



Health in Your Hand

Framing the Opportunity

1 The Problem

The World Health Organization (WHO) projects a shortage of 18 million frontline health workers (FLHWs) by 2030, of which over ten million will be nurses and midwives.¹ Without these workers, we cannot reach the health-related Sustainable Development Goals or any of our other global health aspirations.

There are only three ways to reduce this projected workforce gap:

1. **Get more:** Bring more health workers into the frontline health workforce through new recruitment and training, accreditation of existing informal workers, and increasing funded health worker posts;^{2,3}
2. **Lose less:** Improve retention of existing health workers;⁴ and
3. **Do more:** Extend the reach and productivity of the FLHWs we already have, so that health worker teams can cover a larger proportion of the population while still providing quality care.

The [**Johnson & Johnson Center for Health Worker Innovation**](#) (the Center) is exploring all three of these strategies, but this concept note will focus specifically on the third.

2 The Opportunity

There are 5.2 billion mobile phone subscribers globally, with smartphones representing 68% of mobile connections.⁵ While important digital divides remain,⁶ technology is disrupting almost every sector – from retail banking to real estate – bringing services closer to consumers, while increasing convenience and expanding access to many who were previously underserved. These shifts are empowering individuals and communities, while changing the workforce requirements of many industries.

Despite the health sector’s looming human resource crisis, it has been slow to use technology to optimize how services are delivered and how scarce human resources are allocated to

Self-care is defined by the WHO as “*the ability for individuals, families and communities to promote health, prevent disease, maintain health, and cope with illness with or without the support of a healthcare provider*”.⁷

Digital health is ‘*the systematic application of information and communications technologies, computer science, and data to support informed decision-making by individuals, the health workforce, and health systems, to strengthen resilience to disease and improve health and wellness for all*’.⁸

improve health outcomes. However, COVID-19 has driven a recent acceleration in digital health. At a population level, COVID-19 hotlines, chatbots, and mobile apps have supported health education, disease surveillance, and vaccine distribution efforts. At an individual level, telehealth and remote patient monitoring have enabled continuity of care for patients and reduced the burden on health facilities at a time when face-to-face medical appointments have been heavily restricted.

In healthcare, the aim is not to eliminate the need for health workers and health facilities. However, direct-to-client digital health technologies can engage individuals in their own health to promote effective self-care, while also facilitating appropriate linkages (a 'digital front door') to healthcare services when required. By driving the right care-seeking at the right time through the right delivery channel, a hybrid model of integrated virtual and in-person health services can support client needs, expand the reach and productivity of health workers, and enable universal health coverage.

3 The Opportunity

Digital modalities, including mobile messaging, chatbots, websites, mobile phone applications, and help desks or hotlines, are powerful enablers of self-care and remote care management by health providers.

Early examples of digital self-care services in low-resource settings included programs that used automated voice calls or text messages to deliver a structured sequence of reminders, motivational messages, or timely health information.¹²⁻¹⁷ With technology advances and increasing mobile phone ownership and use, programs have evolved to include instant messaging services (e.g., WhatsApp, Telegram), mobile websites, and applications that enable interactive user engagement, information on-demand, rich media, advanced analytics, and artificial intelligence automation such as chatbots and machine learning.¹⁸⁻²⁰ Links to trained health personnel through call centers, help desks or hotlines can provide individualized attention, answer client questions, make referrals for in-person care, and provide support and counselling remotely.²¹⁻²³

Direct-to-client digital health services can support:

- Health promotion
- Medication adherence
- Chronic disease management, including behavior change motivation, remote monitoring, and peer support
- Support and linkage to care for self-administered testing and sampling
- Mental health support and treatment
- Access to health-related commodities
- Care-seeking reminders, treatment retention
- Remote consultations

The evidence for these digital services is growing. Over the past two decades, digital applications and mobile communications have been used to improve health literacy, support treatment and medication adherence, reinforce chronic disease self-management, and drive healthy behavior change. Patients using digital self-care services report feeling supported and cared for,²⁴⁻³⁰ demonstrating that social and emotional support can be provided through digital communication. Digital communications also provide privacy and anonymity for patients who may have trouble communicating about difficult subjects face-to-face, including hard-to-reach groups like adolescents.^{20,27,31}

“

Through digital and other technologies, we will enable individuals and communities to identify their health needs...and play an active role in maintaining their own health and well-being.”

– [2018 Declaration of Astana](#)¹¹

Studies and evidence demonstrating improvements in health outcomes are still limited in low-resource settings, with some promising results for chronic disease management,^{32,33} contraceptive use³⁴⁻³⁶ and medication adherence for HIV anti-retroviral therapy.³⁷

Recent discussions on the state of digital self-care interventions all echo the same call for more research and evaluation to demonstrate the impact that digital self-care can have on health outcomes across different contexts, disease states, and patient groups.^{7,9} There is also a need to show how these approaches can effectively mirror the quality and safety of in-person interactions.

