MHEALTH TECHNOLOGIES AND DOCTOR-PATIENT RELATIONSHIPS IN THE CONTEXT OF CONSUMER CULTURE IN WINNIPEG, CANADA

By

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ABSTRACT

The purpose of this study was to examine how the use of mHealth technologies by lay individuals influenced their relationships with their doctors in the context of consumer cultures. Ten individuals living in Winnipeg, Canada who used varying mHealth technologies ranging from fitness devices, thermometers and cardiovascular monitoring devices for personal health monitoring were interviewed. Using reflexive sociological interviewing, the participants were engaged in conversations on health, their use of their devices, and their relations with their doctors. The interviews were conducted via Zoom Video conferencing between September to November 2020 and audio recorded using the audio recording function on Zoom. The interviews were transcribed verbatim and coded using the NVIVO software.

Thematic analysis was used to analyse the data. The central themes that emerged from the interviews are the monitored life; consumerism in health; mHealth, health decisions and doctors; interpersonal doctor-patient relationships. The themes were interpreted using existing literature, Foucault's concept of biopower and Lupton's digital cyborg assemblage. Participants could be identified as consumer-patients who used mHealth technologies to gain knowledge on their bodies and health. The knowledge gained is specific and unique to participants' health needs which they use to practice health and self-care individually or with assistance from their doctors. With this, mHealth technologies influence doctor-patient relationships such that patients partner with doctors in diagnosing and treatment. However, depending on the social location, patients may either be passive patients or consumer patients during medical encounters. These findings contribute to the existing literature on the use of mHealth technologies and consumerism in doctor-patient relationships.

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"Let us then approach the throne of grace with confidence, so that we may receive mercy and find grace to help us in our time of need" (Hebrews 4:16 KJV).

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Introduction

1.1 MHealth Technologies

From the introduction of the first computers to the developments of web 1.0[1] - through to web 3.0[2], digital technologies like computers, e-books, and smartphones, among others have worked their way into the way life is organised in societies characterised by consumer cultures (Anderson and Rainie, 2018; Dittmar, 2008). In much the same way, digital technologies are bringing changes in how healthcare services are delivered and health promotion is practised among patients, lay individuals, health professionals and those within health networks (Henwood and Marent, 2019; Meskó, Drobni, Bényei, Gergely, and Győrffy, 2017; Oudshoorn, 2012). With most countries ensuring social distancing protocols in the wake of the global pandemic - COVID-19, Alessi (2020) predicts that reliance on digital technologies in health care is likely to increase especially in cases of remote monitoring of the health of individuals and developing personalised care post-discharge of patients. Additionally, companies such as Apple, Alphabet and Microsoft in recent years have filed for patents relating to healthcare. Patents enable these companies to market sophisticated devices and products including mobile phone applications, wearable devices, and others, also considered as mHealth for health promotion and personalised medicine (Beaver, 2018; Licking, Evans, and Bean, 2018).

[1] Web 1.0 is the first generation of the World Wide Web developed in 1989. This version could not allow users to interact or exchange information on the internet but only search for and read information (Choudhury, 2014). This was followed by web 2.0 and later web 3.0.

[2] Web 3.0 is the third generation of the World Wide Web with advanced Artificial Intelligence, 3D graphics, and other features than web 1.0 or web 2.0 that allows for user flexibility. Users can create contents and share on websites, interact with others like in the case of social media, engage in e-commerce and so on (Choudhury, 2014).

The Global Observatory for eHealth under the World Health Organization (WHO) defines mHealth as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices" (World Health Organization, 2011, p. 6). MHealth has been widely promoted as providing benefits in the delivery of healthcare and health promotion- access to health information for the general public; management of chronic diseases; increased health and wellbeing through monitoring of one's health; enhanced coordination and management in outbreaks of epidemics and disasters; increased access to care for people living in remote and rural areas; and the promotion of healthy behaviour and lifestyles among individuals (Anderson, Burford, and Emmerton, 2016; Hasman, 2011; Jutel and Lupton, 2015; McKay, Slykerman, and Dunn, 2019; Riley et al., 2011; West et al., 2012; Xie, Nacioglu, and Or, 2018).

MHealth technologies are emerging as important tools for the contemporary management of health. Some policymakers believe that mobile applications and technologies designed for health purposes will offer ways to manage chronic conditions of patients, lessen healthcare costs and improve healthcare delivery. For example, in her keynote address at the 2011 mHealth summit, in Washington, the US Secretary of Health and Human Services stated that mHealth technologies are the "biggest technology breakthrough of our time" that can be used to address challenges such as limited patient access to information to make them knowledgeable about their health and side effects about certain medication and little information from patients to be used by practitioners for healthcare (Dolan, 2011). Given the introduction of new devices and health applications on the market every day and the fast-paced developments of new ones, it is important to understand the complex ways in which patients' experience using mHealth

technologies in creating knowledge about their bodies and how this shapes medical encounters with their physicians.

MHealth technologies may promote active participation of individuals in their health and wellbeing ensuring an equal partnership between healthcare providers and their patients, empowerment of individuals to make informed decisions regarding their health needs, and enhanced interaction between healthcare providers and patients (Bradway, Årsand, and Grøttland, 2015; Klein, Hostetter, and McCarthy, 2014; Meskó et al., 2017; Robinson, 2013; Shan, Wang, Luan, and Tang, 2019). However, other scholars are more critical of mHealth technologies. These researchers raised concerns over its effectiveness in improving health care, the quality, safety and privacy issues of mHealth devices, and individuals' abilities to accurately interpret the information on health applications (Baldwin, Singh, Sittig, and Giardina, 2017; Buijink, Visser and Marshall, 2013; Eng, Donna and Lee, 2013; Hasman, 2011; Jutel and Lupton, 2015).

1.2 Doctor-Patient Relationships

The relationship between the doctor and the patient is described by Stavropoulou, (2012, p. 314) as "one of the most complex interactions in health care, which goes beyond consultation and clinical practice and involves aspects that are developed outside the encounter". A study by Magee (2003) on the opinions of doctors and patients regarding the doctor-patient relationship in different countries including South Africa, America, Canada, United Kingdom, Germany and Japan suggests this relationship is an important foundation for building strong societies. From scoping existing literature on the topic, the term 'doctor-patient relationship' is used as a 'concept' to describe how patients and doctors interact with themselves and their attitudes towards each other (Szasz and Hollender, 1956). In this thesis, the sociological concept 'doctor-

patient relationships' is used to recognise that these relations are heterogeneous; considering gender, ethnicity, and cultures, among other aspects of social locations.

In recent years, there have been suggestions the relationships between doctors and patients may be changing from paternalistic to consumeristic models across the globe alongside the development of global consumer culture (Hardey, 1999; Iverson, Howard, and Penney, 2008; Kaba and Sooriakumaran, 2007; Kivits, 2006; Stewart et al. 1995). The paternalistic model of doctor-patient relationships is one in which patients silently comply with treatments and interventions offered by doctors to restore them to health (that is patient compliance, patient adherence) whereas the consumer model is one in which patients as consumers of particular health-related goods and services, exercise greater control over their health and health care decisions (Kaba and Sooriakumaran, 2007; Peck, and Conner, 2011). For example, Stewart, Brown, Weston, McWhinney, McWilliam and Freeman (1995, p. xvii) comment that "medicine is undergoing a radical transformation that demands fundamental changes in the way we conceptualise the role of physicians". The cultural changes influencing doctor-patient relationships may be due to technological advancements in healthcare, changes in the political and economic structure, loss of patient trust, greater emphasis on patient autonomy by policymakers and globalisation (Andreassen, Trondsen, Kummervold, Gammon, and Hjortdahl, 2006; Dijkum and Vegter, 2010; Kaba and Sooriakumaran, 2007; Lupton, 1997a; Meskó et al., 2017). In the same way, the number of people with chronic conditions is increasing together with the costs of managing these conditions (Aluttis, Bishaw, and Frank, 2014). Additionally, with growing trends towards patient empowerment and consumerism in health care (Daruwalla, Thakkar, Aggarwal, Kiasatdolatabadi, Guergachi and Keshavjee, 2019; Lupton, 1997a; Parikh, 2013; Stewart Loane et al., 2014; Thompson, 2006) individuals may be adopting technological

tools such as mHealth in managing chronic diseases and in diagnosing and monitoring their general health (Lupton, 2013).

In turn, however, mHealth technologies grant patients access to information and tools for health promotion and disease prevention to which they otherwise may not have access (Aitkin, Clancy, and Nass, 2017; Jutel and Lupton, 2015; Lupton, 2012a, 2013). This means these technologies can shape doctor-patient interactions during medical encounters (Jutel and Lupton, 2015; Lupton,2013). Yet we still know little about how the adaptation of these technologies effects the medical encounter. The purpose of this research is to examine how the use of mHealth technologies by lay individuals effects doctor-patient relationships framing this inquiry in the context of theories about the patient as a 'consumer' in late modern society (Lupton, 1997a). In this thesis, I focused on the everyday realities of users (patients) of mHealth devices in their relationships with doctors. The research question is 'how do mHealth technologies influence doctor-patient relationships in the context of consumer cultures?'

In the next chapter, I review relevant literature on doctor-patient relationships, mHealth technologies, and theories which help examine the research question. In chapter 3, I outline the methodology used to answer my research question. In chapter 4, I present my findings from interviewing ten users of mHealth technologies living in Winnipeg, Canada. In the final chapter, I summarise the findings of the research, highlight the limitations and contributions to existing literature, and provide suggestions for future research.

Chapter 2

Literature Review

2.1 Doctor-Patient Relationships

> The doctor-patient interaction does not occur in a vacuum. Physically and psychologically, the event takes place in a particular culture. The participants bring to it their understanding of that culture-at-large plus their understanding of the culture-specific rules that govern the particular event (Raffler-engel, 1989, p. 1).

The roles of patients and doctors in societies have changed throughout history (Kaba and Sooriakumaran, 2007) though there has not been much documentation of the experiences of patients in doctor-patient relationships by medical historians (Lupton, 2012a). This is because it has been difficult to access real-life historical accounts of illnesses and diseases by patients and lay individuals (Lupton, 2012a). However, the regard given to doctors as noted down in novels, movie scripts and plays from the early ages provide a view of doctor-patient relationships from traditional societies to modern societies in western societies (Kaba and Sooriakumaran, 2007; Lupton, 2012a).

In a classic of medical sociology, 'A Contribution to the Philosophy of Medicine', Szasz and Hollender (1956) developed three models that describe the roles and power relations between doctors and patients: active-passivity, guidance-co-operation and mutual-co-operation models. Under the active-passivity model, patients are inactive in the relationship as doctors act on and take on the primary role of providing care and treatment to the patient. Power and authority lay in the hand of doctors (Szasz and Hollender, 1956). In the guidance-co-operation model, both doctors and patients are active in the relationship. However, the roles of patients are

minimal as doctors take on higher positions due to their knowledge of the body and they provide directions to patients for improved health and wellbeing. Patients are thus required to adhere to the directions provided by the doctor (Szasz and Hollender, 1956). In the third model, which is the mutual-co-operation model, doctors and patients take on the shared responsibility of providing care and treatment to sick individuals. With this, doctors and patients share equal power as they are both knowledgeable about the body, interact regularly and patients tend to take care of themselves (Szasz and Hollender, 1956). Kaba and Sooriakumaran (2007) note the mutual-co-operation is notably in patient-centred and consumerist approaches to health care.

Emanuel and Emanuel (1992) proposed four models to describe doctor-patient relationships. The models are the paternalistic model, the informative model, the interpretive and the deliberative model. The views of doctor-patient relationships by Emanuel and Emanuel (1992) and Szasz and Hollender (1956) can be unified to an extent. Emanuel and Emanuel (1992) explain the paternalistic model as one where doctors have absolute control over treatments for patients, using their skills and expertise to provide care to patients. This model can be likened to Szasz and Hollender's (1956) active-passivity model. The informative model is described by Emanuel and Emanuel (1992) as one where doctors provide patients with relevant information concerning their diseases and treatments; and assist patients to make choices regarding their situations.

The interpretive model overlaps with the informative model where doctors act as guardians or counsellors and provide patients with information as with the informative model. However, Emanuel and Emanuel (1992) stress that doctors and patients engage in a mutual understanding of diseases and their intervention in the interpretive model. The interpretive and informative models can be likened to the guidance-co-operation model by Szasz and Hollender

(1956). The deliberative model (Emanuel and Emanuel, 1992) is similar to the mutual-co-operation model (Szasz and Hollender, 1956). Emanuel and Emanuel (1992) suggest here that, doctors do not persuade patients to follow prescribed health interventions but engage in dialogue with patients to mutually develop health care interventions for patients.

In the next section, I examine the roles and power relations inherent in doctor-patient relationships in different historical settings in western societies, which would later become characterised by consumer culture, using the model developed by Szasz and Hollender (1956).

