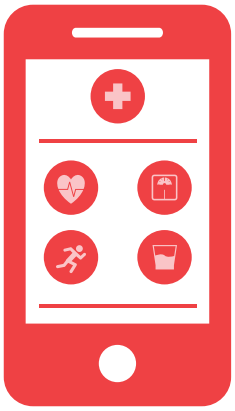

Technology in Healthcare – THE NEED FOR BETTER HEALTH LITERACY

Text by Dr Wong Tien Hua

In my column published in the March 2017 issue of *SMA News* (https://goo.gl/CpTJoP), I wrote about how technology has the potential to both disrupt and transform healthcare. For example, the use of healthcare technology to empower patients in "self-services" enables faster and easier access to medical information and intervention. Additionally, it reduces costs of manpower without necessarily affecting the quality of care while achieving fast, cheap and good service.

Such healthcare technologies already exist and are finding their way into consumer electronics, from mobile apps to healthcare "wearables" that detect and track personal health data. Other technologies include telemedicine, health kiosks and vending machines. Even if we do not use such healthcare technology presently, we engage in similar technology on a regular basis, from self-check-outs at supermarkets to self-check-ins at airports. However, healthcare is much more complex than purchasing groceries or printing boarding passes from a machine.

Medical knowledge is not only so vast that it is beyond any single human to comprehend fully, but it is also constantly expanding and changing in tandem with scientific discovery. Even medical professionals have difficulty keeping up to date with the latest advances. There is therefore a great imbalance of information between the doctor and the patient, with the doctor typically possessing most of the information – the so-called "information asymmetry". The fact that medicine is rife with all sorts of scientific terminology and medical jargon makes this imbalance even more acute as the public struggles to understand the terms.

Patients not only need to "level up" their knowledge in the field of medicine, but they also need to have a change in their attitudes towards healthcare before they can engage healthcare technology. Patients would have to possess a certain level of *healthcare literacy*. We look at the case with smartphone apps as example.

Health apps

Health apps on smartphones are downloadable software that purports some health benefit to users. They can be broadly categorised into apps for medical conditions, such as blood glucose trackers for diabetics and blood pressure trackers for hypertensives, and apps for general wellness, such as exercise trackers and calorie counters. Wearables, such as Fitbit and Jawbone fitness trackers, keep track of users' daily step count and physical activity through sensors and transmit the data to the smartphone apps.

The potential to change behaviour is tremendous, given the ubiquity of smartphone usage and, in particular, the high degree of penetration in all levels of society irrespective of educational background and age groups. Health apps can have a great impact on morbidity and mortality through the encouragement of healthy behaviour via using choice architecture, assigning challenges and rewards, and prompting regular reminders to users.

Some studies show that patients do benefit when doctors recommend certain health apps to encourage behavioural change, in place of traditional follow-up material, given the limited contact time with the doctor. Apps incorporating weight loss programmes work well because patients carry and use their mobile phones all the time.[1]

On the flip side, the problem with apps is that there are too many available – literally in the tens of thousands. I looked up the "Health and Fitness" category in the App Store on my iPhone and found a bewildering number of apps ranging from workout trainers to food and nutrition calorie trackers, and sleep aids. We have no idea which of these apps work and which do not, and whether there is clinical evidence of benefit. The majority of such apps are not regulated, and we do not even know if they were properly tested. Take for example apps that help users check for cancers, detect depression or predict heart disease – should these be regulated?

Some people may argue that the apps do no harm, but unnecessary data can cause anxiety (disease) or at the minimum, some guilt (calories). Is it really necessary to track arrhythmias, oxygen saturation and continuous blood pressure in the general not-at-risk population? What if the readings are not accurate or even wrong? Isolated health data can also be misinterpreted, as it does not consider the patient as a whole.

It is clear that even in the realm of health apps, there is too much choice

and confusion for the consumer. Studies show that the use of wearables may not be sustainable, and that usage typically falls off after a few months as interest rapidly wanes.

Of more importance is whether patients know what to do with the data that is collected, and if they are able to make sense of the information. Patients with existing ailments, such as chronic diseases, may benefit from wearables and health apps, but they need to first understand their own conditions and know the important perimeters to track and the critical ones to take action on.

