



# Telemedicine supported strengthening of primary care in WHO South East Asia region: lessons from the COVID-19 pandemic experiences

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## ABSTRACT

The COVID-19 pandemic has exposed the fragmentation of the healthcare delivery systems and highlighted the role of resilient primary healthcare systems for a robust public health response during health emergencies. Primary care while being the first point of contact between the citizens and the health systems has received scant attention or targeted investments over the past several decades. Through this narrative review, we aim to outline the potential role of telehealth in augmenting health systems capacity. While teleconsultations have increased exponentially during the pandemic, evidence suggests that utilisation of primary care for non-emergency and non-COVID-19 conditions such as chronic medical conditions has significantly decreased, suggesting that most telemedicine utilisation has been to address an immediate crisis. In countries with pre-existing national digital health framework and enabling regulatory environments, telehealth interventions while strengthening the public health response to COVID-19 also supported the continuum of care at the primary care level. Even after COVID-19 is controlled, telemedicine has the potential to address persistent obstacles to primary care in the South East Asia region, including scarcity of trained healthcare workers, access challenges and costs associated with in-person care. Telemedicine holds promise in strengthening primary care and has the potential to catalyse achieving universal health coverage.

## INTRODUCTION

COVID-19 was declared a Public Health Emergency of International Concern on 30 January 2020 by WHO.<sup>1</sup> Several member states in the South East Asia (SEA) region enforced strict lockdowns with an aim to

## Summary box

### What is already known?

- ▶ COVID-19 disrupted health services in all the countries.
- ▶ Telemedicine plays a vital role in catering to health systems' needs to bring patient closer to the physician and has the potential to ensure comprehensive continuum of care.
- ▶ Despite its usefulness, telemedicine has not been used in routine health services delivery towards strengthening primary care in the South East Asia (SEA) region.
- ▶ Although telemedicine has been in use in many of the countries in SEA region, policy and regulatory challenges restricts its widespread adoption.

### What are the new findings?

- ▶ During the pandemic, several countries in the SEA region passed various legislations and issued telemedicine practice guidelines resulting in increased uptake and acceptance of telemedicine among patients and providers.
- ▶ Despite the increased utilisation of telemedicine, for scale up and long-term sustainability, there is a need to design, implement, evaluate and generate robust evidence around the role of telehealth in strengthening primary care.
- ▶ Potential opportunities for strengthening telemedicine deployment include implementing integrated information systems, stakeholder engagement, capacity building and carefully managing the transition which could further help in mainstreaming telemedicine as the new normal in comprehensive health services delivery.

contain the pandemic. Healthcare workers were deployed for pandemic response and healthcare facilities were repurposed

as COVID-19 centres resulting in widespread disruptions to routine health services delivery. Frontline healthcare workers engaged in contact tracing were at increased risk and with a large number of them getting infected with COVID-19, the disruptions to primary care delivery were accentuated. Public health response to the pandemic included introduction of digital health interventions aimed at exposure notifications, contact tracing, self-care and remote monitoring for those with suspected or confirmed COVID-19. In some instances, both public and private healthcare facilities were shut down to prevent face-to-face contact and thereby reduce the disease transmission in healthcare facilities. Only designated COVID-19 hospitals were functional during the lockdown in many of the SEA countries. Those with pre-existing illnesses who were at high risk for contracting COVID-19 were advised not to visit healthcare facilities and care delivery for non-COVID conditions came to a grinding halt. As the pandemic progressed, several countries in the region introduced or expanded access to telemedicine services to maintain essential medical care as face-to-face visits were deemed unsafe thus making telemedicine critical for care delivery as defined by WHO.<sup>2</sup>

### ROLE OF TELEMEDICINE IN RE-ALIGNING THE PRIMARY HEALTHCARE

Emerging evidence highlights that governments, policy makers and implementation agencies have been facing a number of challenges during the prepandemic era, a predominant one being lack of policy support to foster implementation of digital health interventions.<sup>3, 4</sup> Population growth and improving life expectancy has widened the gap between the availability of essential health services and citizens. Lack of primary care delivery systems and non-existing referral pathways result in overburdening of health systems capacity at secondary and tertiary care centres. Inadequate physical infrastructure, non-availability of competent health workforce and underinvestments into essential healthcare service delivery components including diagnostics and essential medical supplies have been identified as the challenges faced by most low-income and middle-income countries (LMICs) in their pursuit of strengthening primary care. When combined with appropriate investments into health workforce and infrastructural capacity for health services delivery, telehealth is likely to result in better coordination, continuum of care, greater patient engagement and—importantly—greater reliance on information and communication technology in the delivery of care.<sup>5</sup> A systematic review reported that ‘patients tended to adhere to health advice and coaching provided by nurses over the telephone as a substitute for in-person visits’.<sup>6</sup> A report on telehealth in primary care setting in the UK suggests increased patient satisfaction and decrease in the percentage of re-admission.<sup>7</sup>

