregnant women and postpartum women over 4 months		debrief meetings, including monthly sessions for feedback and retraining. • ASHAs learned to collect individual-level data, shifting from perfunctory to substantive interactions during home visits. • Reduced information asymmetry between doctors and ASHAs, empowering ASHAs to take proactive steps on early maternal risks. • Questions based on symptom clusters to identify maternal risks, allowing ASHAs to address issues before escalation. • Software developed as an offline application for practical use. • Feasibility study conducted over four months, integrating M-CAT forms into ASHAs' existing responsibilities. • ASHAs felt empowered by understanding and interpreting data, improving their ability to identify and act on maternal risks, and enhancing their status within the community.

				• Designed to respond to clinical needs rather than aggregate data, initially requiring continuous support for less literate ASHAs. • Regular home visits scheduled before monthly ANC clinics, acknowledging limitations of a preliminary, paper-based tool.
4.	Community health workers in rural India: analysing the opportunities and challenges Accredited Social Health Activists (ASHAs) face in realising their multiple roles Lipekho Saprii, Esther Richards, Puni Kokho, Sally Theobald (2015)	In depth interviews and focus group discussions of 18 ASHA's. Purposive sampling.	Manipur: Purul block and Mao-Maran block of Senapati district.	• ASHAs in rural Manipur are primarily viewed as community health activists and link workers. They disseminate health information, encourage women to complete antenatal care, and motivate institutional deliveries through home visits and counselling. • ASHAs provide regular and affordable health benefits, particularly in remote areas. They offer minor treatments, monitor blood pressure, and identify pregnancy-related complications, reducing the burden on healthcare facilities.

				• ASHAs rely on incentives from schemes like JSY for compensation. These incentives significantly influence their focus on activities like institutional deliveries and immunization, often neglecting non-incentivized tasks like home visits and community mobilization. Irregular payment of incentives causes financial instability and dissatisfaction among ASHAs, affecting their performance and relationships with the community. • Remote villages with difficult terrain and poor transport systems pose significant challenges for ASHAs. They often have to cover long distances on foot, making it difficult to link the community with health services. • ASHAs face challenges due to gender roles and

				traditional practices. They are expected to fulfil household duties, which limits their ability to perform their professional roles.
5.	Overview of e-Health initiatives in Rajasthan: An exploratory study Nitin Kumar Joshi, Pankaj Bhardwaj, Praveen Suthar, Yogesh Kuman Jain, Vibha Joshi, Kuldeep Singh (2021)			• The study includes 13 initiatives categorized into four main groups based on their target primary users: client-oriented, healthcare providers-oriented, health system managers-oriented, and data services-oriented interventions. • Insufficient technically skilled professionals at the district level, inadequate manpower, overcrowded health facilities, technical issues and server problems (especially in PCTS and ECTS), low wages leading to demotivation and incomplete data entry by data entry operators, and network and connectivity challenges in rural areas impacting telemedicine services.

				• Rajasthan's e-Health initiatives, as pioneers in India, have achieved notable success in meeting the diverse needs of the population despite challenges, and addressing issues related to manpower and infrastructure, along with further studies and evaluations, could significantly enhance their effectiveness and set a global benchmark.

CHAPTER – 3

The methodology explains how the research was done. It gives an overview of the study setting, the sample size and the method used for collection of information.

METHODOLOGY

Study Design:

This research adopts a qualitative, descriptive design to delve into the challenges faced by ASHA workers when using digital health applications. This approach facilitates a deep understanding of their experiences and perspectives, capturing the nuances of their day-to-day interactions with digital health tools.

Setting Sample:

The study setting was the district of Pali, in Rajasthan State, India. Pali was purposefully selected for the remarkable utilization of digital health solutions in comparison with other districts in Rajasthan. Colleagues and local health officials pointed that engagements with digital health were higher in Pali as compared to the other districts. Moreover, the required data were available; hence it was convenient to conduct a study in Pali.

Sample size and justification:

In the present study, a total of 50 ASHA workers were selected. Though the sample size was determined by the time and resource constraints, 50 participants appeared to be appropriate enough to extract meaningful information pertaining to the problems ASHA workers faced while working with digital health applications.

Sampling Technique:

The sampling technique used in the study is convenience sampling identify ASHA workers. This approach was chosen for its practicality and efficiency in reaching potential participants quickly. ASHA workers with readily available contact information were approached for participation.