2.1.1 Historical Perspective of Doctor-Patient Relationships

In traditional western cultures, the doctor was a religious leader such as a priest or a shaman who was powerful and well-respected in society (Magner, 2005). Diseases were diagnosed by priests while magic, doctrine, rationality and mysticism were used in the treatment of diseases (Lázaro and Gracia, 2006). Additionally, some diseases like leprosy were associated with the sin and the moral status of the patient (Magner, 2005). To be healed of such diseases, there was the need for a Supreme Being, (God) to forgive patients for their sins which would then lead to the patient being cured of the ailment. This is evident in Biblical texts in the Jewish tradition for instance, where leprosy was associated with sin and impurity (Lázaro and Gracia, 2006). Such societies were relatively simple with little specialisation and technological advancements (Porter, 1997). Hence, religious leaders used their status and authority in the society to determine the mode of treatment and patients often had no choice but to adhere to the authority of the priest (Kaba and Sooriakumaran, 2007). This kind of doctor-patient relationship reflected the active-passivity model as the priests made decisions for and on behalf of patients while patients were inactive.

During the Greek Enlightenment Era, (around 600 to 100 B.C) the Greeks developed medical knowledge that involved the use of naturalistic observation in the diagnosis and treatment of disease which was carried out by surgeons, doctors and apothecaries (Lupton, 2012a). The social organisation during that time in Greece reflected that of the democratic system and patients actively engaged with doctors when ill (Kaba and Sooriakumaran, 2007; Magner, 2005). Though secular modes of healing were taking place, religious healings were also evident during that period as patients called out to saints and went on pilgrimages to be healed (Lupton, 2012a). Despite this, doctors had an impact on doctor-patient relationships as laypeople relied on and sought the counsel of doctors when they were sick (Kaba and Sooriakumaran, 2007). The doctor-patient model during this period reflected that of guidance-co-operation and a bit of the mutual-participation model since lay individuals became involved in improving their health by finding cures to their ailments (Kaba and Sooriakumaran, 2007).

The fall of the Roman Empire in Europe led to the restoration of the powers of religion and belief in the supernatural in the society around that time (Lupton, 2012a; Magner, 2005). As the dominance of religion was restored, priests or magicians once again assumed the role of the doctor with powers and authority to heal the sick who were often considered as babies who unable to help themselves (Kaba and Sooriakumaran, 2007; Lupton, 2012a). The active-passivity model is evident here in the relationship between the doctor and the patient (Kaba and Sooriakumaran, 2007).

In Western European societies during the fifteenth to the eighteenth centuries, different practitioners became involved in medicine and healthcare and this included midwives, doctors, apothecaries, herbalists and wise women (Lupton, 2012a; Porter, 1997). Patients who sought the services of doctors during this time were often privileged, upper class and aristocratic members

of society, while doctors practised medicine as a trade interested in promoting the interests of their patients (Kaba and Sooriakumaran, 2007; Lupton, 2012a; Porter, 1997). With this, patients dominated doctors due to their position as upper-class members in societies and treated the doctor as a 'superior servant' (Lupton, 2012a; Porter, 1997). Also, Kaba and Sooriakumaran (2007) record that the model of illness and healing used during that period required doctors to attend to the needs of the patients that manifested in the form of symptoms. Doctors would not physically examine the bodies of patients but relied on patients' self-diagnosis and preferred form of treatment to assist patients (Porter, 1997).

Additionally, there was a gradual increase in knowledge among the lay population on the causes of illness and diseases during this period. It is noted by Porter (1997) that between 1660 and 1800 both lay individuals and doctors in England for instance, attributed health to good health practices and adopting good moral values as the sins of a person could bring about sickness as a form of punishment by the Supreme God. Underprivileged sick people would rely on herbalists, their intuition and knowledge, or friends, or God's will for treatment of ailments rather than doctors (Lupton, 2012a). In Canada, it is revealed by Bernier (2003) that before the nineteenth century, patients in Quebec would consult family members or people in their communities like herbalists who had some knowledge on ailments to help with treatments. Also, doctors in Canada were often located in towns and privileged families sought the services of doctors. Patients and doctors would mutually agree on illnesses and modes of treatments (Bernier, 2003). The model from the fifteenth to eighteenth centuries lies between the mutual-co-operation and guidance-co-operation models (Kaba and Sooriakumaran, 2007).

2.1.2 The Emergence of Science and Doctor-Patient Relationships

Describing the cultures in Western societies, the period of Enlightenment brought in humanity's quest for liberation, belief in the progress of society and development of science and technology. This period was also characterised by a rejection of religion and divinity in explaining and addressing societal problems (Lupton, 2012a; Porter,1997). The Enlightenment period is also considered to be when beliefs and principles concerning the practice of contemporary biomedicine originated. Scientific beliefs came to inform the practice of medicine (Lupton, 2012a).

By the eighteenth century in some European societies, there were books for use by the lay population on preventing diseases and improving health and wellbeing (Porter, 1997). These books were focused on daily habits to be adopted by laypersons which included, "maintaining temperance, or avoidance of unnatural excess, in the individual's daily habits, including diet, exercise, sleep and regular exposure to fresh air and cold bathing" (Lupton, 2012a, p. 82). It is noted by Lupton (2012a) that though the medical profession was gaining prominence in England, most people accorded doctors with less respect and power. This is because doctors were seen as adulterated due to their engagements with dissecting human bodies and their contact with human blood (Lupton, 2012a). Individuals would negotiate with doctors based on their understanding and judgement of bodily reactions when sick (Lupton, 2012a). Also, lay individuals played active roles in preventing diseases and re-gaining lost health when sick through self-medication other than seeking help from doctors (Kaba and Sooriakumaran, 2007). The kind of relationship between doctors and patients "was joined on the basis of personal empathy between the parties" (Jewson, 1976: 233). By this, doctors could be regarded as friends who mutually agree with patients, the illness and modes of treatments needed to restore the patient to health (Jewson,

1976). This reflected the mutual-co-operative model as both the doctor and the patient played active roles in healing.

As scientific worldviews advanced in the latter part of the eighteenth century in the United Kingdom and France, diseases and illnesses were increasingly attributed to the biological make-up of the person's body of which the patient was not aware, rather than the symptoms the person showed as was done in the early part of the eighteenth century (Kaba and Sooriakumaran, 2007). The expansion of science brought in the establishment of hospitals and medical institutions like laboratories, and the invention of the stethoscope, the microscope and x-rays (Lupton, 2012a; Porter 1997). The new approach in medicine required that doctors examined patients using the new forms of technology and medical knowledge to provide a diagnosis and treatment for the patient (Kaba and Sooriakumaran, 2007). Due to the introduction of technology in medicine, the reliance on subjective accounts of illness and diseases of patients by doctors started to decrease whiles patients gradually became dependent on doctors (Kaba and Sooriakumaran, 2007; Lupton, 2012a). Bernier (2003) notes that the practice of medicine in Canada was influenced by trends in Europe. This is because, Canadians practising medicine as midwives, surgeons, among others, were in contact with those practising medicine in Europe as a way of keeping up with new trends in the practice of medicine. For instance, inoculation and vaccination were practised and common in Canada at the same time as in Europe. Also, individuals wanting to practice medicine would go to Europe for training.

In Western Europe particularly in the United Kingdom, institutions like the College of Doctors were formed which led to an established qualification for doctors that enabled members to practice in the medical field (Porter, 1997). Gradually, the influence and status of doctors in Western European societies grew, journals and textbooks were filled with praises of the work of

doctors stressing their societal importance and status in the profession (Porter, 1997). Sick individuals became inactive members in doctor-patient relationships as they had to rely and wait on doctors for diagnosis and treatments modelling active-passivity in doctor-patient relationships (Jewson, 1976; Kaba and Sooriakumaran, 2007; Lupton, 2012a). Also, Porter (1997) reports that, in the early part of the twentieth century, there was a wide range of technological tools such as sphygmomanometers and thermometers for use by doctors in addition to antibiotics and penicillin, leading doctors with still more authority. By the twentieth century, the subjective judgements of patients became insignificant during medical encounters and patients, as a group no longer played an active role in doctor-patient relationships (Lupton, 2012a).

During the early 1950s, American sociologist Talcott Parsons examined the roles and responsibilities of doctors and sick persons in doctor-patient relationships in the United States (Parsons, 1951). Parsons (1951) conceptualised that the sick person was not responsible for his or her situation, but as a social deviant who needed to be treated by a professional to be restored to participation in the wider society. Parsons (1951) recognised doctors as individuals, with the necessary technical knowledge and education responsible to help patients recover from diseases. Due to the expertise doctors have, they were accorded authority and autonomy in their profession (Hughes, 1995). In contrast, patients adopted the 'sick role' as they were presumed to be lay individuals without any knowledge on improving health and preventing diseases without the assistance of the doctor (Parsons, 1951). Thus, patients generally took up passive positions while doctors occupied active roles enforcing the dominance and the autonomy of the medical profession (Hellin, 2002). It is interesting to note that technological development associated with the rise of bioscientific medicine was thus, an important factor in the doctors' rise in social status.

Works by some sociologists in Western cultures in the 1970s on doctor-patient relationships showed increasing interest in the nature and extent of power and authority of the medical profession in society. Eliot Friedson (1971), for instance, argued that "in the course of obtaining a monopoly over its work, medicine has also obtained well-nigh exclusive jurisdiction over determining what illness is and therefore how people must act in order to be treated as ill" (Freidson, 1971: p 205). The medical profession had the power to influence what is considered an illness and used medical knowledge to control lay individuals to behave in certain ways. Foucault (1973) also turned a critical eye on a model in which doctors gave maximum attention to clinical signs in assessing the presence or absence of disease and ignored patients' subjective experiences. This mode of diagnosis and treatment emphasised that the medical profession was more interested in sickness and its treatments than the health of individuals (Friedson, 1971; Illich, 1975; Segall and Fries, 2017).

It appears from the 1970s that, patients have slowly begun to challenge the dominance of doctors in healthcare (Lupton, 2012a; Meskó et al., 2017; Porter, 1997). Porter (1997) notes "stirred by wider consumer protection and rights movements, the sick learned to abandon the role of 'child' accepting medicine from a paternalistic doctor; they began to assume the guise of adults" (Porter, 1997, p 690). This move by patients to be active in healthcare was facilitated by the increasing availability of medical information and health tools for use by lay individuals, growing mistrust of doctors (in part due to negligence on the part of doctors) and the influence of consumerism in healthcare (Gray, 2002; Lupton, 2012a, 1997a; Porter, 1997).

2.1.3 Consumer Culture and Doctor-patient Relationships

From the 1970s, patient consumerist groups and policy forums called for the availability of medical and health information to the general public, active involvement of patients in doctor-

patient relationships and adoption of preventive behaviours to promote health and wellbeing in Western developed nations (Hellin, 2002; Lupton, 1997, 2012a, 2013; Mort, Finch, and May 2009; Mold, 2010). For instance, the Alma Ata Declaration by the World Health Organisation in the 1970s asserts that "the people have the rights and duty to participate individually and collectively in the planning and implementation of their health care" (World Health Organization, 1978). Also, Ian Kennedy a British professor of law in his session at the Reith lectures, an annual lecture series in Britain that often focuses on ongoing issues criticised doctors for relying on modern scientific interventions in diagnosing and treating diseases and ignoring health promotion and subjective views of lay individuals on health and wellbeing. In his lecture titled 'Unmasking of Medicine', Kennedy (1980) called for active participation of patients in health whereby laypersons took a greater responsibility in their health and wellbeing. Since then, policy documents from the Department of Health in the United Kingdom, for instance, have stressed citizen participation in health and adopted a consumerist approach in healthcare delivery and promotion whereby individuals have active voices in making health decisions (Thompson, 2007).

In Canada, right-wing think tanks such as the Fraser Institute and the CD Howe Institute have been advocating for free-market models for the Canadian economy extending this to healthcare delivery in the country (Carroll and Shaw, 2001). These organisations emphasised the 'right' of the patient in handling health matters (Little and McGivern, 2014). These facts support Lupton's (1996, 1997a) argument that health consumerism is based on the modernist view of 'individualism' in which the rights of persons are stressed as means for the individual to look out for himself or herself and not rely on others in achieving maximum health.

In his book 'Modernity and Self-Identity,' Giddens (1991) assumed that contemporary society is characterised by a post-traditional culture and late modernity where the 'the self becomes a reflexive project' (Giddens, 1991, p. 32).

> Self-identity, then, is not a set of traits or observable characteristics. It is a person's own reflexive understanding of their biography. The self-identity has continuity - that is, it cannot easily be completely changed at will - but that continuity is only a product of the person's reflexive beliefs about their own biography (Giddens, 1991, p 53).

The culture of post-modern societies is one that leads people to recognise that they need to be in constant reflection of who they are to create their own biological and social identities. Individuals do not passively accept who they are but actively engage in practices that shape themselves and the body through a continuous process of seeking knowledge and learning (Giddens, 1991).