While comprehensive evaluation of telemedicine in the SEA region has not been systematically undertaken, the recent experience from use of telemedicine during the pandemic and emerging evidence suggest that telemedicine might be a way forward to build strong, resilient primary care systems.<sup>8</sup>

Lack of flexibility and resources have become barriers for primary care systems to adapt to the changing patterns of diseases globally.<sup>9</sup> Chronic diseases account for almost 60% of all deaths and 43% of the global burden of disease. Moreover, 79% of the deaths attributed to these diseases occur in the LMICs.<sup>10</sup> As primary care systems in most member states in the SEA region are still geared towards delivering episodic acute care that is fragmented, integration of chronic disease management and ensuring the continuum of care supported through contextually relevant health innovations including comprehensive telehealth deployment might be a key strategy to strengthen primary care towards comprehensive primary health-care (PHC).

### CHALLENGES TO IMPLEMENTATION AND SCALE OF TELEHEALTH FOR PHC

While telemedicine has been in use for over three decades, its optimal utilisation as a health system strengthening intervention has been underused, lack of policy support to foster the implementation process of such technological interventions has been identified as a key challenge by a range of stakeholders.<sup>11</sup> High-income countries (HICs) have also highlighted challenges at various levels impeding the uptake and scaling up of these digital health interventions, thereby leading to pilotitis.<sup>12</sup> In LMICs, implementers face several challenges ranging from infrastructural costs associated with setting up, slow clinical acceptance, unreliability of internet connection in rural areas, lack of conformance to standards, non-interoperable systems and lack of clearly articulated regulatory frameworks, non-user-friendly technologies and faulty implementation strategies.<sup>13</sup>

Several of the above-mentioned challenges led to telemedicine remaining in an experimental mode in the past, it was only during the pandemic that governments in SEA region recognised the immediate and emerging need and extended policy support to implement telehealth at national scale. A few notable exceptions being Bhutan with an e-health strategy that envisages widespread use of telehealth solutions by 2023 to meet its public health objectives,<sup>14</sup> Sri Lanka incorporating telemedicine as an integral component of its national e-health strategy launched in 2016,<sup>15</sup> Indonesia recognised the role of telemedicine for organisation of health service facilities in remote areas and very remote areas.<sup>16</sup> Examples of regulatory and policy interventions in the SEA region include India’s Telemedicine Practice Guidelines 2020,<sup>17</sup> interim guidance on use of telemedicine by Indonesia permitting

doctors and dentists to provide telemedicine services through mobile apps and Information and Communication Technologies (ICT) systems. This was further supported by the Indonesian Medical Council issuing a regulation regarding the Clinical Authority and Medical Practice through Telemedicine during COVID-19,<sup>16</sup> Bangladesh Medical and Dental Guideline on telemedicine (July 2020),<sup>18</sup> notification issued for the telemedicine by Thailand (July 2020),<sup>19</sup> telemedicine guideline (May 2020) issued by Nepal Medical Council.<sup>20</sup>

### TELEMEDICINE IMPLEMENTATION EXPERIENCES FROM THE SOUTH EAST ASIA REGION

Telemedicine has been pilot tested in India for two decades. In 2001, the Department of Space through Indian Space Research Organisation, initiated a nationwide telemedicine programme and provided necessary infrastructure for 384 hospitals with 60 specialty hospitals connected to 306 remote healthcare facilities.<sup>21</sup> Under the national telemedicine network scheme, between September 2001 and August 2016, a total of 1661 teleconsultations and follow-ups were carried out, with 3576 beneficiaries, and 148 Continuing Medical Education (CMEs) conducted to benefit medical and allied health professionals.<sup>22</sup> Until the pandemic, there was no legislation or guidelines for the practice of telemedicine.

Early into the pandemic, in March 2020, India launched the telemedicine practice guidelines that provided instructions for prescribing medications and conducting follow-up care for chronic diseases, thereby enabling patients to consult from home with medical providers via telemedicine services. These guidelines were notified in the gazette in June 2020.<sup>17</sup> An indigenously developed telemedicine initiative 'e-Sanjeevani' that offers services in the hub and spoke model through the Health and Wellness Centres under the flagship Ayushman Bharat programme of Government of India launched a new version for outpatient consults in April 2020 and within 6 months, catered to 0.8 million telemedicine consultations across India. It was also noted that over 20% patients use e-Sanjeevani to consult with doctors more than once realising the potential for telemedicine to facilitate the continuum of care and in March 2021, it completed 3 million consultations.<sup>23</sup> A volunteer-led programme by a group of Indian health start-ups, supported by 7000 healthcare professionals developed a telemedicine platform named project 'StepOne' offering tele-triage for COVID-19.<sup>24</sup> In partnership with 16 state governments in India, they either established new toll-free numbers or managed the existing emergency health helpline numbers that governments were using for ambulance services. As the pandemic progressed, the services were adapted to offer telemedicine consultations and remote monitoring for those testing positive and telepsychological support services for those on home isolation. The platform has catered to 0.5 million cases of COVID-19 in India.