Inclusion and Exclusion Criteria

- Inclusion Criteria

    - ASHA workers in the Pali district of Rajasthan
    - Willingness to participate in a telephonic interview
    - Availability to complete the entire interview

- Exclusion Criteria
    - ASHA workers who did not respond to phone calls (after two attempts at different times)
    - Those who declined to participate
    - Incomplete interviews for any reason

Data Collection

Primary data was gathered through telephonic interviews using a structured questionnaire. The qualitative data from these interviews were then coded to streamline the analysis process. To secure the target sample of 50 completed interviews, approximately 100-120 calls were made.

Secondary data was also incorporated, involving a thorough review of existing literature, reports, and articles. This review focused on digital health implementation challenges.

Data Analysis

The analysis of the data collected during the course of study was conducted using elementary statistical tools and techniques like distribution of raw data and percentage of responses on various aspects.

Ethical Considerations

This study prioritised the ethical considerations ensuring that informed consent was obtained from all the respondents after briefing them on the study's nature, purpose, and the use of their information. Participants were assured of their confidentiality and their right to withdraw from the study at any time.

This methodology ensures a thorough and ethical exploration of the challenges faced by ASHA workers in using digital health solutions, offering valuable insights for enhancing digital health implementation in rural healthcare settings.

CHAPTER 4

Results and Findings

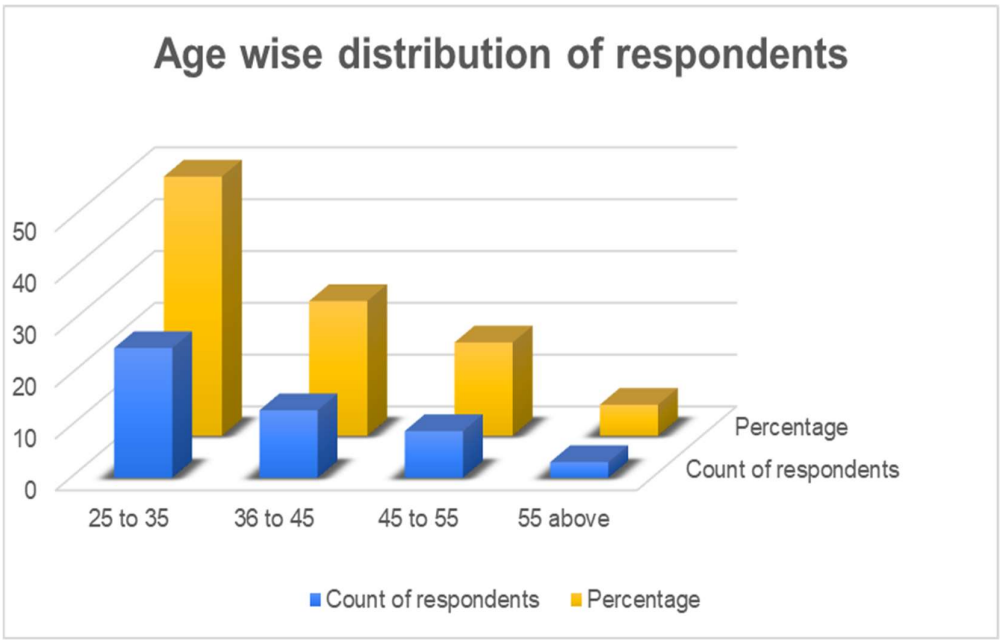

Fig. 4.1, Age wise distribution of the respondents in count and in percentage.

Most of the respondents are from the age bracket 25-40 and are working as an ASHA for more than 5 years. The area or region of work of majority of the respondents was rural (87.5%).