Lupton, (1997a) notes that consumer-patient approaches to health care reflect the concept of 'reflexive project to self' by Giddens (1991). According to Lupton (1997a), the patient-consumer in contemporary Western societies is like a 'reflexive actor' who is "actively calculating, assessing and, if necessary, countering expert knowledge and autonomy with the objective of maximizing the value of services such as health care" (Lupton, 1997a, p. 374). As consumers, patients do not submissively accept medical knowledge but would constantly probe, question and examine medical information in order to maximise their best interests (Lupton, 1996; 1997a). Patients view health and health care as their personal responsibility where they actively and enthusiastically research various diagnosis and treatments of diseases and other methods to maximize their health (Lupton, 1996, 1997a; Sointu, 2005).

Unlike the passivity-active model where the patient is inactive in doctor-patient relationships, the patient as a consumer in doctor-patient relationships represents that of the mutual-co-operation model (Kaba and Sooriakumaran 2007) of Szasz and Hollender (1956). Here, patients reject the paternalistic approach to health care which makes patients inactive in doctor-patient relationships. Rather, they are knowledgeable on diseases and various treatments and have choices in the type of medical practitioners they engage with (Lupton, 1997a; Mold, 2010). The doctor, in contrast, is in competition with others selling her or his professional skills and knowledge for income whiles patients treat medical services as the way they treat other services such as beauty, carpentry and others (Lupton, 1997a). From one perspective, the consumer-patient approach has the potential to equalise power relations between doctors and patients (Meskó et al., 2017; Parikh, 2013). It also places much responsibility on lay individuals to manage and control their medical care and health through adopting and engaging in appropriate lifestyles, resources and technologies that will lead to positive outcomes in their health (Lupton, 2012b, 2013).

On the contrary, some writers argue that the consumer perspective to health care that stresses empowered patients may be overemphasised (Germoy, 1995; Henwood et al., 2003; Lupton 1997a; Zadoroznyj, 2001). Germov (1995) for instance suggests that arguments that consumerist approaches in health care decreases medical power may not be the case during medical encounters. Also, Zadoroznyj (2001) suggests that despite increasing developments in health and health care that enables individuals to practice consumerism in health and health care, doctors continue to have medical knowledge and power over lay individuals. In an analysis of qualitative interviews of fifty women in Australia over experiences with obstetricians and choices with medical services, Zadorozyj (2001) notes that medical services and encounters are

different from services in marketplaces since individuals are often distressed when they enter medical encounters. Additionally, Zadorozyj (2001) notes social class of individuals plays a role in consumerism approaches to health care.

Over the last several decades, patient-consumer approaches have incorporated and facilitated the use of Complementary and Alternative Medicine (CAM) such as herbal treatments, aromatherapy, homoeopathy and acupuncture (Adams, Lui, McLaughlin, 2009; Broom, 2005; Lupton, 1996). For example, a study by Fraser Institute in Canada showed that about 79% of the respondents have used CAM in 2016, which was an increase from previous studies of 74% in 2006 and 73% in 1997 (Esmail, 2017). The common CAM practices adopted by respondents from the study were chiropractic care, yoga, relaxation techniques and acupuncture. Esmail (2017) added that people adopted CAM to prevent diseases and illness and maintain general wellbeing. Fries (2014) conducted a qualitative study on the use of CAM among older individuals ageing fifty-five years and above in Canada. Fries (2014) situated the use of CAM among individuals as part of the consumerism trend in medicine which emphasised individual responsibility and self-care. In conclusion, Fries (2014) found out that older adults adopted CAM as a means to gain control over their health. Similarly, research by Frank and Stollberg (2004) on the use of medical acupuncture by patients in Germany revealed that though patients sometimes adopted acupuncture in treatments of diseases, they were not interested in making their health and medical decisions and would rely on their doctors for advice.

Recent developments in patients as health care consumers are driven by advancements in technology like the introduction of the internet (Coiera, 1996; Hardey, 1999) and from the 2000s, mHealth devices for health promotion (Levin and Gordon, 2015; Lupton, 2012b, 2013; Parikh, 2013). As early 1997, some individuals with internet access in the United States were engaging

in consumerism practices as they used the internet as a medium to educate themselves about illness and diseases, the treatments available and the implication of such treatments (Eng, Maxfield, Patrick, Deering, Ratzan and Gustafson, 1998). The 2005 Canadian Internet Use Survey (CIUS) reported that about 8.7 million Canadians aged 18 years or older search for medical and health information from the internet (Statistics Canada, 2005). From the same survey, more than one-third of the respondents reported that they discussed information obtained from the internet with their doctors during hospital visits (Statistics Canada, 2005).

2.2 mHealth Technologies

The introduction of mHealth, in particular, has brought about novel ways for patients to obtain access to health information and engage in real-time body monitoring anywhere without the involvement of a medical professional (Lupton, 2012b, 2013; Olesch, 2019; Rich and Miah, 2017). mHealth technologies are promoted by digital health technology experts and interested patient organisations as a means for individuals to better manage their health (Dé, 2011; Lupton, 2012b, 2013, 2016; Petrakaki et al., 2018). The use of mHealth leads to a situation where the everyday spaces and practices of laypersons are filled with medical tools and clinical assessments like that of the hospital (Lupton, 2013; Mort, Finch and May, 2009; Nettleton and Burrows, 2003; Oudshoorn, 2012). With mHealth technologies, individuals can generate and transmit data from the body which can be used to monitor health and wellbeing. For instance, some mHealth devices enable people to remotely monitor and record their vital signs and other health information which can be used for self-care to improve their quality of life (Li, Dey, and Forlizzi, 2011; Lupton, 2012b, 2013). Other mHealth devices may assist individuals to interpret health data collected from the body and may send prompts to persons to seek medical assistance in cases where their vital signs may not be in the ‘normal range’ which may lead to better health

practices and health care (Ho and Quick, 2018; Swan, 2012). Swan (2012) argues that with individuals remotely monitoring their health, doctors can access the necessary health data that will enable them to work effectively in providing appropriate health care needed by patients. People can become aware and conscious of their medical and health data, which can influence engagement in practices that maximises health (Anderson et al., 2016; Figueiredo, Caldeira, Chen, and Zheng, 2017). For instance, Mandracchia et al., (2019) in a systematic review on healthy behavioural changes revealed that mobile health applications influenced healthy eating choices through constant self-monitoring of their calorie intake, weight and physical activity.

Lupton (2012b) notes that mHealth technologies are not used only for medical purposes pertaining to the sick but are used by healthy individuals in an attempt to prevent diseases and promote health. Research by Fox and Duggan, (2013) on the use of mHealth for instance, revealed that about 69% of Americans (including people with and without any chronic health condition) had at least one mHealth device which enabled them to regularly monitor their health. Similarly, a study on Canadian adults revealed that 32% of Canadian adults had different health applications on their mobile phones and smart devices which they used to monitor different aspects of their health such as glucose levels, body weight, calories, physical activities, body temperature and so on in the three months before the study was conducted (Pare et al., 2017).

Users of mHealth devices can thus understand and know about the functioning of their bodies and individual habits that may lead to ill health and this may make them more active participants in doctor-patient relationships (Lupton, 2013; Swan, 2012). Additionally, it is assumed that mHealth devices reduce inequality in access to health information between patients and doctors and makes patients, ‘experts’ in healthcare and health promotion (Andreassen and Dyb, 2010; Parikh, 2013; Swan, 2012).

2.2.1 mHealth technologies, Consumerism and Doctor-Patient Relationships

The use of digital technology for health by patients is often associated with the terms 'patient engagement' or 'patient empowerment' (Lupton, 2013, p. 258). In the notion of 'patient engagement' or 'patient empowerment', the patient is responsible for his or her health, actively engages in practices to promote health and makes all the decisions related to his or her health and health care (Lupton, 2013; Swan, 2012). The patient is thus an empowered health consumer with requisite resources like modern technologies for self-monitoring and self-care (Ho and Quick, 2018; Lupton, 2013). Hence, it is argued that these technologies assist him or her to make informed decisions which leads to positive health outcomes (Dé, 2011).

Information is regarded as important in building new roles and responsibilities in doctor-patient relationships which is different from paternalistic doctor-patient relationships (Hardey, 1999, 2001). The dominant position of the doctor stems from their access to medical technology and knowledge at the disadvantage of the patient. As noted by Foucault (1990) "medicine creates and maintains a 'social monopoly of expertise and knowledge" (in Turner, 1995, p.47). The emergence of the earlier form of the internet that is Web 1.0 and Web 2.0 lead to the creation of medical and health websites that provided patients with knowledge on health matters and access to different information and lay knowledge, for instance through personal blogs of patients and online forums (Broom, 2005; Lupton, 2016b). Previously, the inability of individuals to fully interpret bodily signs and functioning led them to initiate medical encounters to obtain information on how to approach the symptoms they are experiencing in their bodies. Like the emergence of the internet (Coiera, 1996; Hardey, 1999; Stewart Loane and D'Alessandro, 2014), mHealth creates the opportunity where medical knowledge is more accessible to the lay public

(Lupton, 2012b, 2013) and this has the potential to decrease the autonomy and power of the medical profession (Hardey, 1999).

The innovation of mHealth grants people further access to traditionally medical knowledge through monitoring devices to examine the human body and physiological make-up of the person (Lupton, 2013). By using mHealth, laypeople have access to thorough visual images of their bodies and they can accurately measure the physiological workings of their bodies which were initially only available to medical practitioners and healthcare workers (Finch, Mort, Mair, and May 2008; Lupton, 2012b, 2013; Nettleton and Burrows, 2003). Examples of mHealth devices include Fitbit, Muse™ and FreeStyle Libre Reader™. Fitbit enables its users to track their physical activities, nutrition, heart rates, sleep patterns and so on (FitBit, 2020). FreeStyle Libre Reader™ is a remote diabetes management device that users stick to their bodies that enables them to track their glucose and physical activities anytime (Abbott Laboratories, 2018). Muse™ also have different electroencephalography (EEG) sensors that help users monitor the brain in order to control stress and calm the mind and body. Muse offers users to record and create visual images of their brain activity (Muse™, 2020). Using their mHealth devices, laypersons, therefore, has access to certain types of 'medical truths' on which they can use to manage and improve their health (Dé, 2011; Lupton, 2012b). A further illustrative example of how mHealth may shape the medical encounter follows.

In the 2000s, Larry Smarr (Ramirez, 2013; Smarr 2012), a professional computer scientist, wanted to lose weight. In addition to the traditional method of avoiding processed foods and using the bathroom scale, he adopted different mHealth devices like Fitbit, Meditation Oasis Apps and Omron blood pressure monitor. Smarr (Ramirez, 2013; Smarr 2012) used these devices to enable him to track his physical activity (steps taken), foods eaten, sleep patterns and

stress levels. He believed tracking these elements would help him reach his desired weight loss goal. After religiously following the diet and routine recommended with the assistance of the devices, Smarr realised that the expected weight as suggested by the device within that time frame of adopting his new lifestyle was not in line with his actual weight. Though Smarr was losing weight, it was not at par with what the device was telling him according to his new lifestyle. With this, Smarr believed there might be something wrong with his body and he began to explore potential causes in his body that might be preventing him from losing weight quickly.

Smarr (Ramirez, 2013; Smarr, 2012) started monitoring his blood for nutrient deficiencies and glucose levels through fasting blood tests as he had earlier been diagnosed as is pre-diabetic. Through days of monitoring, he realised he had high levels of C-Reactive Protein, which put him at risk of cardiovascular disease and as a result, was causing inflammation in his body. Though this was not linked to his weight loss, Smarr believed this indicated there was a problem with his body and advanced his self-monitoring to his stools for various nutrients in the stools and deoxyribonucleic acid (DNA) to determine if he was at risk for disease. He used a commercial stool testing agency and genetic sequencing agency. Through this monitoring, Smarr realised he was showing signs of Crohn's disease and results from the genomic testing (DNA) revealed he had an 80% chance of getting Crohn's disease. Through all this, however, Smarr's body was not showing symptoms of the disease.

With these new findings, Smarr (2012) wanted to prevent the disease from becoming a serious ailment. He met with his doctor to discuss the possibilities of him having Crohn's disease. However, during the meeting with his doctor, Smarr (2012) was told he was doing well as there were no real signs of the disease. Not satisfied with this, he approached a different doctor with his findings. After several weeks of consultations and later developing symptoms of

Crohn's disease, Smarr was told he had the disease. The Smarr (Ramirez, 2013 Smarr 2012) case may be an extreme case of self-monitoring, yet exemplifies the patient-consumer approach in late modernity - by recording and examining his blood levels, calorie intake, physical activity and the level of nutrients in stools, Smarr (2012) was creating his knowledge on his health. This knowledge helped him engage in self-care and even influenced the medical encounter with his first doctor which made him seek a second medical opinion.

