Bridging the digital divide in health care

The global reach of mobile phones has all the hallmarks of a success story. For many in developing countries, it's often the only way to connect to the internet and access valuable knowledge, resources, and trade opportunities that would otherwise be out of reach.

But alongside this empowering potential lies a troubling reality. Just under half the world's population is still cut off from the internet. This statistic was highlighted in SDG Pulse, the first edition of an annual report on progress towards the sustainable development goals (SDGs), which was launched on June 25 by the UN Conference on Trade and Development (UNCTAD).

It's a trend that has been there for some time, says Steve MacFeely, UNCTAD's head of statistics and information, in an interview with *The Lancet Digital Health*. "For services, that limits potential", he says. "We're surprised that people haven't picked up on [it]."

Many of the report's estimates are based on the latest data the International Telecommunications Union released this year. A report by the GSM Association, the global trade body representing mobile network operators, which was released last year, documented a similar usage gap. More recently, the UN secretary-general's High-level Panel on Digital Cooperation warned that an increasingly digitised world risks leaving marginalised people behind.

Digital health is no exception to the upward trend in technology use. Either through electronic systems (eHealth) or mobile apps (mHealth), digital systems are becoming a part of health care around the world. In May last year, member states adopted a resolution at the 71st WHO World Health Assembly, widely seen as a milestone for progress in the field.

The WHO resolution makes no mention of a digital divide, but greater use of information and communication technologies (ICTs) features as a priority in the first of its recommendations to member states, with digital technologies seen as a catalyst for progress towards the SDGs.

UNCTAD is responsible for keeping tabs on progress in the proportion of the population covered by a mobile network, one of the indicators under SDG 9. Each one of the SDGs' 232 official indicators has a custodian agency responsible for monitoring and reporting.

The first edition of UNCTAD's annual report brings some good news. It highlights soaring mobile phone subscriptions globally, and more so in developing countries, where the number of subscriptions per 100 inhabitants rose from 23 in 2005 to 103 in 2018. Mobile network coverage is equally strong. "Except for sub-Saharan Africa, the share of the population lacking mobile telephony coverage does not exceed five per cent in any region", writes UNCTAD in the report.

But widespread access to the internet is still elusive. Just 45% of people are connected in developing countries, and in the least developed countries the proportion is just 20%.

4G or newer wireless systems are still out of reach in Africa and western Asia, which rely on slower systems. Pockets of the population miss out on connectivity even more. According to UNCTAD's report, the percentage of people using the internet is three times lower in rural than in urban areas, and is 5% lower for women than for men. And the gap is wider when it comes to broadband: although subscriptions have increased globally, they're still much lower in developing countries where services also tend to be slower and more expensive.

It all adds up to a digital divide, with billions increasingly within reach of, but still disconnected from, online services.

What this backdrop means for equity in health care is up for debate. Is the glass half empty, or is it half full? "It's a matter of the lens that you choose to take", says Alain Labrique, professor and director of the Global mHealth Initiative at the Johns Hopkins Bloomberg School of Public Health in the USA, in an interview with *The Lancet Digital Health*. Labrique co-authored a 2016 report that found weaknesses in the evidence base behind mHealth interventions.

"I'm a little cautious about using words like 'leaving [people] behind', because I think that frames it in a very negative view", he says. "Flip the interpretation…to consider 50% of the world has access to internet. That is a phenomenal accomplishment."

The benefit is clear already, he argues, in how access to reliable health information has increased in the past 20–30 years.

That's not to overlook barriers to equal access. Labrique says it's important to keep trying to reach the 5–10% of people who can't afford a mobile phone.

Skye Gilbert, deputy director of the Digital Health Solutions programme at the US-based non-profit PATH, tells *The Lancet Digital Health* that giving people the option to access internet services is vital. "Digital is fundamentally an amplifier", she explains. "It can be used to exacerbate inequities. But it can also be used to bridge and support increasing progress towards equity."

One example of this two-sided coin is PATH's Healthy Markets project in Vietnam, which took to social media to tackle stigma and boost demand for HIV testing. It reached out to young people in urban areas who identify as LGBTQ by creating a Facebook group to share information about HIV prevention and connect them to health providers.

Gilbert says people who are too hesitant to ask questions about HIV at a clinic would be invisible without digital.