The [Digital Self-care Framework](#)⁹ highlights four key areas required for quality digital self-care interventions:

1. **The User Experience**, with a focus on the target audience’s needs, perceptions and comfort;
2. **Privacy and Confidentiality**, to ensure that a user’s information is safe and secure;
3. **Quality Assurance**, to provide safe and evidence-based services with strong and reliable links to healthcare services; and
4. **Accountability and Responsibility** to the existing regulation and policy environment and global best practices and evidence.⁹

HEALTH WORKER IMPACT

Although safe and high-quality digital self-care and remote care management requires strong linkages to trained health workers and the health system, most research has focused on client knowledge, attitudes, practices, and health outcomes. Very few studies look at the experiences of the health workers who are supporting direct-to-client digital interventions to

try to understand the impact on their workload, professional responsibilities, motivation, and job satisfaction. Though the benefits for clients appear clear, the limited literature that exists is ambiguous in its discussion of the benefits for health workers.

Digital self-care services are hypothesized to reduce health worker workloads by automating certain health worker functions (e.g., counselling and reminders) and driving more appropriate health-seeking behavior by clients. They can extend the reach of health workers into communities and improve continuity of care in between face-to-face consultations by enabling ongoing dialogue and remote monitoring of patients. A few qualitative studies report health worker perceptions that digital client communication modalities increase their efficiency, ability to prioritize high-risk patients through targeted messages,^{24,27} and promote a better relationship with patients overall.³⁸ Providing digital linkages to care can decrease a health worker's workload by reducing unnecessary visits and focusing their attention on those who need it most (as in the case of an mHealth app in Zimbabwe to support male-circumcision for HIV prevention).³⁹ However, many health workers report concerns about increased workload and being able to draw boundaries after work hours.^{24,38,40-42}

HEALTH SYSTEM IMPACT

It can also be difficult to quantify the impact of direct-to-client digital services on the overall health system, particularly as there has been a proliferation of solutions that are often fragmented or duplicative. Digital self-care services tend to be limited to a particular disease area or population group (often driven by the source of funding), and most evidence is limited to small-scale studies and feasibility pilots.⁴⁷ For digital self-care and remote care management to become an integral part of primary- and community health in the digital age, it needs to move beyond multiple siloed disease-specific solutions.

Governments and large implementers often lack both technical and governance mechanisms to review the digital information and services that are available to ensure quality, security, privacy, and interoperability. Few published studies include cost-effectiveness data.¹⁷ Only a few noteworthy programs have reached national scale, many of which are implemented by the private sector or non-governmental organizations (NGOs), rather than governments.¹⁷

INTEGRATION BETWEEN DIGITAL AND IN-PERSON HEALTH SERVICES

One of the benefits of digital self-care is the ability to increase access to health services for communities that are chronically underserved. Providing test results by mobile phone,⁴³ and follow-up and self-testing reminders^{26,39,44,45} can increase treatment retention and convenience for clients who do not have easy access to health facilities.^{19,24,46} There is a need for more integrated digital health services that provide support to clients at home, but also offer a reliable link to quality care and in-person support when needed.

4 *Health in Your Hand* Vision, Mission, Objectives

Vision: Individuals and communities have a ‘digital front door’ to quality care that also supports and optimizes the role of frontline health workers.

Mission: Make quality direct-to-client digital health services a norm in low-resource settings worldwide.

Objectives:

1. Increase investment in quality evidence-based digital self-care and remote care management services by the public health system and government agencies to increase access to services in communities, increase the reach of health workers and the health system, and save costs.
2. Increase the reach of health workers by creating linkages between digital and in-person health services that promote more supportive and efficient client interactions.
3. Improve community health outcomes (prevention, detection, adherence, recovery) and self-care outcomes (self-efficacy, confidence, independence, perceptions of support) through increased access to quality evidence-based digital self-care services.

While the overall vision, mission, and objectives are broader than what the Center can accomplish on its own, they chart a path for collective action among key stakeholders and partners with an interest in more effective deployment of direct-to-client digital health services.

5 *Health in Your Hand* Logic Model

Health in Your Hand aims to address the projected health worker coverage gap by using direct-to-client digital technologies to support self-care and remote care management. This will optimize the allocation of scarce human resources for health. The following logic model provides a high-level overview of what is needed to achieve the three Center for Health Worker Innovation impact goals of 1) Strengthened primary and community health systems, 2) Thriving frontline health workforce, and 3) Decreased health worker coverage gap.

The three workstreams of Health System & Enablers, Health Workforce, and Communities & Clients illustrate a flow of strategic activities with expected outputs and outcomes aligned with addressing the critical gaps identified in the evidence and the current state of the field. The logic model was reviewed with digital health implementers in Brazil, India, Malawi, Philippines, South Africa, Uganda, and the USA.