In a study of the potential of technology to contribute to positive health outcomes and better health care, Andreassen and Dyb (2010) argue that health technology is like a 'black box'. In this instance, when any health technology is introduced in health care, it becomes a passive element that grants patients, who the researchers characterise as 'rational,' access to health knowledge. The knowledge acquired from health technology then facilitates interactions between patients and doctors which is supposed to lead to better health outcomes. In Smarr's case (Ramirez, 2013; Smarr 2012), for instance, he approached his doctor with knowledge of the current physiology of his body generated from his use of mHealth devices and consultations with other commercial laboratories. It can be argued that mobile health technology made him an 'expert' and an active participant in the doctor-patient relationship typifying the mutual-co-operation model by Szasz and Hollender (1956). Also, Smarr's actions (Ramirez, 2013; Smarr, 2012) exemplify the socio-cultural nature of late modernity described by Giddens (1991) and Lupton (1997a) as mentioned earlier. This is because Smarr can be said to be a reflexive individual who was constantly searching and engaging in self-care practices and was somehow doubtful of the expertise of his doctor.

Nevertheless, Lupton (2013) maintains that patients as consumers do not always act rationally, and the patient-consumer approach to healthcare and health promotion neglect "to

acknowledge the mutual dependencies, ambiguities and ambivalences of the doctor-patient relationship" (Lupton, 2013, p. 263). An earlier study by Lupton (1997a) on patient engagement and consumerism in healthcare and health promotion supported this argument. After analysing sixty interviews with lay (non-medical) people, Lupton (1997a, p 373) concluded that "in their interactions with doctors and other health care workers, laypeople may pursue both the ideal type 'consumerist' and the 'passive patient' subject position simultaneously or variously, depending on the context". Also, a study on patient-consumer choices among residents in Bristol, United Kingdom, (Greener, 2003) realised that patients are often dependent on the doctors in the doctor-patient relationship. From the research, Greener (2003) revealed that medical knowledge tends to be complex- and subjective experiences of patients and information gotten from sources other than doctors tend to be a small part of medical knowledge. Hence, for optimum health outcomes, patients tend to depend on doctors to make decisions regarding their health.

2.3 Power and Consumerism in Doctor-Patient Relationships

As earlier indicated, medical knowledge grants power and authority to doctors giving them control in health and health care. This leads to patients relying on doctors to relieve them of their symptoms and restore them to health. Also, relying on the doctor for improved health is considered the 'reasonable' thing to do as medical doctors have been trained to handle diseases, sicknesses and the human body (Lupton, 2012b). The potential of new technological development to transform doctor-patient relationships through the patient-consumer approach has been discussed and applauded by some researchers in sociology (Hardey, 1999; Loader, Muncer, Burrows, Pleace, and Nettleton, 2002). This is because technology has the potential to make people knowledgeable and informed, provides patient-consumers greater choices on enhancing and maintaining health, and can balance power relations between doctors and patients

(Finch et al., 2008; Hardey, 1999; Loader et al., 2002; Nettleton, Burrows, and O'Malley, 2005; Petrakaki, Hilberg, and Waring, 2018).

Hardey (1999) conducted a qualitative analysis of the use of the internet for attaining health information by twenty-eight different households in the United Kingdom. In the analysis, he concluded that "internet forms the site of a new struggle over expertise in health that will transform the relationship between the health professions and their clients" (Hardey, 1999, p. 820). He revealed that participants who used the internet to get health knowledge would often negotiate with their doctors on the diagnosis and treatments of diseases offered by the doctors. Hardey (1999) somewhat optimistically argued that the negotiation between doctors and patients tend to balance power relations between the two. In a further qualitative study of ten households on how lay individuals create and use health information in the United Kingdom, Hardey, (2001) argued that the internet leads to a creation of 'knowledge' and this had a great potential in changing the doctor-patient relationship since patients became informed.

Another study by Stewart Loane and D'Alessandro, (2014) revealed that the internet offered patient-consumers, knowledge about medical conditions and treatments which impacted the power structure in doctor-patient relationships. Stewart Loane and D'Alessandro (2014) focused on an online support group for inflammatory bowel disease in Australia where patients shared their subjective experiences and empowered themselves. They concluded that knowledge circulated within the support group empower patients to work as partners rather than passive recipients in doctor-patient relationships.

In contrast, Stevenson, Kerr, Murray and Nazareth (2007) maintained that access to medical knowledge by lay individuals does not lead to power changes in doctor-patient relationships. Stevenson, Kerr, Murray and Nazareth (2007) conducted focus group interviews of

adults living with diabetes, heart disease and hepatitis C in different socio-economic areas in the United Kingdom about the potential of the internet to disrupt the paternalistic model of doctor-patient relationships. From the research, they argued that though patients approached doctors concerning various health information found on the internet, they still recognised the value of medical knowledge possessed by the doctors and valued their position of relying on doctors to make health decisions. This supports the argument by Ball and Lillis (2001) that technological innovations can change the nature of doctor-patient relationships but doctors will continue to maintain their dominant position in health care. Likewise, Kivits (2006) contends that the introduction of technology such as the internet to patient-consumers does not lead to a decrease in the authority of the medical profession but rather knowledge from internet sources supplements what the patient knows. In terms of making health decisions and choices, patients still tend to rely on the doctor.

Furthermore, Lupton, (1997a, 2013) argues there are limits to the extent patients will want to challenge doctors' authority despite adopting the role of patients as consumers. Lupton (1997a, 2013) argues that in most cases, the health situation of patients plays an active role in the patient's approach in relationships with doctors. For instance, when the illness is minor, people may ignore the authority of the doctor and may deal with the ailment in their own way. However, when a person is very sick, they become vulnerable and may not wish to challenge the doctor despite having all the information on the disease and its treatments.

MHealth devices have been characterised as granting patients-consumers control over their health through the knowledge acquired from the devices, granting them security on their wellbeing (Lupton, 2013). In an Australian qualitative study involving twenty-two respondents on the use of health applications for self-tracking and self-care, Anderson and colleagues (2016)

realised that some people actively used mHealth devices as a way to gain knowledge of their physiology and manage any health issue that might come up from the analysis. Most of the people interviewed by Anderson and colleagues (2016) were not sick nor had any chronic illness but would regularly check their pulses and other physiological functioning as a means to keep up with their health. In an interview with a cancer survivor, the person revealed to Olesch (2019) that, through constant body monitoring, he was able to get access to data that helps him understand his current health status. Like Larry Smarr (Ramirez, 2013; Smarr, 2012), and others, mHealth tends to be regarded as a means to manage health and prevent diseases. However, there are still questions about how much value patients place on mHealth technologies and also, how negotiations between patients and their doctors unfold when the patients use mHealth technology for health care.

Moreover, the use of mHealth for self-monitoring and self-care may lead to tensions, conflicts and anxiety for the patient (Jutel and Lupton, 2015; Lupton, 2013). This is especially in situations where the information retrieved from the device may conflict with the individual's subjective understanding of how she or he is feeling (Lupton, 2013). Huniche, Dinesen, Nielsen, Grann, and Toft (2013) investigated the experiences of patients with chronic obstructive pulmonary disease using monitoring health devices at home in Denmark. In the qualitative analysis, Huniche and colleagues (2013) found that patients used the data retrieved from monitoring the body to decide their physical activity and adopt health behaviours that lead to increased health. The patients often felt secured and encouraged when the data produced by the device was within an 'acceptable' range and would feel discouraged, worried and depressed if the data did not show this even if they appeared to be feeling well. Also, based on the data produced, patients had to decide whether to involve their doctors in interpreting the information

in cases where the data produced was not at par with how they felt. As noted by Williams, Weiner, Henwood, and Will, (2020) self-monitoring is more than becoming 'well-informed' on health, it involves a complex process of discovery, negotiations and assessing information from different sources to conclude one's health.

Based on the literature, it can be concluded that doctor-patient relationships are not static and has been changing over time- passive patient and doctor, engaged and active patient and doctor. Additionally, technological advancements like mHealth enable patients to act as autonomous and informed individuals (Hardey, 1999, 2001; Lupton, 1997a, 2013) who have the ability to manage their health and health care with or without the involvement of doctors. In the next section, I discuss how Foucault's (1990, 1984, 1997) biopower and Lupton's (2015) digital cyborg assemblage informs this research.

2.4 Theory

2.4.1 Foucault's Biopower

> What makes power hold good, what makes it accepted, is simply the fact that it doesn't only weigh on us as a force that says no, but that it traverses and produces things, it induces pleasure, forms knowledge, produces discourse. It needs to be considered as a productive network which runs through the whole social body, much more than as a negative instance whose function is repression (Foucault, 1984:61).

Michael Foucault's works emphasised the positive and dynamic nature of power in modern Western societies. He noted that power in modern societies is dispersed throughout social relationships, everyday practices, technologies, and other aspects of everyday life rather than limited to military force as it was in early societies (Foucault, 1990). In biomedicine, for

instance, power is the basic means by which diseases and illness are identified and health is promoted (Lupton, 1997b). The power possessed by doctors concerning patients is thus recognised as 'facilitating capacity or resource' (Lupton, 1997b, p. 99) through which the roles of doctors and patients are highlighted and the definitions of disease and illness are constructed (Fries, 2008; Lupton, 1997b). Power is recognised as having a governance and surveillance potential in providing patients with directions on how to know, perceive, and control their bodies (Lupton, 1997b).

Foucault developed the concept of biopower to describe the manner by which individuals engages in 'technologies of the self' for health (Foucault, 1997). Technologies of self refer to devices and practices "which permit individuals to 'reflect and act' on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality" (Foucault, 1997, p 224-5). Biopower is a productive force to promote the life and health of humans (Foucault, 1997). According to the concept of biopower, institutions like the state and clinical medicine sought to exercise power and control over populations by focusing on the human body. While this control on the human body was not through threats of violence or directly imposing on the person, it is founded on the desire of the individual to be healthy. The form of control exercised in biopower is through enacting trends in healthy practices to produce an idealised citizen (Pylypa, 1998).

Biopower is a subtle form of power that is expressed through everyday practices that enhance health and prevent diseases such as maintaining proper hygiene, proper diets, engaging in self-monitoring and self-care (Fries, 2008; Pylypa, 1998). Power is the result of the production of knowledge (Foucault, 1980) and the body becomes a site of producing knowledge, where the person can study and retrieve information for control (Gastaldo, 1997). The Foucauldian concept

of biopower can be applied in examining the use of mHealth devices and the doctor-patient relationship. This is because mHealth devices may be used by lay individuals to generate information about the body which influences the adoption of healthy behaviours and routine disciplinarily measures in an attempt to promote health (Lupton, 2012b, 2013; Lupton and Maslen, 2019; Petrakaki et al., 2018; Pylypa, 1998). In effect, the rise of mHealth may be conceptualised as the new rise of a new form of 'technologies of self' for health (Foucault, 1997).

With biopower, individuals "voluntary control themselves through self-imposing conformity to cultural norms through self-surveillance and self-disciplinary practices, especially those of the body" (Pylypa, 1998, p. 22). These cultural norms may take the form of physical fitness practices that are understood to be embedded within mHealth technologies. Hence, in using mHealth devices, lay individuals may be subjected to disciplinary routines provided by the devices (Lupton, 2012b). Some devices send out real-time notifications encouraging the person to be attentive to good health practices and behaviours like participating in physical activity, drink water, take a certain number of calories, monitor their pulse and so on (Ho and Quick, 2018; Williams et al., 2020). In a qualitative study involving six focus groups and five individual interviews in America, Peng, Kanthawala, Yuan and Hussain (2016) revealed that the respondents conformed to health reminders provided by the health application. However, some of the respondents revealed sometimes the reminders would interfere with their schedules and that they may not follow them. Additionally, mHealth devices can enact a mode of power in the individual by helping lay individuals to monitor themselves, generate health data about their bodies, understand how their bodies are working and engage in self-care practices to promote

health (Lupton, 2012b, 2013, 2015). The knowledge created from using mHealth devices may place individuals in positions to control their bodies for health and wellbeing (Lupton, 2015).

In their explanation of biopower, Rabinow and Rose (2006), argue that there is an ongoing trend where individuals are taking active interests in health and taking up the responsibility to promote their health. They argue that government, social, medical and other institutions capable of controlling the lives of humans are responsible for this trend. Health and wellbeing have become the primary responsibility of a person where the layperson acquires all the needed knowledge and engage in practices that will improve his or her life (Rich and Miah, 2017), a feature in late modernity mentioned by Giddens (1991).

Rabinow and Rose (2006) characterise three major elements that underline the concept of biopower. The first element is "truth discourses about the 'vital' character of living human beings and an array of authorities considered competent to speak that truth" (Rabinow and Rose, 2006, p. 195). In this instance, lay individuals are considered to be experts on a particular area of interest intended to produce truth discourses. The discourses in this sense may include but not limited to biology, demographic, social, and other environmental factors relating to health (Rabinow and Rose, 2006). Kingod (2018) studied how diabetic Danish adults used Facebook to exchange knowledge on their management of chronic diseases. The individuals involved in the study engaged in different healthcare practices, examinations on the body, subjective intuitions, negotiations with their bodies and different health devices to create knowledge unique to the person about the diabetic illness (Kingod, 2018).

