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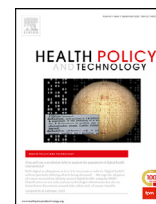
Editorial

Digital health: Is the glass half-full or half-empty?

After years of enthusiasm around digital health and its limitless promises, last year a wave of scepticism rose from a strong voice – that of the UN Special Rapporteur on extreme poverty and human rights. In October 2019, his office submitted a report [1] highlighting the risk of a gloomy digital future (or "digital dystopia") where rampant digital development could rapidly turn to automate predicting, identifying, surveillance, detecting, targeting and punishing. The report rapidly became a reference for many and the debate around digital health became progressively polarized.

In light of the ongoing COVID19 pandemic and global initiatives to promote social distancing, mobile telephony and digital health has again grabbed the spotlight. New digital solutions against coronavirus have flourished: from the popular dashboard [2] created by Johns Hopkins University where one can monitor the worldwide spread of the virus, to widely-available telemedicine services to avoid overwhelming care facilities, prioritise acute COVID19 cases and prevent unnecessary spread of infection, and even artificial intelligence (AI) driven systems which can read a CT scan and diagnose COVID19 in a few seconds [3], and a plethora of Chatbots for self-diagnosis.

In the middle of this pandemic a few continue to cast doubts about the goodness of digital health, not to mention the safety, effectiveness and relevance of these solutions. Understandably, the risk of a digital dystopia has actually never been so high. South Korea has developed an App [4] which tracks patients' health status as well as their location to make sure they are not breaking their quarantine and Israel has announced the upcoming deployment of electronic counter terrorism measures to track COVID19 infected people even if this infringes on privacy [5].

So, is "digital health" good or bad? This article aims to promote a productive exchange by fine-tuning the discussion without hindering the opportunity for a sea-change in global health, characterized by a continued acceleration of progress towards Sustainable Development Goals. To properly address the debate around the dark (or bright) side of digital health, one must begin by specifically defining what is being discussed – to avoid the error of painting with too broad a brush. Over the past decade, it has become clear that the term "digital health" does not describe a single monolith, but rather a broad domain of innovations spanning a large swath of solutions. Digital health goes from hardware and software solutions and services, and includes telemedicine, training and educating healthcare professionals, web-based analysis, email, mobile phones and applications, digital fora, text messages, wearable devices, and clinic or remote monitoring sensors [6]. A Google search for disease symptoms by a patient may be thought of as digital health.

Another element for consideration when debating the potential and present value of digital health is the contextual environment: digital impact and appropriateness is massively dependant on location. Imagine access to e-learning as an example: one can follow online classes on a smart phone in the train on one's way to work in Europe, while the same application might crash multiple times on a modem-based PC in a rural office in a low-resource country. On the other hand, a text-message reminder or even a handheld ultrasound device might have a life-saving capability in a South Asian village but not work effectively in a suburb of Washington D.C., stymied by regulatory obstacles and facility-centric health systems.

WHO and the broader health community recognised the lack of a shared and standardized vocabulary around digital health and, in 2018, proposed a taxonomy [7] which categorizes the different ways in which digital and mobile technologies are being used to support health system needs. The WHO framework defines types of digital health solutions and provides names and even synonyms to the vast spectrum of digital technologies, their applications, and the challenges they aim to overcome. The Coronavirus web dashboard, for example, falls under the category "Map location of health events", the app for self-assessment of COVID19 is a "decision support for clients", the hospital call centre is part of "telemedicine", and the South Korean App belongs to "Longitudinal tracking of clients' health status".

The list goes for several pages spanning from "personal health tracking" Apps (e.g. for a woman, she enters the date of her last period and the service informs her of her fertile days during the cycle), to "automated analysis or predictive medicine" (e.g. automated identification of persons at risk), to "healthcare provider decision support" (e.g. guidance step by step through the process of registering sick children, listening to their complaints, performing an examination, delivering diagnoses, and administering treatment). While the classification was developed to identify gaps and reduce duplication, evaluate effectiveness, and facilitate alignment across different digital health implementations, it can be also useful for a discussion on ethics and risks.