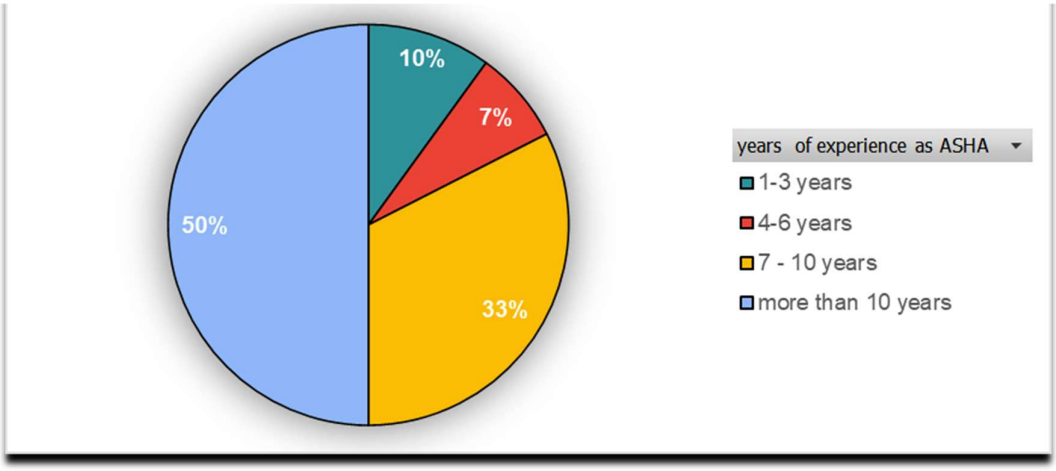

Fig 4.2, Percentage wise distribution of years of experience of the respondents.

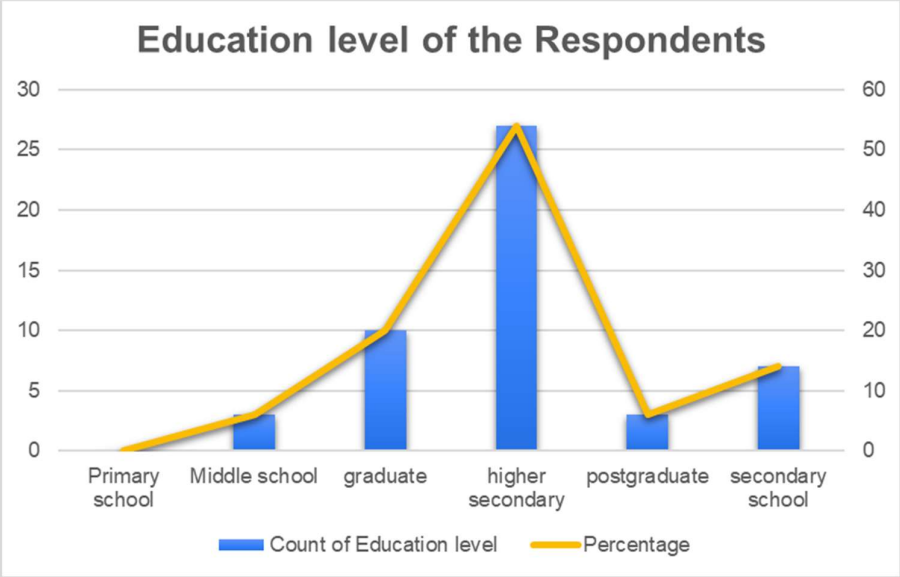

Fig 4.3, Education level of respondents in count and in percentage.

Nearly half of the respondents had completed higher/senior secondary level of education.

All the respondents had a smartphone. Most of them had the smartphone of their own (95%) while a few respondents had access to a smartphone which belonged to a family member.

All respondents agreed to receiving training for the new and different Applications at least once since they started using the applications. Some told that that trainings are held once every two years at our own level, at the PHC where our MOIC or ANM explains the application.

The ease of using a mobile phone for majority of the respondents was high. They stated that initially they faced challenges but with time and continuous usage they can now easily operate smartphones. Some respondents informed that they took help from family members to use the smartphones.

The use of the digital application is easy for majority of the respondents (72.5%) while some accepted to facing some difficulties in the use of application in their work. On asking further it was found that those who answered that the use of application is easy, had faced some difficulties in the beginning and with time became acclimatized to the use of these applications.

More than half of the respondents feel that these applications have improved their efficiency and helped them in their work. Some respondents are neutral towards the shift

from offline to online work while still 10% of the respondents were not happy with the shift and feel that their efficiency is reduced with the use of such tools.