From the research by Kingod, (2018) the members in the Facebook group can be said to be authorities and experts on diabetic management through their daily practices of monitoring their bodies. The members of the group discover how their bodies react to various treatment

options, diet, external environment and others about their bodies and the illness (Kingod, 2018). The study by Kingod (2018) shows the unique ways of creating knowledge from the individual body through experimenting with self and sharing the subjective experiences of the individual with other members of the group. Though those who share their experience and knowledge do not impose it on the other members of the Facebook group; the knowledge shared becomes truth discourses on diabetes management. Therefore, in contemporary biopower, there is an expert individual who has attained medical and health knowledge through his or her experiences and negotiations with the body, technology, and daily habits (Rabinow and Rose, 2006). The knowledge produced forms of truth discourses about health that may be adopted or modified by others to improve their health (Rabinow and Rose, 2006).

The second element mentioned by Rabinow and Rose (2006, p.195) are "strategies for intervention upon collective existence in the name of life and health." With the exercise of biopower, institutions impose disciplinary measures on populations to create a norm that seeks to promote life and wellbeing (Pylypa, 1998). As noted earlier, the patient as consumer subjectivity in healthcare and health promotion in late modern society presumes that the individual engages in reflexive practices to promote health and prevent diseases (Lupton, 1997a, 2013). Sanders (2017) argues that digital technologies form 'technologies of self', which "expand individuals' capacity for self-knowledge and self-care at the same time that they facilitate unprecedented levels of biometric surveillance, extend the regulatory mechanisms of both public health and fashion/beauty authorities" (Sanders, 2017, p. 36). Often health data generated by the use of mHealth is uploaded to a central data system (Till, 2014). This creates a situation where people's health data is accessible to others which also leads to the formation of population health

surveillance by big co-operations, medical institutions and others (Lupton, 2016a; Sanders, 2017; Till, 2014).

The third aspect of Rabinow and Roses (2006) elements of contemporary biopower include "modes of subjectification, in which individuals work on themselves in the name of individual or collective life or health" (Rabinow and Rose, 2006, p. 195). According to Rabinow and Rose (2006), biopower influences lay individuals to adopt certain practices that tend to reflect that institutional expectations about how they should organise their lives. mHealth devices provide self-knowledge about the individual's body which they may use as a way of modifying their behaviour for better health outcomes (Lupton, 2013). In the case of Larry Smarr, (Ramirez 2013, Smarr 2012) for instance, he developed a routine of self-care and certain habits to lose weight which led to the discovery of him probably having Crohn's disease. Likewise, in Kingod's (2018) study, the diabetic patients had developed a regime of self-care in managing the illness which they would share on the Facebook group. Though the routines adopted by individuals were not directly imposed on them by the medical institutions, they resulted from individuals' constant production of knowledge about their body and the desire to become healthier.

Thus, knowledge of the body is in the hands of the individual which he or she uses to develop daily practices that are not directly under the control of health institutions (Sanders, 2017). With access to information, there is the potential for agency as individuals define 'what health is' and how to use the knowledge produced from the body to modify health behaviours (Jutel and Lupton, 2015; Lupton, 2012b). In biopower, individuals who are not ill can adopt health practices that have the potential to enhance their health. Also, individuals who are ill can adopt health practices that can enable them to regain lost health (Armstrong, 1995). Thus,

biopower is a strategy for the governance for health that is promoted to individuals, to invest in human life and promote health practices (Lupton, 1997b; Pylypa, 1998).

2.4.2 The Digital Cyborg Assemblage

Lupton's (2015) theory of 'digital cyborg assemblage stems from the concept of biopower wherein the individual, the body and technology interact with one another to produce knowledge for increased population health. In this perspective, digital health technologies make up a 'digital cyborg assemblage' that offers innovative ways of promoting health and wellbeing, and improving health care delivery while reducing costs especially in areas where it is difficult to access health care (Lupton, 2015). In 1960, NASA engineering scientists Clynes and Kline introduced the term cyborg to describe cybernetic organism. A cybernetic organism is a creature that adopts human characteristic and machines features and uses those components to adapt to new environments (Lupton, 2015). Cyborg was later adopted into sociology by Donna Haraway (1991) in examining the interaction of technology and individuals in modern Western societies.

Digital technologies have become a part of healthcare and health promotion with the specific tasks of surveillance, monitoring and communication (Lupton, 2015). Most digital health technologies have sensors that enable people to record and analyse biometric data (Dé, 2011; Sinhasane, 2018). The digital cyborg assemblage refers to the lay individual who uses such digital technologies to examine his or her physiology or uses them to perform medical and health care tasks on the self (Lupton, 2015). mHealth devices enable the interaction of the human body with technology using sensors and processors that enables the body to be monitored, recorded and interpreted (Dé, 2011; Lupton, 2012; Rich and Miah, 2017). Lupton (2015) writes

> Now, more than ever, digital technologies have made it possible to peer inside the body, to monitor its functions and render them into visual form. The digital cyborg assemblage in the context of medicine and health promotion is focused on monitoring the signs and signals of the body, its patterns and its data (Lupton, 2015, p. 574).

Information retrieved from digital devices is sometimes sent to healthcare providers, shared with health support groups or privately kept by the individual for his or her consumption (Lupton, 2015). This is confirmed by Anderson and colleagues (2016) in a qualitative study involving twenty-two users of mHealth devices in Australia. From the study, people had different uses of data retrieved from health devices. While some of the respondents will send the information to their doctor for counsel on the information retrieved from their bodies, others will privately use it to modify their health behaviours, and still, others will share it with friends and families as a means of maintaining social status.

In the digital cyborg assemblage, the human body is a site of medical surveillance, for collecting data and monitoring health by the lay individual. There is also the notion that the body is a system of data codes and diseases are a result of information retrieved from technologies (Lupton, 2015). The information, algorithmic calculations and health data that one retrieves from mHealth devices can thus be regarded as sources of knowledge of disease and health (Jutel and Lupton, 2015; Lupton, 2015). With mHealth technology, the human body may become a scientific experiment whereby these devices enable owners of the body to make assumptions about the body and its processes with or without the assistance of a medical expert (Lupton, 2013). Additionally, the self-knowledge produced by digital health technologies may lead the individual to take on disciplinary measures in an attempt to maximise their health and reduce illnesses (Lupton, 2013). Lupton (2015) notes that this informs the power and authority a

layperson has over the body as the body is recognised as one to be manipulated to attain a form of health.

This chapter entailed a historical review of the nature of doctor-patient relationships in traditional western societies to post-modern western societies. The literature also shows how the adoption of mHealth technologies can be conceptualised as likely to have sociological consequences for doctor-patient relationships. In the next chapter, I discuss the research method I employed to examine this.

Chapter 3

Methodology

I used a qualitative approach grounded in Bourdieu's reflexive sociology (Bourdieu and Wacquant, 1992) to answer the research question that is "how might mHealth technologies influence doctor-patient relationships in the context of consumer cultures?" The qualitative approach in research is preferred for this thesis because the researcher will obtain from the participants, unique perspectives, experiences, and stories on the research topic without simplifying the views of the participants. As noted by noted by Hammersley (2013), qualitative research highlights the role of subjectivity in research and allows the researcher to break down and study phenomena in details. With this, participants had the opportunity to share their experiences, which provided rich data on how discourses produced from using mHealth devices for health and wellbeing influenced their relationships with their doctors.

3.1 Reflexive Sociology

According to Bourdieu (2004), reflexive sociology

> is not a matter of pursuing a new form of absolute knowledge, but of exercising a specific form of epistemological vigilance, the very form that this vigilance must take in an area where the epistemological obstacles are first and foremost social obstacles (Bourdieu, 2004, p.89).

My epistemological position is influenced by Bourdieu who stresses "overcoming the antinomy of objectivism and subjectivism" (Wacquant, 1998, p. 220). I recognise that "the objective structures of society (e.g., social roles, norms, institutions) influence subjective behaviour (what Bourdieu referred to as "practice"), and in turn how the totality of social behaviour serves to

reproduce the reality" (Fries, 2009, p. 327). The construction of social phenomena is a result of the influence of society on the actions and behaviours of the individual; society informs the behaviours of people and vice versa (Caron, 2013). Thus, there are societal structures that influence the attitudes and actions of users of mHealth technologies and their relationships with doctors.

In reflexive sociology, Bourdieu (1998) postulates that social research is vulnerable to biases that tend to contaminate the research process and eliminate objectivity in the research. As researchers begin to conduct research, they introduce bias in the way to examine the phenomena and the way it is described. Bourdieu (2004) grouped these biases into three parts: (a). bias related to the researcher's social position in the society, such as class, race, ethnicity, among others; (b). bias from the academic discipline and; (c) "scholastic bias"- the situation whereby social researchers tend to adopt and project existing theoretical explanations in describing the issue under study (Bourdieu, 1998 in Fries, 2009, p 329). Reflexive sociology is thus a 'self-referential' (Fries, 2009, p. 329) method that enables participants to be active in the research through sharing their own experiences and practices, without imposing on the research process her or his theories, validations, and beliefs (Fries, 2009; Mauthner and Doucet, 2003).

Researchers in social science must be conscious, that they form part of the research that is being studied (social world and social reality) while at the same time, they are also social actors with their ways of acting (Fries, 2009). In adopting reflexive sociology as a methodology, the knowledge gained from this investigation critically reflects the accounts and experiences of users of mHealth technologies and their relationships with doctors, which are sensitised to how my subjective view may influence my knowledge on the topic. In this, the researcher is influenced

by and participates in the social world in which the research question was deduced, and the theories and approaches used are products of the social world (Bourdieu and Wacquant, 1992).

As a researcher, it is important to declare the philosophical assumptions that have influenced me in my research journey. My philosophical assumptions, worldviews and beliefs inform the way I carry out the research, my writing style, and shape the content of this thesis (Creswell and Poth, 2018). The social constructivist paradigm informs my philosophical position. In the social constructivist paradigm, knowledge is a product of meanings of humans that are negotiated culturally, socially, and historically (Creswell and Poth, 2018). Individuals create meanings and knowledge through interaction with others and their social context (Scotland, 2012). The results of this research cannot be considered as representing the objective reality of mHealth technologies and doctor-patient relationships. Other researchers from diverse backgrounds may study the data transcripts of this research and may focus on different areas in their analysis than I. Hence, the use of mHealth technologies and doctor-patient relationships can be examined using different methods, perspectives and views.

The goal of reflexive sociological method is to "capture the dialogical interplay of objective social structure with subjective agency in social behaviour" (Fries, 2009, p. 327). Thus, the researcher should be aware of societal structures that affect behaviours and actions of people and how this contributes to the phenomenon under study (Fries, 2009). With this in mind, I recognised that the use of mHealth by patient-consumers for enhanced health is linked to the neoliberal societal context where individualization and self-responsibility are emphasised as part of cultural values (Lupton, 2012).

According to Fowler (2003), reflexive sociological interviews "permit access to each respondent's interpretative perspective, that is, they permit the hermeneutic recovery of the

subjective order of things" (Fowler, 2003, p. 3). By adopting reflexive sociological interviewing for this research, the focus of interviews was to gain from respondents, their 'lived experiences' without categorising their experiences and behaviour according to existing analytical categories or theories (Fries, 2014). The goal here was to enable participants to share with the researcher, their reflexive accounts of their experiences of their doctor-patient relationships as users of mHealth devices. To do this, I avoided questions that would lead to second-order accounts from the participants which would conceal their actual experiences (Williams, 1995). According to Fries (2009) 'why' questions can lead to second-order accounts as opposed to 'how', 'who' and 'where' questions. For instance, instead of asking respondents 'why do you use mHealth devices?' the researcher should consider 'how did you start using mHealth devices?' From the example, the researcher is likely to gain more information in the latter question than the former.

In adopting reflexive sociology as a health sociology researcher, I kept a journal during the data collection process to reflexively examine my social position as I undertook this study. I am an African, international student in Winnipeg, Canada and a user of mHealth technology. I use the Samsung Health application and MyFitnessPal to monitor women's health, water intake, food consumption and physical activity. Though these health monitors influenced my knowledge of my body, my relationships with doctors in Canada had often modelled the active-passivity model of doctor-patient relationships described by Szasz and Hollender (1956). In medical encounters I had experienced over my adult years, most doctors seemed not interested in engaging me on my subjective understanding or interpretation of what is going on with my body. According to Bourdieu (1993), the researcher possesses a monopoly of the production of knowledge in the research field and is influenced by her or his interests. The researcher has her

or his unique background and subjective interests, and the presence of the researcher in the research field influences the thought pattern during the research.

Upon my reflexive account from my first interview, I realised I unconsciously assumed the study participant had similar relations with the doctors. Bourdieu contends that the social scientist inhabits the social world, thus she or he must be critical of their social position about the study to be undertaken (Fries, 2009). With the reflexive journal, I recognised how my past experiences with doctors influenced the interview with the first respondent. With this, I examined my questioning style and I was able to sensitise myself during later interviews to concentrate on participants responses and asked follow-up questions based on their responses to reflect their stories. During the data analysis, I used the reflexive journal to examine my reactions to the narratives of respondents regarding their mHealth technologies and encounters with doctors so as to not let my social position obscure the realities narrated by participants. Researchers using reflexive sociology be sensitive to any social connections, values and belief systems that are likely to disrupt the research and hide any knowledge produced during the research (Mauthner and Doucet, 2003; Tracy, 2010).