In Myanmar, telemedicine has been implemented from 2017 in partnership with a leading telecommunication service provider to facilitate consultations between patients and doctors. The telemedicine services were scaled up during the pandemic where the government along with an implementation partner enhanced the availability mobile tablet devices with embedded health information packages and decision support tools for pandemic response. This initiative supported frontline healthcare workers and equipped them with contextually relevant information to support the pandemic response as well as improving primary care delivery.<sup>25</sup>

Independent health platforms such as 'Halodoc' has supported Indonesia increase its health workforce capacity through contracting a dedicated pool of clinicians who provide consultations for healthcare workers in the community or patients at home during the pandemic.<sup>26</sup> In Sri Lanka, the availability of a robust primary care system, comprehensive digital health infrastructure and framework for private sector engagement outline in the national e-health strategy supported the introduction and rapid scale up of a telemedicine helpline and consultation service in partnership with 'MyDoctor' a telemedicine platform provider.<sup>27</sup> Moreover during the pandemic, a number of private telemedicine providers supported the Ministry of Health through making their telemedicine platforms available for use in public health response for COVID-19 as well as supporting the delivery of routine health services delivery.

In Nepal, the remote and rural healthcare units rely on provider to provider telemedicine consultations where health assistants consult specialists at tertiary care centres in medical colleges and teaching hospitals to reduce the necessity for patients to travel long distances for postoperative care.<sup>28</sup> In Bangladesh, private sector-led family health centres leveraging telehealth service delivery has been pivotal in supporting government's hotline which was used to identify and triage COVID-19 cases.<sup>29</sup> The National Institute for Mental Health and Neuro Sciences in India also launched their Interactive Voice Response System-based tele outpatient services providing mental health support services even as India witnessed a large number of suicides during the pandemic,<sup>30</sup> however these recently introduced telehealth interventions are yet to be evaluated.

### BEYOND THE PANDEMIC—TOWARDS A SUSTAINABLE TELEHEALTH ECOSYSTEM

Electronic consultations were considered as illegal in a few regions of HICs (the USA) and later were brought within the ambit of law by making necessary provisions and the pandemic later forced to approve for patient-doctor telemedicine consultations.<sup>31 32</sup>

Evidence also suggests that telemedicine is highly dependent on users' needs.<sup>33</sup> However, among the

providers acceptability is subjected to caveats of multiple specialities involved and communication between specialities,<sup>34</sup> requirement of good quality video and audio experience, availability of digital healthcare records and a human-centred design.<sup>35</sup> While there has been widespread use of telemedicine during the pandemic, mechanisms to evaluate its impact and measure outcomes and acceptability among end users have not been addressed comprehensively. Healthcare delivery systems that use electronic health records are well suited for telemedicine, as clinicians can access patient files remotely. For telemedicine to be scaled up optimally in the context of PHC, countries would need to consider a comprehensive digital health strategy that includes investments into infrastructure such as electronic health records, e-prescriptions and linkages to diagnostic information systems and citizen engagement interfaces. Incorporating feedback from all stakeholders into improving functionality and ease of operations will be key as large-scale telemedicine programme as considered by member countries.

### THE PROMISE OF THE NEW NORMAL FOR PHC

As a key component of comprehensive PHC, primary care plays the critical role as the first point of contact between citizens and the health delivery systems. PHC has been identified as an essential pillar to achieving the universal health coverage. However, primary care systems in most countries have been designed towards delivering episodic acute care and predominantly focused on improving reproductive maternal and child health indicators. Lack of operational flexibility and limitation of resources have been long recognised as barriers for PHCs to adapt to the changing patterns of diseases globally.<sup>36</sup> With the growing burden of non-communicable diseases and multiple morbidities, integration of chronic disease management and novel operational models to ensure contextually relevant health services delivery are critical to realigning PHCs as health systems build back beyond the pandemic.

During the pandemic, the Indian state of Andhra Pradesh introduced a 'missed call' service-based telemedicine offering for non-COVID-19 conditions. A command centre was manned by a dedicated team of generalists and specialists, they were available on roster to provide telemedicine consultations. As healthcare facilities could not be accessed for fear of contracting COVID-19, medications prescribed during the teleconsultations were home delivered through a well-coordinated mechanism of an existing network of the public health facilities (PHCs) and frontline healthcare workers. Those requiring hospitalised services or in facility services such as haemodialysis were provided transport and referred for such specialised services thereby ensuring the continuum of care when routine health services delivery was disrupted.<sup>21</sup> Where appropriate primary care infrastructure is already existing, telehealth platforms offer an opportunity to connect

the different components of the primary health services delivery and help establish referral pathways for specialty care where required.