Hence, we advocate more nuanced debate - considering the harms and benefits of each digital health strategy on its own merit, within the context of its implementation, in light of the status quo and alternative investments. The recent WHO Digital Health Guidelines [8] released in April 2019 take such a systematic approach, having been commissioned thorough Cochrane Systematic Reviews of the evidence in specific digital interventions and undertaken an evidence-to-decision process prior to issuing recommendations. When the Special Rapporteur states that benefits of

digital technologies are for those "who are economically secure and can afford to pay for the new services", the broad domain of digital health for low-resource setting is neglected. If one were to explore the evidence around healthcare provider decision support tools, one might argue quite the opposite. For example, in Burkina Faso, one of the poorest countries in the world, such a tool (IeDA by Terre des hommes [9]) has been developed and deployed at national scale to help healthcare workers accurately diagnose and treat sick children in remote areas, even when the health professionals are poorly trained. The tool increases the percentage of severe cases properly diagnosed and leads to a significant reduction of antibiotic uses [10]. Such a digital tool is designed for the most vulnerable and unreachable, and not for those who might be considered "economically secure".

The Special Rapporteur's arguments are worthy of consideration when contextualized, and in some instances overlap specifically with caveats placed by the WHO Guideline Development Group responsible for the WHO Digital Health Guideline. For example, in the case of digital solutions reaching out to clients with alerts or reminders, clients who are inaccessible by mobile phone or are illiterate may find themselves excluded from certain program opportunities - IF they are not designed with these populations in mind. Such issues should rightly be addressed; as such people are often those who would benefit the most from these interventions. The Digital Health Guideline reflects carefully on ten specific evidence-based recommendations, accompanying these with implementation considerations to guide policymakers. As stated in the document, "digital health has the potential to help address problems such as distance and access, but still shares many of the underlying challenges faced by health system interventions in general, including poor governance, insufficient training, infrastructural limitations, and poor access to equipment and supplies. These considerations need to be addressed in addition to specific requirements introduced by digital health. As the context will moderate the eventual impact of digital health interventions, the broader health system and enabling environment become especially critical." Technology is no panacea for decades-old health system challenges, neither is it the root of a future dystopian society. It will not solve the COVID19 pandemic, but digital health could be a robust weapon in the fight against it.

A positive approach has been taken by the new WHO–UNICEF–Lancet Commission on the future for the world's children [11]. By narrowing the scope to specific categories of digital health, the authors were able to engage in a constructive discourse highlighting both potential and risks for numerous types of technology, while suggesting solutions. "For example, predictive risk modelling has been embraced both as a powerful tool for preventing and detecting child abuse and criticised for individualising social problems and reifying oppressive frameworks of risk and abuse." They conclude with a call to apply the precautionary principle where the burden of proof (i.e. safety) lies on the proponent of such predictive models.

With digital as ubiquitous as it is, it is inaccurate to refer to "digital health", without precisely defining what is being discussed. WHO leadership in the form of a Classification of Digital Health, and the recent Guidelines are timely. These documents highlight the need for more, high-quality evidence of impact and cost, across varied global contexts. The Guidelines are considered dynamic, open to new evidence as it emerges. Moving forward requires an empirical, fact-driven debate – where positive and negative findings are considered in their context. As in medicine, today we distinguish between obstetrics, surgery, dental care, homoeopathy, oncology, etc., and these different topics are discussed separately, highlighting benefits and side effects of novel techniques and ideas within each area of practice. Overarching ethical and legal frameworks do help to guide many basic cross-cutting principles such as respectful care and patient confidentiality. We urge the adoption of a more nuanced vocabulary around digital health, using the WHO Classification not only to evaluate technology's effectiveness but also to frame future discussions around risks, ethics and, of course, benefits.

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