3.2 Sampling Recruitment and Participation

For this thesis, users of mHealth devices considered in the study referred to individuals who utilise different aspects of mHealth technologies or devices (like blood pressure monitors, calorie count or food intake monitors, weight management devices, biosensor monitors and wearables that track body temperatures, heart rates and respiratory rate, smartphone health applications and so on) for monitoring their physiological functioning and record their health behaviours to gain knowledge on their health and also, to improve health outcomes.

The inclusion criteria for this research were any individual who has access to and uses mHealth technologies for personal health care, is over eighteen years of age, have seen a doctor in the previous year and can participate in an interview in the English language. Healthcare professionals who use mHealth technologies for personally monitoring their bodies and other health purposes are exempted from participating in this research. The population sample for this research was users of mHealth technologies in Canada over the age of eighteen years. In a national study on the use of smart connected devices for health and health care involving 4109 Canadians, the researchers (Paré et al., 2018) found out that 66.2% used different mHealth devices for health-related purposes. To sample the respondents for this research, I adopted the "typical case" purposive sampling strategy (Patton, 2002). The typical case strategy allows the researcher to intentionally choose research participants who have in-depth knowledge and are familiar with the topic under study (Patton, 2002).

After obtaining the ethics approval, I posted the recruitment flyer on fitness and health groups on Facebook, WhatsApp and Twitter. I also posted the flyer at the Active Living Centre of the University of Manitoba and a local fitness centre. Though this method was useful, the three participants who contacted me could not meet the criteria of seeing a doctor in the previous year. I also sent the recruitment flyer to CJNU-FM but no potential participant contacted me through this. I also used a snowball strategy (Parker, Scott and Geddes, 2019) where I directly asked interviewed participants if they knew anyone, they felt may be interested in participating in this research. This strategy proved useful as three participants were recruited through this method. Also, I engaged in direct solicitation where I encountered two people who used health applications, blood pressure monitors and smartwatch to monitor their health. These people agreed to be interviewed for the research. I initially screened participants based on the criteria to

ensure that they were knowledgeable and could relate to, describe and illustrate their relationships with their doctors as users of mHealth devices. After this, I sent consent forms (appendix i) to the participants and we arranged a convenient day and time for the interview.

Table 1: Typical Case Purposive Sampling Strategy

Strategies	Male	Female	Total
Social Media	2	3	5
Direct solicitation	0	2	2
Through Participants	1	2	3
Total	3	7	10

3.3 Procedure

I conducted semi-structured one-on-one interviews between September and November 2020 (see appendix ii) with the participants in order to explore the subject matter under study. Semi-structured interviews enabled me to have a flexible interview guide with follow-up questions to easily probe into participants' comments. Additionally, semi-structured interviews provided the platform where participants shared background information and stories which had not been anticipated by the researcher, a goal in reflexive sociological interviewing. Also, semi-structured interviews allowed for easy transitioning among topics of research interest.

In observing COVID-19 protocols, the interviews were conducted through Zoom video conferencing. Zoom video conferencing is an internet service platform that enables people to communicate and conduct meetings using computers, mobile phones and other mobile devices irrespective of their geographical location (Archibald, Ambagtsheer, Casey and Lawless, 2019). Zoom is appropriate and convenient to use for data collection as compared to other internet-based platforms like Skype because zoom offers a means to record and store interview sessions securely and safely without the involvement of another third-party service provider (Archibald et

al., 2019). Participants chose their private areas of convenience for the interview and I interviewed participants from my private residence.

Before interviews, consent forms were sent out to participants by e-mail to confirm their informed participation in this research. Some participants filled the forms and submitted the forms before the day of the interviews. Those who did not fill the forms were asked to give verbal consent before the interview started. Before the interview, participants were asked if they had any questions regarding the interview. In addition, with consent from participants, I took notes on my computer during interviews whenever necessary and this made up the field notes which were incorporated in the data analysis.

As counselled by Frey and Fontana (2000), interviews in qualitative research should be a spontaneous interaction between the participants and the researcher with an interview plan only serving as a guide to the researcher. Following this counsel, I used a conversational style of interviewing that allowed the participants the freedom to control the pacing of the interview and helped reveal topics that may not be in the existing literature. Due to my position as a health sociology researcher, the conversational style of interviewing mitigated any form of power imbalance in the course of collecting data and made participants comfortable to share their experiences (Parker, 2005). The length of interviews was between fifty minutes and nineteen minutes with the average interview lasting for an hour.

3.4 Ethical Consideration

The Tri-Council committee on research ethics in Canada as part of its guidelines requires researchers to ensure the welfare of research participants. Among the factors that contribute to the welfare of respondents are “privacy and the control of information about the person, and the treatment of human biological materials” accordingly to how the participants want it treated

(Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research 2014, 6). The act of ensuring confidentiality includes the obligation to protect information from unauthorised access, use, disclosure, modification, loss or theft. Fulfilling this not only reinforces a trusted relationship between researchers and participants but also ensure the integrity of the research project.

Before the interview, I obtained ethics approval (appendix iii) from the Psychology Sociology Research Ethics Board of the University of Manitoba. Participants were informed about the nature of this research and consent forms were sent out to participants through emails. I also informed participants they are not compelled to partake in this study, and they could withdraw at any time during the research process. After interview sessions on zoom, I moved the data recorded to a password-protected file on my computer and my university's server which is also protected by a password. To ensure anonymity and privacy of participants, pseudonyms were used to replace the names of the participants on file. These pseudonyms were used throughout this research and in the write-up of the thesis. I did the transcription of data to prevent the situation where anyone outside the research may identify the participants.

3.5 Data Analysis

Using reflexive sociological interviewing, participants of this research were provided with opportunities to share their feelings and perceptions as narrative descriptions of their use of mHealth technologies and their relationships with their doctors. I adopted a thematic analysis approach which is considered a good method for analysing research data that seeks to examine people's experiences, views and daily realities of a phenomenon (Braun and Clarke, 2006). As I wanted to capture the complex interactions of participants, their mHealth technologies and their relationships with their doctors using participants' narratives, thematic analysis proves to be a

useful method for data analysis (Reissman, 2008). Also, thematic analysis provided a means of extracting and connecting patterns from the collected data to generate meaningful interpretation that reflected the experiences of the participants (Braun and Clarke, 2006). The data from this research consisted of interview transcripts and field notes. However, the primary data for analyses was interview data while the field notes served as complementary data in the analysis.

With thematic analysis, I was able to individually identify emerging themes from each participant. Based on the research questions, the existing literature and the theories concerning the topic, I was able to deduce the themes for the study. Together with the thematic analysis (Braun and Clarke, 2006), I adopted a voice-centred relational approach (Mautner and Doucet, 2003) for the interpreted data compatible with reflexive sociological interviewing (Fries, 2009). The voice-centred relational approach enables the researcher to reflexively examine his or her roles (such as social location, epistemological and ontological influences, academic background and others) which may influence the data interpretation process and change the actual narratives of participants (Fries, 2009; Mautner and Doucet, 2003). The goal is that at the end of the interpretation, the analysed data reflect the voices of the participants and not my voice and ensure rigour in the research. To carry out this, I wrote down my views on some of the questions from the interview questions in my journal. After every analysis of transcripts, I examined if my views influenced the analysis such that participants views got lost in the process.

3.5.1 Stages of Data Analysis

After every interview, I directly transcribed the audio recorded. I then sent the transcribed data to participants to go through to ensure the transcribed data is exactly what they said. I adopted this approach because, during the first interview, there were glitches in the network. In order to ensure I did not miss anything the participant said, I sent the transcript to the participant

for review. I later adopted this for the other participants, too. Through this, participants were able to correct any word that was not clear during transcription and some also shared views and experiences they forgot to mention during the interview. I transferred the transcribed data to NVIVO for coding and sorting out the data. Through listening to the audios and transcribing, I was able to familiarise myself with the data and gain a thorough understanding of the interview scripts of the participants.

Using NVIVO, I developed codes from the data. I initially compared the data from my field notes to the transcript data. I kept the field notes on hand whiles coding as it helped me compare any similarities and differences whiles coding the transcript data. I used the open-coding method which is the process of analysing data to develop labels and concepts whiles reading the text (Gläser and Laudel, 2013).

The codes generated were then grouped to form themes (Braun and Clarke, 2006). I created the themes by looking for consistent relationships and patterns among the codes. The similar codes were assembled and named with reference to the existing literature. In the next chapter, I discuss the themes developed from the analysis.

Chapter 4

Analysis of Findings

In this section, I examine the research question, 'how do mHealth technologies influence doctor-patient relationships in the context of consumer culture?' using the data collected from the research participants. The interview was conducted on Zoom Video Conferencing and the interviews lasted an average of sixty minutes. Ten participants from Winnipeg agreed to be interviewed for this research. I realised that individuals between the ages of twenty to thirty years who are active in fitness activities were interested in this kind of research as I received lots of requests from individuals in this group. After I received five participants in this category, I deliberately declined further participants in this group to ensure I got participants from other age groups as well. Hence, the majority of the participants are in this category.

The participants interviewed used different wearable devices ranging from fitness devices to thermometers and cardiovascular monitoring devices for personal health monitoring. Though the fitness devices used by participants like Fitbit and Garmin were designed to monitor fitness activities, these devices could measure heart rate, blood pressure, cardiac activity and quality of sleep. With this, participants who used fitness trackers were interviewed based on how they used their devices. Thus, preference was given to participants who used fitness trackers like the Fitbit not just for their physical activities but other aspects of their bodies like cardio rate, metabolic rate, quality of sleep and mood. Overall, the mHealth technologies used by participants helped them generate health data through body monitoring. With this, participants gained insights on the presence or absence of illness, their mood, appearance, nutrition, daily fitness activities, among others.

Table 2: Profile of Participants

Participant (Pseudonyms)	Sex	Age	Education	Paid employment	Job	Underlying Health Condition	MHealth Device
Olivia	F	33	Master's	Yes	Adults Support worker	No	Fitbit
Amber	F	27	Bachelor's	Yes	Junior Accessor	Yes (Name of condition withheld)	Samsung fitness watch
Ethan	M	25	Bachelor's	Yes	Recreational Therapist	No	Samsung fitness watch
Sophia	F	28	PhD (Ongoing)	Yes	Student	Yes (Clinical anxiety)	Garmin
Mia	F	35	Bachelor's	Yes	Sales Executive	Yes (Ulcer)	Garmin, Mood monitor app
Ava	F	45	Master's	Yes	Home Manager (People with Disabilities)	Yes (Overweight and High Blood Pressure)	Blood pressure monitor, Fitness watch
Daniel	M	42	Diploma Certificate	Yes	Security guard	Yes (High Blood Pressure)	Blood pressure monitor, Samsung Health app
Ella	F	28	PhD (ongoing)	Yes	Teaching/ Research Assistant	Yes (Overweight and diagnosed by a doctor to be susceptible to Heart Disease)	Fitbit, Some health apps
Jude	M	21	Bachelor's (ongoing)	Yes	Sales Representative	No	Fitness watch, Health app, Weight Management app
Carla	F	38	Bachelor's	No	Stay-At-Home Mother	No	Fitness watch

From table 2, nine of the participants are paid employees and there is one stay-at-home mother.

All the respondents had completed high school, one is presently in the university completing his

bachelor's degree and two are working on completing PhD programmes. Also, five of the participants had been diagnosed with clinical anxiety, high blood pressure and one participant (Amber) declined to mention the name of the condition.

The central themes emerging from these interviews are the monitored life; consumerism in health; mHealth, health decisions and doctors; interpersonal doctor-patient relationships.

Table 3: Themes for mHealth Technologies and Doctor-Patient Relationships

Main Theme	Sub-Themes
The Monitored Life	Reasons participants use mHealth Retrieving health information and health prompts A daily affair
Consumerism in Health	Expressions of personal responsibility Accountability and prevention Financial cost Uncertainties about medical knowledge
mHealth, Health Decisions and Doctors	Consumer-patient in the medical encounter Passive patient in the medical encounter Personal health knowledge and health decisions Convenient Health care
Interpersonal Doctor-Patient Relationships	

4.1 The Monitored Life

As many asymptomatic patients may not know of any underlying health conditions and may have to wait until they fell ill before seeking doctors' advice, mHealth technologies may tend to fill this gap. For instance, Amber referred to her mHealth device as "my personal health tracker" whereas another Carla referred to it as a "mini-doctor that could be carried anywhere." This metaphor used by the participants raises the feature that mHealth technologies have the potential of performing the role of doctors. The portability of mHealth technologies makes it

easier for individuals to carry them anywhere enabling participants to notice or know health problems that may arise during their daily routines. Thus, participants are constantly engaging in self-monitoring. Under the theme 'the monitored life', I examine the narratives on the reasons participants use mHealth, how they use the information from their devices and their daily use of their mHealth devices.

