

## Chapter 3

# Healthcare Gets Smarter: Smart and Digital Technology Usage by Maternal and Neo- Natal Healthcare Providers

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### **ABSTRACT**

*There is the emerging use of smart and digital (modern) technologies, such as smart TVs, Internet of Things-connected devices, mobile devices, Big Data software and analytics in healthcare practice and administration. The deployment of such technologies is meant to provide quality, prompt, accurate, tangible information and other critical resources for patients. At a national level, drone technology is being used in African countries like Ghana and Rwanda to deliver critical medications and blood supplies to hospitals difficult to reach because of poor road infrastructure. This chapter of the book explores what technologies are being deployed at institutional levels to provide efficient medical care to patients. Fifteen maternal and neonatal health care practitioners in Accra, Ghana, were interviewed on their use of modern technologies in healthcare administration and delivery and what their challenges are. The study also explored what technologies they currently do not have that they think will be of benefit to their practice.*

### **1. INTRODUCTION**

Healthcare providers are leveraging smart technologies, such as smart TVs, Internet of Things-connected-devices, mobile devices, big data software and analytics to provide quality, prompt, accurate, tangible information and other important resources for clients or patients (Foley, 2017). These newer models of healthcare delivery thrive on collaborative efforts by different caregivers, as well as patients and are largely being facilitated by mobile technologies (Nasi, Cucciniello, & Guerrazzi, 2015). Under this circumstance, it requires that caregivers proactively deploy technology to track patients' wellbeing and also use technology and information to better engage patients and meet or exceed their expectations.

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Digital and smart technologies are used for disease surveillance, treatment support, epidemic outbreak tracking and chronic disease management by healthcare practitioners. It is in the light of this that Kahn, Yang, and Kahn (2010) advanced that:

*Innovative applications of mobile technology to existing health care delivery and monitoring systems offer great promise for improving the quality of life. They make communication among researchers, clinicians, and patients easier, and as chronic disease becomes more prevalent, mobile technologies offer care strategies that are particularly suited to combating these conditions (Kahn et al., p. 254).*

In essence, while the technologies facilitate easy accessibility to patient records and offer more efficient diagnosis, patients are able to use the technologies to access relevant educational content related to their health and to manage their lives health wise.

Essentially, smart and digital technologies, be it portable or otherwise, are transforming health care systems, as they help provide accurate information about diagnosis and medications, clinical scoring and also facilitate access to healthcare resources. In this chapter, all digital or smart technologies and applications are operationalised as modern technologies. This is because they are emergent technologies that are constantly being updated and improved.

## **2. CONTEXTUAL BACKGROUND**

In the management of non-communicable diseases like diabetes, there is evidence that technology is a great asset. Ghana is ranked sixth in sub-Saharan Africa and counts over seven million people with diabetes in the country. Among countries within the sub-Saharan African region, there are approximately 13.6 million people living with diabetes (Daily Guide, 2017). Among diabetics, there has been reported complications and reduced quality of life in certain parts of the world and Ghana is not likely an exception. This is as a result of poor self-management skills, lack of personalized education and clinical inertia, leading to grave complications (Goyal & Cafazzo, 2013).

There have been constant improvements in technologies that are used in hospital settings to offer healthcare, especially, in the area of medical diagnosis. During the Ebola outbreak, many health facilities in Ghana started using smart thermometers. These technologies, unlike the mercury-filled ones, do not need to have physical contact with human body in order to determine temperature of patients, aside the fact that they determine human body temperature within a relatively shorter time.

Also, there is the common usage of the digital pulsometer (called the fingertip pulse oximeter) which is placed at the fingertips to digitally measure the pulse of patients. This is a digital mobile device which is easy to operate. This smart digital technology measures pulse strength and pulse rate in a few seconds and displays it conveniently on a digital LED display. Yet is the use of the digital sphygmomanometer (blood pressure device). Unlike the manual instrument which requires listening while slowly releasing the pressure in the cuff that comes with the device, this digital sphygmomanometer eliminates disruptions during the listening stage that can impede proper detection of the blood pressure of a patient. The digital instrument, although uses a cuff which may be placed around the upper arm or wrist just like the manual meter, in this case, requires minimal human effort and intervention while using it.

Technology usage for healthcare delivery and management is not only at the individual and institutional levels. On a much higher level, the regulatory institution for health services in Ghana, the Ministry

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