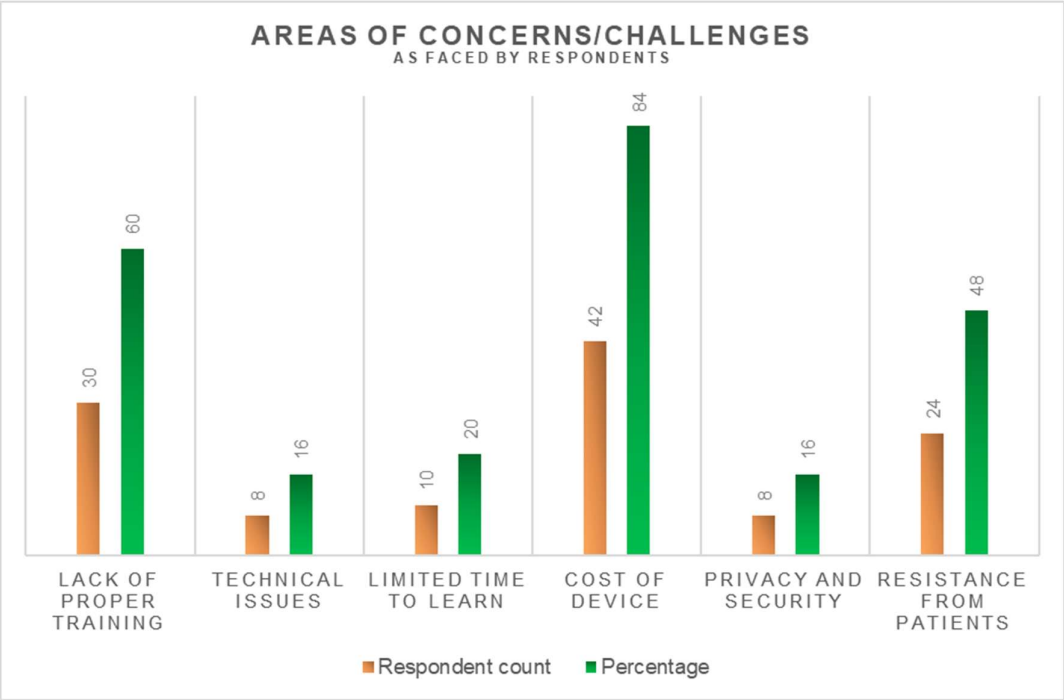

Fig 4.4, Areas of concerns or challenges faced by respondents in count and in percentage.

As for the challenges faced, 60% of the respondents feels that proper training and guidance is a challenge. Technical issues are not seen as much of a challenge but still is a point of discussion when using digital solutions, as pointed out by half of respondents. Almost 85% of the respondents were burdened by the cost of device which they have to use for the applications. On further discussions with the respondents, it was found that majority of the workers have purchased a smartphone only to use these applications mandated by the government. Other areas of concern like sufficient time to practice, privacy and security, user interface was not a challenge for many of the respondents (>65%). Though the resistance from the community for the ASHA workers in using these applications has reduced and is not seen as a challenge by half of the respondents, some feel that the community sometimes does not cooperate as much as expected.

All the respondents overcame any challenges faced by seeking help of colleagues and supervisors and through trial and error on their own level. Majority (97%) of the

respondents also contacted the technical support if the difficulty was still not resolved. Majority of the respondents feel that the applications that are to be used by them for their daily task are user friendly and almost half of them (47%) don't feel overburdened with the multiple applications for different programs.

The workers were also asked about any suggestions and many of them talked about additional features for an online incentivization provision, and support/assistance for buying a mobile phone.

The information from the secondary sources also identified infrastructural issues and the digital literacy of the workers to be challenge in the successful utilization of these applications.

CHAPTER – 5

DISCUSSION

The study aimed to identify the challenges faced by ASHA workers in utilizing digital health solutions. The findings reveal that both advantages and obstacles are evident in the adoption of the digital tools. Notably, while most ASHA workers have adapted to smartphone use, they face significant challenges related to device costs, training gaps, and the burden of maintaining both digital and physical records.

It is found that the education level of many of the ASHA workers is higher/senior secondary, i.e., they possess the level of understanding to comprehend and grasp the operational ability of any smartphone and new applications. This finding challenges the common assumption that digital literacy is a primary barrier to adoption. Instead, it appears that ASHA workers are generally capable of learning and utilizing these applications, given time and practice. Many of the ASHA's have been working for more than 5 years and have experience of both offline (pen paper based) and online (mhealth and applications) working.

The use of smartphone is relatively easy for all the workers, and if they face difficulty, they can easily overcome those with the help of colleagues and family members. This resilience is further supported by their problem-solving approaches, such as seeking help from colleagues, supervisors, and family members when faced with difficulties. Though technical issues are not seen as a challenge by the workers, but network connectivity problems, and software bugs (apps not opening due to high workload) cause obstacles and hinder the smooth workflow process. This sometimes leads to the workers using the offline method of noting the things in a register only to later fill the details in the applications. The persistent technical glitches suggests that while the digital infrastructure has improved, it is not yet robust enough to fully replace traditional methods. The workers appreciate the efforts of the government to make the work process online and feel that the shift from the offline to online is good and increases efficiency.