4.1.1 Sub-Theme: Reasons People Use MHealth

In this section, I examine how participants started using their mHealth devices. Using reflexive sociological interviewing (Fries, 2009, 2014), I avoided asking direct questions such as 'why do you use mHealth?' but instead, engaged the participants in a discussion of the ways that reflected on how they started using mHealth.

Mia is a sales executive who mentioned that she has had her fair share of health issues while growing up. When we were talking, she revealed she has been diagnosed with an ulcer and has had other medical issues with her eyes. Mia uses Fitbit, a mental health app for monitoring anxiety and stress and the forehead thermometer. She mentioned she had been using her mHealth technologies for over a year and a half now, but she started using the forehead thermometer during the outbreak of the COVID-19 pandemic. Mia related:

"… and until recently, I have been checking my body temperature. I often get this headache during winters. But until recently, I have been getting it and I know it is as result of stress and the pandemic. Anytime I have a headache, I feel my temperature is up. And then I will check my temperature with the gun which is scary. Because if my temperature is higher than normal, it wouldn't be that I have headache, but it will be you have COVID, please isolate" (Mia, 35 years, sales executive).

With the COVID-19 pandemic, it has been predicted by some mHealth researchers (Alessi, 2020) that the use of mHealth technologies was likely to go up due to remote patient monitoring and remote management of illness and diseases. Among the participants interviewed, only Mia

added the thermometer to monitor her body temperature due to the outbreak of the COVID-19 pandemic. Her decision to add the thermometer is to detect early signs of the COVID-19 virus is something she decided without the involvement of her doctor or any health care professional. Also, with ongoing public announcements on the COVID-19 pandemic (Public Health Services, 2021), she knows in case she should experience an unusual body temperature, she has to isolate herself. Mia's use of the thermometer can be examined using the concept of biopower (Foucault, 1984; 1997; Lupton, 1997b; Pylypa, 1998; Rabinow and Rose, 2006). As noted in the literature, biopower seeks to promote human life and prevent death through adopting certain interventions by governments, health institutions, groups but can also be adopted by individuals (Foucault, 1984; 1997; Fries, 2008; Lupton, 1997b; Pylypa, 1998; Rabinow and Rose, 2006). With this pandemic situation, governments have been imposing lockdowns and other restrictions on their citizens, in addition to educating the public on safety measures to prevent the virus. In Canada for instance, provinces issued lockdowns, curfews, stay-at-home orders, restricted travelling, the closing of non-essential businesses among others to contain the spread of the virus (Dangerfield, 2021). Despite the lockdowns been compulsory measures imposed on the governments on the population, Mia has willingly adopted the thermometer to detect early signs of the COVID-19 virus and take actions when needed which can be understood as disciplinary in the Foucauldian sense. The intervention to promote her life is the constant checking of body temperature and the disciplinary action is isolation in her case.

Ethan is a recreational therapist and uses a Samsung fitness and health watch. He describes himself as a healthy individual who loves going to the gym. He has goals of keeping a healthy lifestyle and avoiding a sedentary life. He mentioned that he had been monitoring his health and physical activities manually and would visit the doctor's sometimes for health check-

ups. About two years ago, he saw advertisements on the smartwatch and how it could give you precise details on certain aspects of your health. He got intrigued and decided to get one for himself. He said:

"I would monitor my health and lifestyle activities here and there but nothing much. So, I needed a watch, but I found out through these ads and reviews on the net that I could do more with the smartwatch. I did my research and it really gives you in-depth details on your body. You can track your runs, your water intake, especially that I tend to not drink much water, your sleep, my heart rate and all that. So, I got the Samsung one and I have been using it since I got it" (Ethan, 25 years, recreational therapist).

Almost all of the participants started using their various mHealth technologies because they wanted to practice lifestyles that led to maximum health and wellbeing. Daniel works as security personnel who uses the blood pressure monitor and Samsung health application. Relating how he started using mHealth technologies, he said: "I decided to be more healthy and I got it and I have been using it from 2018". This corresponds to the literature that mHealth technologies are often promoted to consumers as a way for them to practice and maintain healthy lifestyles (Bradway, Årsand, and Grøttland, 2015; Dé, 2011; Lupton, 2012b). Hence, for my participants, they started using their mHealth devices in an attempt to live the kind of lifestyle that would promote their health.

During the interviews, I asked participants for specific examples of the kind of self-care and lifestyles behaviours that they adopted to maintain or obtain health. Daniel mentioned:

"…mmm, exercising, but I lost it some years back. But then I thought if I need to keep myself healthy, I must exercise and I started using the health app to track my activities. and my diet too. I try as much as possible to eat healthy" (Daniel, 42 years, security guard).

Similar to Daniel's practices, participants engaged in exercising, different diet plans, routine medical check-ups, in addition to using their mHealth devices as part of their self-care and healthy lifestyle practices and behaviours. Carla related:

“I go check myself with my doctor at least once in every 4 months to know everything is right and it is. I have a scale that I use to weigh myself and I know when I am tending towards where I am not supposed to go to. And most times when I eat stuffs, I check the content, the sugar and all those things at the back... oh! what do they call it [I: nutrition]... yeah, nutrition content! I check that too… and I check with my doctor, I check my weight, my glucose and every other thing that needs to be checked. And I have my watch on too, I check my steps and calories I am burning every day. It shows me my blood pressure and heart rate. Sometimes I exercise and I check my calories, steps and all that. So, I do it every day to make sure I am good. And I am very grateful I took that route because it's been helpful and working for me” (Carla, 38 years, stay at home mother).

Ava in our conversation also explained:

“I will say that I try to eat healthily, I try to exercise, yeah I have been on diet plan that failed and but now I got a new one that works. Now what I am doing is I am eating what I have been raised to eat. Unlike before that, you are dieting and this has to go out, this has to out, and you are dieting and before I realise I am back to the same habits… So now I am not taking foods out, but I eat it in smaller portions. urm… also I was always taught to know that my spiritual life must also be healthy. I must know what I believe and hold on to it. I also grew up knowing that family life is important in health, I must have good relationships and be able to socialise with people around me and be happy… these are all the steps I have taken, talking about food, talking about exercise, talking about erm… social relationships, checking in with my doctor, taking action if I feel something out of the ordinary in my body system” (Ava, 45 years, home manager).

These activities taken by participants to promote health can be understood in terms of Foucault’s (1997) ‘technologies of self’. As detailed in the above theory section, ‘technologies of self’ is where individuals adopt various strategies or means on their bodies in order for them to attain some form of happiness, optimum wellbeing, among others (Foucault, 1997). Participants can be said to be engaging in ‘technologies of self’ (Foucault, 1977) in that they perceived their self-care and lifestyle practices as allowing them to think of themselves as health-conscious. Also, they perceive that these self-care and lifestyle behaviours are beneficial in other aspects of their lives. As they engage in these lifestyle behaviours, they in turn gain health, independence, work productivity and so on.

Olivia uses Aura and Calm, two different health applications that use artificial intelligence to help their users manage or improve their mental health through meditation, mindful breathing, mood tracking, journaling, gamification and others. Olivia also uses Fitbit. She speaks positively of the health applications claiming these health apps have helped her manage stress and anxiety and also prevented the situation where she has to be on medication for that. She has not been medically diagnosed with anxiety or stress.

"my first year of transitioning in this place was tough… the way of learning, I am not used to fast learning as I felt everything was rushed. I always found myself lurking behind and I was very stressed out and didn't feel well with myself generally. And it wasn't like I could walk in- to the clinic and say I was more stressed out because I am having issues with my move here. But I felt like let me find something casual that can help me calm myself down, help me improve my health and do better in my studies. So, this was the last resort I found myself doing. Did it Help? Well, it helped a little bit but as you know it is an app so its not big of a deal. But then there is always that option of seeing a professional to help you or even prescribe anti-depressant medication for you, but I didn't want to go there. It was more like let me try something casual if it would work" (Olivia, 33 years, adults support worker).

Olivia preferred using health applications to manage stress and anxiety to see a doctor. In the interview, she mentioned she was not interested in initiating a medical encounter about her moods because she assumed, she will be diagnosed with depression: "Also, I also feel they may diagnose me with depression because I am always going to see them, telling them oh! I am stressed out and my everyday problems. I don't want to be on any medication" (Olivia, 33 years, adults support worker). Olivia also revealed that she liked the convenience of having the applications anytime anywhere for meditation. For Olivia, she used the health applications to receive guided tips and instructions on meditation based on her current mood which she preferred other than taking medication. In line with Peng, Kanthawala, Yuan, and Hussain's (2016) discussion of peoples' use of mHealth applications, Olivia preferred personalised guidance on managing stress and anxiety other than medication which may be generalised.

According to Ella and Ava, their interactions with their doctors led to their use of their mHealth devices. They were looking for a means to avoid or manage illnesses. Ava mentioned during our zoom meeting that she has been obese all her life and had always been interested in ways that will improve her health. She added that due to this, her daily life routines are revolved around activities that enable her to maintain health and avoid any of the health conditions associated with obesity. She prioritised exercising, healthy eating, routine medical check-ups, spiritual health and social life to maintain her health. She had been using the blood pressure monitor for more than three years and the fitness watch for a year now. She got her fitness watch because she wanted to monitor her physical activities and the blood pressure monitor after her doctor recommended that she monitored her blood pressure.

"I got my device when the doctor advised I should monitor my blood pressure. He wanted me to record it daily and he wanted to see the figures after two weeks. He said I should go to the stores and get it done. I started going to the stores and I discovered that it wasn't working out for me because of my schedule. I was behind schedule, and I was not doing what I am supposed to do since I was spending lots of time going out to the stores. I talked to uh… I think two or three pharmacists and I decided to buy one for myself. The one that fit was the one around the wrist, so I got it. That's the reason we are here, and I have been using it for a couple of years now" (Ava, 45 years, home manager with people with disabilities).

As Ava revealed in our discussion, her doctor did not specifically ask her to buy a blood pressure monitor but she decided to buy one based on her busy schedule. This supports the claim by Ball and Lillis (2001) individuals nowadays want to preserve their free time and convenience even in managing health, making more people adopt digital technologies for health.

Ella is a twenty-eight-year-old research assistant who describes herself as a healthy person. She revealed that her doctor always expressed concern over her health during her visits. According to Ella, from two to three visits to the clinic, her doctor said she was becoming overweight and was likely to get diabetes and heart disease during physical examination. Her

doctor encouraged her to maintain an active and healthy lifestyle by going to the gym, referred her to a dietician to assist her with her meal plan and recommended that she gets a fitness device that will help her practice an active lifestyle. However, it wasn't until she joined a fitness group that she bought the Fitbit.

"I go to a gym near to my home. I really love that community and I became passionate about my health from there. I feel my doctor did a good job, he really cared about my health but the fitness group I joined sparked something in me. I became conscious of how I was feeling, and I bought my Fitbit to monitor my progress especially with cardio." (Ella, 28 years, teaching and research assistant).

Ella's case is in line with the conclusion by Peng, Kanthawala, Yuan, and Hussain (2016) in their qualitative study on the use of mHealth devices. The researchers realised that members in fitness groups tend to adopt mHealth devices like the fitness watches where they socially share their output data with themselves in an attempt to encourage themselves or ensure they are up to goals they set for themselves. Though Ella mentioned she does not share her self-monitoring data with others in her fitness group but her doctor, the use of Fitbit by members in her group influenced her to also get the Fitbit.

Unlike the other participants who started using their mHealth devices due to recommendation from doctors or their desire to live healthy lifestyles, for Amber, her friends influenced her decision to get her Samsung watch. Amber is a twenty-seven years old junior accessor who has been using her smartwatch for about three years now. She revealed she has been diagnosed with a medical condition regarding her leg and that she normally had to stretch to help her condition. Initially, she was not using her smartwatch as a health tool but for entertainment and other purposes. After some time of using the watch, she realised she could set prompts using her device to remind her to stretch which helps her leg condition. She later started using it to monitor her heart rate, calories consumed, fitness activities and mood. She describes

her mHealth device as a smart tool that can pick up whatever activity she is doing or mood she is in.

"So, it was out of actually fancy stuff… [laughs] oh yeah, I have a smartwatch. Because my friends had it and they talked highly of the smartwatch. I also saw the ad and I thought that is nice. Having a watch you can make calls from but I didn't know it was connected to health and things like that. And then after I got it, I started realising the other uses" (27 years, junior accessor).

In Amber's case, health was not the goal when she got her smartwatch but for other purposes like calling, texting, checking the time, among others. This scenario is noted by Ho and Quick (2018), Swan (2012) and Williams, Weiner, Henwood and Will (2020) that everyday tools are been transformed into health tools for health purposes. With this transformation, everyday living spaces become a site like that of clinics and hospitals as participants can practice healthcare at home (Lupton, 2013; Mort et al., 2009; Nettleton and Burrows, 2003; Oudshoorn, 2012).