For the **International Telecommunications Union estimates of the global population using the internet** see https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

For the **first edition of UNCTAD's SDG Pulse** see https://sdgpulse.unctad.org/introduction

For the **announcement of UNCTAD's first annual statistical analysis of selected SDGs** see https://sdg.iisd.org/news/unctad-releases-first-annual-statistical-analysis-of-selected-sdgs

For the **GSM Association report** see https://www.gsma.com/mobilefordevelopment/resources/state-of-mobile-internet-connectivity-2018

For the **World Telecommunication and ICT Indicators Database 2019** see https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx

For the **recommendations by the High-level Panel on Digital Cooperation** see https://www.un.org/en/digital-cooperation-panel

For the **global strategy on digital health** see https://www.who.int/ehealth/en

For the **World Health Assembly resolution on digital health** see http://apps.who.int/gb/ebwha/pdf_files/WHA71/A71_R7-en.pdf?ua=1

For the **potential for progress in global mHealth initiatives** see https://www.scidev.net/global/health/feature/the-arduous-path-to-make-mhealth-work-at-last.html

For the **2016 report on mHealth interventions for health workers** see https://media.wix.com/ugd/f85b85_cc8c132e31014d91b108f8dba524fb86.pdf

For **PATH's healthy markets project** see https://www.path.org/articles/innovative-healthy-liver-happy-life-campaign-vietnam-integrates-hiv-hcv-testing

For the **UN Declaration of Digital Independence** see https://news.un.org/en/story/2019/06/1040131

For the **Mobile Gender Gap Report 2019** see https://www.gsma.com/mobilefordevelopment/resources/mobile-gender-gap-report-2019/?utm_source=blog&utm_medium=website&utm_campaign=gender_gap_report&utm_content=gender_gap_report

For the **WHO Digital Health Atlas** see https://digitalhealthatlas.org/en

"Then the flip side of that is, there's LGBTQ individuals that might have the same hesitancy to connect with a health system that are in rural communities. But in a lot of those communities, the Facebook subscriptions are not very high." A similar exclusion would come up if the project were rolled out in a country such as India, she says, where on average 40% fewer women than men are online.

The Ebola outbreak in the Democratic Republic of the Congo is another case where the lack of connectivity matters. Without internet access, news can take weeks to travel, says Gilbert. "When you have an outbreak of a highly contagious disease, the difference of 2 weeks is a really big deal."

For now, the promise overshadows concerns over inequity. Health centres haven't abandoned traditional methods like telephone calls or postcards, and many digital health tools don't rely on internet connectivity to work—medication reminders sent by text message have been particularly successful.

Looking to the future, Labrique is optimistic. Confident that more people will see the benefit of digital health as connectivity continues to grow—because better reach is better business for ICT companies—he sees the digital divide as a transition stage, typical of how the introduction of new technologies usually evolves. Just like the adoption of now-established technologies like vaccines, ultrasonography and x-ray scans, progress in digital health will be staggered, he says. "The moral quandary is greater to say, should we not do this, for the 50% of this [unconnected] population?"

Gilbert is more cautious, citing emerging innovations, such as precision medicine, that rely on computational analysis of genetic material. "Being excluded from the digital domain will have more and more implications for someone's health status and for their ability to access those innovations", she says. "So the digital divide will become more and more tied to health and equity over time."

It's not yet high on the agenda of the digital health community. But Gilbert sees signs of change. Just last June, the UN High-level Panel on Digital Cooperation, a panel chaired by influential philanthropists Melinda Gates and Jack Ma, released its report to the UN secretary general that highlights digital inclusion. "[It] was the first time I really saw a very high profile set of individuals talking about the digital divide", she says.

Much needed evidence about the digital divide from a health perspective is also beginning to emerge. A collection of papers published last year—"a great start", says Gilbert—explored the impact of digital technologies on gender and health equity. Earlier this year, the GSM Association released a report on the mobile gender gap based on data from 18 low-income and middle-income countries.

She lists other areas where more evidence is needed—from the effects of the divide on non-communicable diseases, to the time lag in access to digital innovations between wealthier and poorer countries.

The motivation is far from academic. There are basic questions to answer, one of them being whether inequity is made worse because certain services are available through digital channels. "I haven't seen any evidence that suggests this", says Labrique, adding that it's important to keep monitoring whether introducing these technologies might create or exacerbate existing inequity.

So far, the data have been patchy. Although the WHO Digital Health Atlas maps relevant projects around the world, there's no one-stop-shop for statistics on who has access to health-care technologies. According to SDG Pulse, the digital divide shows up in measures of internet use for shopping: the proportion of people using these services is much lower in the least developed countries. But ICT statistics don't capture the use of digital health tools.

Gilbert says that with more evidence on the downsides of exclusion and the costs to society, for example, governments could more easily secure finance for projects that extend digital infrastructure into rural areas. Developers might also be encouraged to design data collection so that exclusions can be monitored. "And then some of that evidence could also be used to help direct focused efforts to do extension work, or where you haven't quite yet closed the digital divide [to] think very creatively about how to be inclusive", she adds.

MacFeely says UNCTAD is even pondering whether internet access should now count as a basic service. "So far, basic services have tended to mean shelter, food, water, maybe sanitation. But in the digital world, the question now is WiFi, is that actually a basic service?"

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