The cost of the device is a major concern for the ASHA workers. There is found to be financial burden of buying a smartphone, technologically advanced enough to support the functioning of the applications, on the ASHA workers. Many workers bought the phone on an EMI and some had to take a loan to buy the phone. No support from the government

or any institution is given to facilitate the buying of these smartphones. This finding highlights a critical gap in the implementation of digital health solutions, where the financial responsibility has been shifted to the workers themselves.

Apart from the heavy cost of device, the lack of continuous and proper training pertaining to these digital health solutions is a challenge. If proper training is imparted with due materials for help, less time will be taken by the workers to understand the application and also less difficulties will be faced by them.

The workers appreciate the use of digital solutions as it becomes easy for them to maintain databases and undertake their responsibilities. However, the maintenance of an offline record, the ASHA diary, only leads to duplication of efforts and more time consumed.

Many of the workers feel that the applications are good and easy to use. They consider the applications used by them to be easy to navigate and understand, i.e., being user friendly. They also talked about additional features for an online incentivization provision, and support/assistance for buying a mobile phone. Some workers feel that the work should either all be online or all be offline as maintaining two records for all the beneficiaries poses to be challenge for them. They feel the amount of work given to them is substantial but are not paid as much for the work they do. With so many daily tasks and responsibilities, it becomes an extra effort to be maintain two databases with the same data. The duplication of efforts in maintaining both digital and physical records suggests a need for streamlining processes. This redundancy not only increases the workload for ASHA workers but also raises questions about data consistency and efficiency.

Limitation of the study:

- The study was conducted in limited time and resources, which affected the chosen sample size of ASHA workers interviewed.
- Due to the limited scope, the district chosen for the sample was based on convenient method and thus the study might not represent ASHA workers from diverse regions or settings.
- Conducting interviews over the phone may have resulted in limiting the depth of responses and non-verbal cues that could have been observed in face-to-face interviews.
- The limited time constraint for the study may have restricted the ability to follow up on interesting points or explore topics in greater depth.

- The study majorly relies on self-reported information from ASHA workers, which may be subject to bias or prejudiced responses.
- The perspective and the field challenges faced by the ASHA workers had not been comprehensively explore which resulted in the lack of comparisons from existing data to maintain data quality.

Strengths of the study:

- The study addresses a topic that has not been extensively explored before, potentially providing valuable insights into the challenges faced by ASHA workers.
- By contacting ASHA workers directly, the study captures first-hand experiences and perspectives.
- Asking for suggestions from the ASHA workers adds a practical dimension to the research, potentially informing future improvements.
- Telephonic interviews allowed for data collection despite the resource constraints, enabling the study to be completed within the limited timeframe.
- The study focuses on challenges faced by ASHA workers, allowing for a targeted exploration of this particular aspect of their work
- This study could serve as a foundation for more extensive research on ASHA workers' challenges and experiences.

CHAPTER – 6

CONCLUSION

ASHAs in Rajasthan have largely embraced and are continuously utilising digital health solutions provided to them to complete their tasks and responsibilities, despite initial hurdles. These applications and solutions have improved the efficiency and data management. However, there is still scope for further support to ensure effective usage of these applications and increasing productivity of the work.

On the basis of the data collected and analysed, the following conclusions can be drawn:

- **Financial burden:** Acquiring appropriate smartphones is a financial strain for ASHA workers. They have to take a loan or buy the smartphone on EMI just for using the application. Some ASHA are sole earning members of the family and it becomes a challenge for them to buy a smartphone. While some use the phones of other family members as it is not possible to acquire one for their own use. This also hampers and effects the workflow and duties to be completed by ASHA. They have to wait for the phone to be idle, or they fill all the details later in these applications.

- **Training gaps:** Inadequate and infrequent training limits their ability to fully utilize digital tools. Anything new requires time and proper guidance to learn, according to the ASHA workers. Continuous and proper training and refresher trainings in cause of any update, can prove to beneficial for them.