INPUTS

Primary target population: health workers

- Funding
- Backbone organization
- Regional implementers
- Global digital foundations and guidance
- Research support
- J&J volunteers

STREAMS

HEALTH SYSTEMS & ENABLERS
 Create an enabling environment and build the evidence base for digital self-care and remote care management through global coordination of research, advocacy, and investment in global foundations and guidance.

HEALTH WORKFORCE
 Contribute funding and technical assistance to regional programs that support health workers to introduce and monitor digital self-care and remote care management activities along a continuum of care with in-person health care services.

COMMUNITIES & CLIENTS
 Support high quality digital self-care applications and mobile messaging services that contribute to client self-efficacy and improve linkages to care.

ACTIVITIES

Activities focused on:

1. building evidence of positive health worker and health system impacts;
2. documenting best practices for integrating digital self-care and in-person health services;
3. direct engagement & advocacy with relevant gov't policy and decision-makers to promote supportive policies and regulations.

Activities focused on improving the design and implementation of integrated digital self-care approaches to support both health worker and client priorities.

Activities that increase availability of quality evidence-based digital self-care services for different disease states and patient groups.

OUTPUTS

Increased # of research publications, thought leadership publications and best practice guidance demonstrating benefits and health worker/health system impact

Increased # of supportive policies and regulations

Increased # of digital self-care programs linked to the health care system

Increased # of innovations and approaches to expand digital self-care services

Increased # of clients have positive engagement and experiences with digital self-care services

OUTCOMES

Increased investment in quality evidence-based digital self-care and remote care management services by public health system/ gov't agencies to increase access to services in communities, increase the reach of health workers and the health system, and save costs.

Increased reach of health workers by creating linkages between digital and in-person health services that promote more supportive and effective client interactions.

Improved community health outcomes (prevention, detection, adherence, recovery) and self-care outcomes (self-efficacy, confidence, independence, perceptions of support) through increased access to quality evidence-based digital self-care services.

IMPACT

Strengthen primary and community health systems

Thriving frontline health workforce

Decreased health worker coverage gap

HEALTH SYSTEM AND ENABLERS

Through *Health in Your Hand*, the Center can help to create an enabling environment and build the evidence base for digital self-care and remote care management through global coordination of research, advocacy, and facilitation of supportive standards, policies, regulations, governance, and guidance.

This can be supported through the following activities:

1. Building the evidence of positive health worker and health system impacts
2. Documenting best practices for integrating digital self-care and remote care management with in-person health services
3. Direct engagement & advocacy with relevant government policy and decision-makers to promote supportive policies and regulations

Progress against these investments can be measured by # of research publications, thought leadership publications and best practice guidance documents demonstrating benefits and health worker/health system impacts, and increased # of supportive policies and regulations.

HEALTH WORKFORCE

Through *Health in Your Hand*, the Center can contribute funding and technical assistance to regional programs that support health workers to introduce and monitor digital self-care and remote care management activities along a continuum of care with in-person health care services. This can be achieved through activities that focus on improving the design and implementation of integrated digital self-care approaches to support both health worker and client priorities. Progress can be measured as increased # of digital self-care programs linked to the health care system and increased # of innovations and approaches to expand digital self-care.

COMMUNITIES & CLIENTS

Although less of a strategic focus for the Center, *Health in Your Hand* can contextualize past investments in maternal and child health messaging by continuing to support high-quality digital self-care applications and mobile messaging services that contribute to client self-efficacy and improved linkages to care. This can be supported through activities that increase availability of quality evidence-based digital self-care services for different disease states and patient groups, with progress measured through # of clients who have positive engagement and experiences with digital self-care services.

Conclusion

Direct-to-client digital health technologies hold the potential to solve one of the greatest conundrums in global health: how to achieve true universal health coverage with a severely constrained frontline health workforce. By enabling patient empowerment, digital self-care, and remote care management, these technologies can increase access to care while optimizing when and where scarce human resources for health are deployed. The evidence of benefit for clients across different disease states and health use cases is building. Unfortunately, this is not matched by the evidence of health worker and health system benefit. Too few studies explore the role of health workers in supporting direct-to-client digital services, or the implications for the wider health system. If health workers are to be supported, rather than simply disrupted, by the explosion of direct-to-client digital health solutions, they need to be included in their design, deployment, and evaluation.

The Johnson & Johnson Center for Health Worker Innovation's *Health in Your Hand* initiative will support research, enabling policy, and practical implementation to demonstrate how direct-to-client digital technologies – with strong linkages to in-person care when required – can empower communities to be agents of their own health, while supporting health workers and the health system to deliver quality universal health coverage. We invite other interested parties to join us in this effort.

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