### TELEHEALTH IN HIGH-INCOME CONTEXTS AND IMPLICATIONS FOR PHC IN LMICS

Despite the exponential increase in the use of telemedicine during the pandemic, learnings from high-income setting could help inform appropriate strategies for realigning PHC in other contexts including LMICs. In the USA, the COVID-19 pandemic has been associated with changes in the structure of primary care delivery, with the service delivery components through telemedicine consultations differing from that of facility-based care. For example, (a) in-person primary care visits decreased 50.2% in the second quarter of 2020 compared with second quarter in 2018 and 2019, (b) telemedicine primary care visits increased from 1.1% of the total visits in second quarter of 2018 and 2019 to 35.3% of the total visits in second quarter of 2020, (c) compared with in-person primary care visits, telemedicine consultations were less likely to assess blood pressure and cholesterol levels, indicating that telehealth currently has limitations in prevention and chronic disease management.<sup>37</sup>

In India, the flagship Ayushman Bharat Pradhan Mantri Jan Arogya Yojana, a government-sponsored health insurance-based health services delivery programme, witnessed 50% drop in average weekly utilisation of services during the initial 10 weeks (25 March to 2 June) of the pandemic as compared with the prelockdown phase.<sup>38</sup> The subsequent recovery in the utilisation of in-hospital services even while the restrictive measures in place as the pandemic progressed could be attributed in part to the widespread availability of telemedicine services facilitating consultations and referrals in both the public and private sectors.

In the UK, guidelines were disseminated for video consultations in primary and specialist care during the COVID-19 pandemic. These guidelines were developed using a co-design approach where end users' perspectives informed the practices, such as role of video consults to avoid face-to-face consultations with doctors citing risk from infection during the COVID-19 pandemic. Several technical considerations were identified as critical by patients.<sup>39</sup> In Israel, use of telemedicine technologies by primary care paediatricians increased substantially during the first COVID-19 lock-down. The study highlighted that paediatricians expected that use levels will recede after the pandemic.<sup>40</sup>

### ETHICS, REGULATORY AND FUTURISTIC TELEHEALTH

The ethical aspects of use of the telemedicine need to consider a privacy by default design approach and all measures including legal frameworks to ensure

confidentiality and privacy of the users of these systems. It must be ensured that an ethical and safe approach is adopted to develop and use digital health technology and appropriate training is imparted, to enhance the capacity of the human resources for health, leading to an overall health system strengthening.<sup>41</sup> As primary healthcare is being built back better post-pandemic, video consultation platforms could serve a complementary role. Embedding machine-learning algorithms into the video consultation platform could facilitate the automation of triage, particularly for responding to queries and identifying those at risk using a symptom checklist and interactive voice interface that uses natural language processing capabilities. A potential model of remote home monitoring using video consultations and remote virtual presence has been described for chronic conditions such as end stage kidney disease.<sup>42</sup>

Telemedicine reduces the opportunity costs associated with referral to higher centres while also easing the burden on the tertiary healthcare systems and improving the access of healthcare in rural and remote settings. The 'new normal' of continuum of care could leverage telemedicine at its core towards building back resilient PHCs. Below outlined are potential opportunities where telemedicine could bridge the existing gaps in the SEA region:

1. Integrated service systems (primary, secondary and tertiary) and information systems;
2. Efficient referral systems;
3. Engaging all the stake holders;
4. Evidence-based change management strategies;
5. Capacity building and increased community engagement.

## CONCLUSION

While telemedicine and telehealth have been in use over three decades, the COVID-19 pandemic has highlighted the opportunities that these technologies offer to bridge existing gaps in health services delivery. However, the hopes that telemedicine will solve the persistent structural problems, specifically in primary care are likely to be short-lived beyond the pandemic. While telemedicine as any technology is a tool and cannot solve the structural challenges as outlined, it can certainly improve capacity, operational efficiencies and access while also reducing time pressure and costs in the long term. There is a paucity of literature on provider acceptability, role of patient literacy, telecommunications and healthcare delivery infrastructure and regulatory environments. We propose that the opportunity offered by the pandemic-driven uptake of telemedicine be translated to evaluate the role of telehealth in augmenting health systems capacity to deliver PHC. Further synthesising the evidence on acceptability, usability and regulatory environments to identify the barriers and enablers towards creating a sustainable telehealth ecosystem in the SEA region

would be a forward step towards an informed strategy towards universal health coverage.

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