Health literacy

Health literacy refers to the ability of patients to seek, understand and make use of basic health information and healthcare services, in order to make appropriate decisions for themselves. It involves communication, culture, and contextual factors.

According to Theo Raynor, there are three aspects to health literacy. These are (1) the ability to read and understand health information; (2) a wider ability to engage with the healthcare process; and (3) the removal by healthcare systems of unnecessary complexity and barriers to patient understanding and involvement.[2] Health literacy is now not only about attaining individual literacy and numeracy, but addressing a wider interplay between patients and the healthcare system, where the design and delivery of services are equally important. A patient who is of *high literacy* is one who knows his/her normal state of wellness, medical condition and medical history, if any. He/she is also able to navigate the healthcare system by seeking out the necessary information, locate the services that he/she needs, communicate his/her requirements to the provider, and also engage in self-care and manage his/her own chronic disease.

In Singapore, we have a highly literate and educated population, but I suspect that our health literacy is not on par with First World standards. Anecdotal experience suggests that our patients are still dependent on healthcare professionals to make decisions for them and may have very little awareness of their own medical conditions. Often, they do not know the names of the drugs they are taking (except for the colour and shape of the pill). Additionally, they may still be deeply influenced by cultural models of health and illness, thereby being misinformed about the nature of the body and disease. Our emergency departments are regularly inundated with patients attending for minor medical conditions, despite the daunting prospect of having to wait long hours in queue.

The benefits of technology are limited by the level of health literacy. Technology requires that the user is able to make use of data and have the knowledge to apply that data in meaningful action. Technology can also help to reduce dependence on healthcare professionals by allowing more autonomy for the patient, through direct access to health statistics and information. However, patients must first know the meaning of the numbers in the calories they eat or energy that they burn, so that it will motivate them to go on a diet or start an exercise programme. Hypertensive patients who track their blood pressure readings need to know what constitutes high blood pressure, what the normal blood pressure levels are, and when to report abnormal results to their doctor.

The ability of patients to understand and make use of healthcare services depends on effective engagement and communication. We can improve health literacy by inculcating good health habits in schools and incorporating health education that addresses specific health issues in the context of local culture and beliefs. Technology can play a role in reducing complexity by incorporating good design and user-friendly interfaces, making it easier for patients to access healthcare. ◆

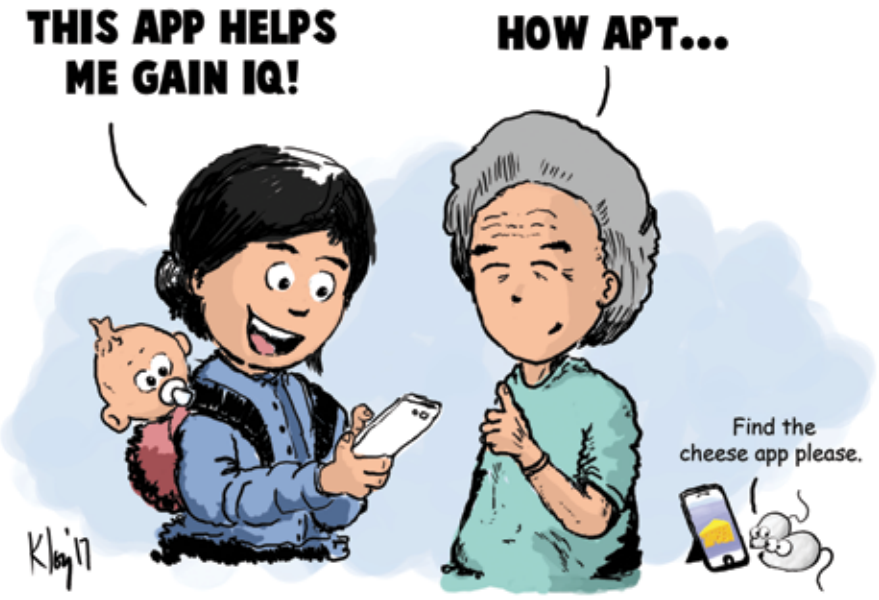

Illustration: Dr Kevin Loy

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2. Theo Raynor DK. Health literacy. BMJ 2012; 344:e2188.

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