- **Connectivity issues:** Network problems and software bugs disrupt workflow, leading to duplication of efforts and more time being consumed to complete the work. Sometime the applications do not open due to high user engagement and OTP are not received on time. This also causes the beneficiary to deny the services or ask the ASHA workers to come back later, making it difficult for the workers to complete their duties on time.

- **Workload concerns:** Maintaining both digital and physical records creates duplication and increases workload. Apart from maintaining two data sets, they also have to use a number (3-4) of applications, some on daily bases while some

on weekly bases. This creates a plethora of applications which can be time consuming and confusing at times.

Despite these challenges, ASHA workers recognize the potential of digital health. They are eager to learn and utilise these resources effectively and efficiently. To fully empower them, targeted interventions are crucial.

Recommendations

Based on the above findings of the study the recommendations for addressing the challenges faced by ASHA workers in using digital platforms and steps proposed to be taken to overcome the limitations of ASHA workers are as follows:

- It is imperative to make the ASHA workers and their families financially comfortable in their work and use of the digital platforms. The study finds that in order to use the digital applications ASHA workers have to financially invest substantial amount of their savings or earing in purchasing a compatible smartphone. It has also been found that many of the ASHA workers have purchased the smartphones on loan since they were unable to invest substantial amount required for purchasing of smartphones upfront. It is therefore strongly recommended that financial support in terms of subsidy or through any other means is provided to ASHA workers specifically against their purchase of smartphones. Such a step would not only relieve them of financial burden but also would encourage them to have latest technology for efficient use of digital applications.
- It has been found in the study that unavailability of network in the area of operation which are mainly rural areas, and technical glitches encountered while using the applications consume lot of time and energy of ASHA workers. These also form a sort of irritant in the use of digital applications and create adverse opinions among the workers about such use of technology. These definitely have an adverse effect on the efficiency of ASHA workers. It is therefore recommended that appropriate steps may be taken to ensure that the network connection is available round the clock in the area. One important step that can be taken in this regard is to provide SIM card of the telecom operator functional in the area of operation free of cost to the workers. Similarly, the IT wing of the government should provide round the clock services to help with technical glitches which are encountered by ASHA workers. The applications may provide for offline data

entry which would automatically upload on the application server as and when the network available.

- The Study finds that along with input of data online on the applications, the ASHA workers are also required to maintain the same information offline, in physical form by recording the same information in a prescribed register called the ASHA diary. This is a duplication of work and can be easily avoided. The effort in recording the same information in ASHA diary and to maintain this record consumes a substantial part of the time and energy of the workers. It is recommended that the offline recording of the information and maintenance of the ASHA diary maybe be done away with.
- Although the ASHA workers seem to be comfortable with the use of digital applications and have overtime learnt to navigate across such applications by their hand on practice and trial and error method, providing regular training/ refresher on the use of such digital applications especially when there is an update or change in the architecture of the application would prove to be immensely helpful in making the ASHA workers comfortable and confident about the features of these applications and would ensure full utilisation of the potential of the application
- The study also finds that besides the PCTS application ASHA workers have also to use many other applications periodically on a daily or weekly basis. Use of different applications can be streamlined either by merging few applications together or ensuring that different applications are used in different time periods so as to avoid overloading of work on the workers.

Use of digital technology in public health management specially in capturing various sets of information from general population bout diff aspects/parameters of individual and community health have immensely altered the administrative and managerial environment of public health systems in the country. Despite many challenges and limitations, it in encouraging to find that the frontline community health workers have adopted and adapted to the use of digital health applications very positively and have developed their own capacities in this regard. However, due to various socio economic and cultural factors substantial challenges still remain to be addressed in the use of digital technology by ASHA workers. This study is an attempt to understand and assess the limiting factors and challenges that the ASHA workers face in using the digital applications in their work. Challenges like financial burden on account of procurement of

smartphones, technological issues in terms of non-availability of network and technical glitches, gaps in training and refreshers and workload burdens on the workers due to duplication of work have emerged as main factors that impact proper functioning of ASHA workers in the field. The study has recommended many steps that could be taken to improve the working environment of ASHA workers with regard to the use of digital applications in public health management. The positive attitude of ASHA workers and their ability to learn on their own is the most favourable fact that has emerged from the study. This study can form a basis for more advanced and improves research in this area to obtain robust information and to further improve the digital health environment of public health management in Rajasthan.

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ANNEXURES

Annexure 1: Informed Consent

I am V.Vaishnavi, a student at IIHMR University, currently researching challenges that ASHA workers face in using digital health solutions. The present research will give an in-depth understanding into your experiences and views regarding the deployment of such technologies within their job responsibilities. This study aims to understand, at a deeper level, the challenges that ASHAs face in using digital health solutions for maternal and child healthcare. Your response will remain confidential and will be used to identify areas for improvement and develop recommendations for better implementation of these technologies.

If you agree to participate in this study, you will take part in one telephone-based interview that is approximately 30 minutes long. I will ask questions about your experiences with digital health solutions, the exact problems encountered by participants, technical challenges, and areas of improvement. Your responses are absolutely confidential. Your name and identifying information remain outside of all reports and publications. Your participation in this study is completely voluntary. You have the right not to participate in this interview and the right to withdraw from the research at any time without penalty. There is no anticipated risk for participating in this study. If you have any questions about the study or your participation, please don't hesitate to ask me now before the interview begins.

Annexure 2: Data collection Tool

1. **Age:**
    - Under 25
    - 25-35
    - 36-45
    - 46-55
    - Over 55
2. **Education Level:**
    - No formal education
    - Primary School
    - Secondary School
    - Higher Secondary
    - Graduate
    - Postgraduate
3. **Years of Experience as an ASHA Worker:**
    - Less than 1 year
    - 1-3 years
    - 4-6 years
    - 7-10 years
    - More than 10 years
4. **Region of Work:**
    - Urban
    - Rural
    - Semi-urban

5. **How frequently do you use Digital Health Solutions in your work?**
    - Daily
    - Weekly
    - Monthly
    - Rarely
    - Never
    - Others (please specify)
6. How comfortable are you with using new technology in general?
    - Very comfortable
    - Comfortable
    - Neutral
    - Uncomfortable
    - Very uncomfortable
7. Have you received any training on how to use Digital Health Solutions?
    - Yes
    - No
8. If yes, how was the quality of the training received.?
    - Excellent
    - Good
    - Average
    - Poor
9. Do you have access to ongoing technical support for using these products?
    - Yes
    - No

10. How easy is it for you to use Digital Health Solutions products?
    - Very easy
    - Easy
    - Neutral
    - Difficult
    - Very difficult
11. Do you face any of the following technical issues while using these products? (Select all that apply)
    - Internet connectivity problems
    - Device malfunctions
    - Software bugs
    - Difficulty in navigation
    - Language barriers
    - Others (please specify)
12. How have Digital Health Solutions impacted your efficiency in performing health-related tasks?
    - Greatly improved
    - Improved
    - No change
    - Reduced efficiency
    - Greatly reduced efficiency
13. Do Digital Health Solutions help you provide better care to patients?
    - Strongly agree
    - Agree
    - Neutral
    - Disagree
    - Strongly disagree
14. How do patients in your community react to the use of digital health solutions?
    - Very positively
    - Positively
    - Neutral
    - Negatively
    - Very negatively
15. Now, let's talk about the challenges you face with Digital Health Solutions. Please rate the severity of each challenge on a scale of 1 (Not a challenge) to 5 (Very challenging):
    - Lack of proper training
    - Technical issues (internet, devices)
    - High cost of devices/data plans
    - Limited time to learn and use new solutions
    - Poor user interface (difficult to navigate)
    - Privacy and security concerns
    - Resistance from patients/community to using technology
    - Other (please specify)
16. **How do you usually overcome these challenges?**
    - Seeking help from colleagues
    - Referring to training materials
    - Contacting technical support
    - Trial and error
    - Not able to overcome them
    - Others (please specify)

17. Do you have access to user manuals or guides for the digital health solutions you use?
    - Yes
    - No
18. How helpful have the following features been in your work? (Rate 1- Not Helpful at All, 5- Very Helpful)
    - Digital health survey
    - Maintaining data base
    - No multiple/duplicate entries
    - Easy retrieving/searching beneficiary.
19. Do you have concerns about the privacy and security of patient data in digital health solutions?
    - Very concerned
    - Concerned
    - Neutral
    - Slightly concerned
    - Not concerned
20. What suggestions do you have for improving the use of Digital Health Solutions among ASHA workers?
21. How do you feel about the change from paper based to digital solutions?
22. What functionalities would you like to see in digital health solutions to better support your work.
23. Do you have any comments or feedback regarding digital health solutions.

Annexure 3: Plagiarism Report

Turnitin Originality Report

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