4.1.2 Sub Theme: Retrieving Health Information and Health Prompts

MHealth technologies use multiple sensor technologies, artificial intelligence, internet of things[3] among other technological innovations to monitor peoples' bodies (Beaver, 2018; Dé, 2011). As participants monitor their bodies and submit themselves to self-care regimes, they may retrieve varying forms of health information from their bodies using the technologies (Lupton 2012b, 2013, 2015). This health information can be presented in various graphic presentations, that participants review retrospectively and use for health care purposes whenever needed. Participants had different views on which health information was valuable to them based on their health needs and health goals. Some participants believed the health information provided by

[3] Internet of things refers a network of objects such as phones, cameras, wearable devices and sometimes human beings designed to transmit information from one end to another (Burgess, 2018).

their mHealth technologies are a true reflection of themselves and whatever they were feeling at any point in time and they act on it appropriately.

Mia uses the fitness watch to monitor her calories, sleep patterns, heart rates and physical activities.

"… It tracks my heart rate. Sometimes it tells me that my blood pressure oh, heart rate is low and I am like I feel normal. Sometimes I feel my heart is beating faster and it tells me my heart rate is normal right. Uh… I am like I don't feel normal but again that is why I can't trust myself and these things do the calculations for me" (Mia, 35 years, sales executive).

In the digital cyborg assemblage, Lupton (2015) describes the human body as a metaphor of a machine with codes whereby the presence or absence of diseases in the body is determined by these codes. From the response by Mia, it is noticed that her understanding of how heart rate is, is based on the interpretation from the device. In similar responses, Amber and Ella spoke on the fact that they rely on data from their bodies to interpret how 'well' they are doing.

"err… I have not experienced any situation where the data is wrong. It is a good reflector of how I am feeling. Because if I am exercising, it is able to tell that. I do not doubt it. I trust my device, I have been using it for more than two years and any information it tells about me, I take it seriously. I wouldn't take it as I am feeling ok" (Ella, 28 years, teaching/research assistant).

"oh! It is able to tell whatever I am doing, and even sometimes my mood. For instance, it records whatever exercise I do. Like it is so smart, if I am doing any kind of exercises, it knows what I am doing, and it will be recording it." (Amber 27 years, junior accessor).

From these vignettes, the bodily functions of participants such as their resting heart rate, physical movements and mood can be monitored and visualised by their mHealth devices for interpretation. This is reflective of Lupton (2015) who noted that mHealth technologies turn the human body into a site of learning as individuals constantly collect data in an attempt to know themselves. According to the literature (Aitkin, Clancy, and Nass, 2017; Dé, 2011; Lupton, 2015; Swan, 2012), mHealth technologies can provide its users with real-time feedback on how

they are feeling. This is seen in the narratives as participants relied on their various mHealth technologies on how they are feeling at any point during the day.

Ethan on the other hand had reservations regarding the data produced from his device. During our conversation, he would move his hands around a lot and the device reported that he was running. He reiterated that this happened sometimes, and he would not rely on his mHealth technology to give him real-time feedback on whatever is going on in his body.

> "Even now, it is saying I am running… the inaccuracy! It's been convenient for most parts and inconvenient too. I like that it notices my body movements especially exercise. It tells what I have done but now see it is telling what I am not doing" (25 years, recreational therapist).

Though mHealth devices may be able to pick participants activities, temperature, heart rate, sleep patterns among others, this situation with Ethan shows that these devices cannot be fully relied on. Ventola (2014) in a review on various mobile devices for remote patient monitoring posited that patients could accurately use mobile devices for monitoring their bodies and health for effective outcomes. Other researchers (Coppetti et al., 2017; Stoecker, Rader, and Halpern, 2013) argued otherwise when they examined various mHealth technologies on the market saying most of the devices had not undergone rigorous testing to make such conclusions. Ethan was the only participant who raised this issue on the accuracy of data produced from mHealth devices adding that he does not fully rely on the devices.

For participants, monitoring themselves and their bodies is a meaningful activity as it enables them to be up to date on their health. For instance, Ava disclosed that before she started monitoring her blood pressure, her doctor will sometimes suggest changes in her diet or lifestyle which she would do. However, she would not sometimes notice the changes until she went back to see the doctor.

"… I will follow my doctor's directions on my health. He will say I should do this, cut down on salt, drink more water, reduce that and others. How effective it was, I didn't know or have the facts until I went back to the doctor. So, it was when I started using the device that I realised how well I am doing with those details it records" (Ava, 45 years, home manager).

Similarly, Ella said:

"It has made me really aware. Because when I started going to the gym. When you do two days of the gym, you don't see any changes in your body but when I started wearing the device, I could see the improvements. Even with the heart, I could see the changes in my heart rate right away. Initially, my resting heart rate was around 175 and now it is down to 62 so it is a huge difference. It helps me track my progress and maintain it" (Ella, 28 years, research/ teaching assistant).

The above narratives support the existing literature that reports mHealth technologies may enable individuals to be aware of their bodies, and how their bodies react to certain environments, foods, lifestyle practices among others to promote health and wellbeing (Figueiredo, Caldeira, Chen, and Zheng, 2017; Kingod, 2018; Mandracchia et al., 2019; Smarr, 2012). Also, Ella is able to gauge her self-care or lifestyle behaviours that contribute positively to her health. With this, she creates unique knowledge on herself based on changes in her body from taking medication, exercising or eating certain diets. This can be examined from Rabinow and Rose's (2006) explanation of contemporary modes of biopower. The unique knowledge created by participants like Ella and Amber becomes 'truth discourses' (Rabinow and Rose, 2006) which may influence their doctor-patient relationships.

Carla, however, appeared to be uncertain about the relevance of the data in contributing to health. A stay-at-home in her late thirties, Carla received her Fitbit as a gift from her friend. She describes herself as 'old-school' and never knew something like that was available for people to easily monitor their selves at home. Before that, she believed people could only monitor their health with health practitioners. Hence, getting her device was eye-opening for her.

She was indifferent to the information retrieved from her device. She mentioned whiles reflecting on the data from her device:

"I like the recorded data. It is good reflecting on how I am doing at the end of the day or week. Hmm … it does not do much, but it actually helps a lot" (38 years, stay-at-home mother).

Likewise, Ethan on the data from his mHealth technology cited:

"for the most part yes, the statistical data has been helpful, but not in-depth. It is helpful but it has its own challenges and there is a lot of stuff it does not monitor. Its been great but then, I wouldn't say it has made me informed" (25 years, recreational therapist).

According to Greener (2003), knowledge by individuals acquired from their subjective experiences and other resources forms a small part of the knowledge needed by individuals to make informed decisions regarding their health. Greener's (2003) view informs the reaction by Ethan and Carla on their health knowledge created with their mHealth. As it can be seen from the narratives above, Ethan and Carla found their knowledge useful but do not consider their knowledge to fully inform them about their health.

In addition to using mHealth devices to collect data on their selves, some of the participants used mHealth technologies to set daily reminders for activities such as 'drink water', 'stretch' and 'take a walk'. Thus, mHealth technologies may be taking on roles of authority as they send reminders to participants to take actions regarding their bodies or health. Ethan used his smartwatch to set reminders to drink water and to stretch during the day.

"I tend to not drink much water and I like the hydration reminders. …and sometimes at work, when I have been sitting for 30 minutes, it sends a notification, get up now and I am like yeah and it will reply good job! So there is that sense of achievement and I am loving it. I am not gonna lie" (25 years, recreational therapist).

Ethan found the reminders useful as they helped him meet his daily goals of water intake and increased physical activities. This supports the views of participants in the study by Anderson, Burford and Emmerton (2016) that mHealth applications help them to attain specific goals perceived to maintain health. When Sophia was talking about the things, she liked about her mHealth device, she said:

"It also has the feature where if you are sitting for more than an hour, it will tell you to move which is also good so that I just don't sit on my couch for hours and hours unend. Like I always try to get rid of the red bar that says how long you have been inactive. It really judgemental [laughs] so I finally get up and walk around to get rid of the bar (Sophia, 28 years, student).

Participants' reaction of conforming to the prompts given by their mHealth devices supports the research by Peng and colleagues (2016) that users of mHealth technologies tend to comply with health reminders imposed by these technologies. As participants set reminders with their mHealth technologies to influence behaviour or an action, they have submitted themselves to surveillance by these devices. In the context of biopower (Pylypa, 1998; Rabinow and Rose, 2006; Sanders, 2017), Sophia and Ethan, have voluntarily submitted themselves to control of their bodies through responding to the prompts given by their devices. For instance, Sophia used 'judgemental' to describe her device hence she always tried to respond to the notifications provided by her device. Ethan on the other hand, felt 'a sense of achievement' when he responded to the instructions given by the device. In these cases, the reward of responding to their prompts is 'sense of achievement' or 'avoidance of judgement'.

Amber also liked the fact that she could set reminders with her device to 'stretch':

"mmm… my work requires me to sit a lot and I like the fact that every time it tells me to stretch, do a little walk, it tells me my heartbeat like your heart is beating this rate especially when I am exercising and also if I am just walking like I have been walking for a long time, it actually automatically times it and tells me ok you have walked this so and so amount of distance at this

time. And I like the prompting because it makes me do more" (Amber, 27 years, junior accessor).

As discussed earlier in this paper, those reminders helped improve a condition she had with the leg. Ajana (2017) and Lupton (2012b) note that when digital technologies are able to influence changes in behaviours of people or influence them to respond to actions like 'drink water' or 'stretch'. Through surveillance, these digital technologies tend to indirectly take on the roles of doctors, nurses or a companion who knows the user well. In Amber's case for instance instead of having her doctor or nurse or family member constantly remind her to stretch due to her leg condition, she has the mHealth device that is monitoring her physical activity to know when she has been inactive. The device then sends her a reminder to stretch.

4.1.3 Sub-Theme: A Daily Affair

For the participants in this study, mHealth technologies are part of their daily lives; they used their mHealth devices daily, or two to three times weekly. They will check their details immediately they wake up in the mornings and before they sleep in the evenings. As an illustration, Sophia wears her mHealth device daily to monitor her sleep, anxiety, workout and fitness activities, among others. Also, she sometimes uses her mHealth device to find correlations between her mood and sleep:

"I wear it pretty much every day because it tracks my steps and what not but I like that it tracks my sleep which is good because I can always see like on days where I have been really anxious, it tracks how long I have been awake which is helpful and it also has the intensity minutes so if your heart rate has been above a certain whatever for longer than ten minutes, it will time and track. So, when I coming working out, it helps try to keep my heart rate at a certain level, and then get those weekly intensity goals" (Sophia, 28 years, student).

The knowledge generated between the correlation of Sophia's mood and sleep becomes 'truth discourses' (Rabinow and Rose, 2006) unique to Sophia. Additionally, the knowledge generated by Sophia on her sleep and mood supports the claim that people use mHealth technologies to

collect information on themselves in order to create health knowledge of themselves that is outside the medical encounter (Lupton, 2012, 2013, 2015; Morley and Floridi, 2019). However, Carla was uncertain on the extent her knowledge from her device made her informed on her health, she maintained that:

"It just gives me a little bit of that knowledge that the doctor isn't going to give me. For instance, … my doctor cannot be tracking my calories for me. That is not done. She tells me to watch what I eat since my BMI is high, suggest some foods and all that. You know what I mean. But then, how will I know the content of what I am eating? How can she tell? It helps me know some aspects of myself, it does help but then not completely" (Carla, 39 years, stay-at-home mother).

Finch, Mort, Mair, and May (2008) in support of telecare argue that health technologies grants physicians access to social life and other aspects of a patient's life which can be used to effectively diagnose, treat diseases and maintain the general health and wellbeing of patients. In this sense, doctors do not consider only the symptoms of patients but look at other aspects of the patient's life which mHealth technologies can monitor. For example, Sophia's associations between her mood and sleep or the rate at which Carla burns calories daily are elements that contribute to their health and wellbeing, but their doctors may not necessarily have access to them.

To most of the participants, daily monitoring of their bodies and daily behaviours with their mHealth technologies is a necessary routine. They did not consider their self-monitoring endeavours as clinical or medical activities. From the participants' views, these activities are to prevent any circumstances that may impede their quality of life. For instance, Olivia views her mHealth application as a device she uses to improve herself as she is often stressed out after work:

"I should say almost every day or at least three or more times in a week. Because the nature of the work I do is very stressful so I always come back home very tired and I really rely on these

destressing apps to improve upon my self and health and general wellbeing. I mostly use it after work. I will just run a quick check on my me and it will offer feedback and how I am doing and also suggestions to kind off make you feel good. It is through this app that I came to know about self-care and how to handle stress on the job, outside of work and others. Most of what I know now is through this apps" (Olivia, 33 years, adults support worker)

Likewise, when Ava was talking about her daily use of her fitness watch, she said:

"uh... I use the blood pressure monitor every morning. I set the date and time and it records it and all that. I used to do it every morning when situations were not good but now that I see that the figures are good good good for several weeks and months, so I am kind of relaxed and I do it just twice or three times a week and it is recorded. For the watch, it is no big deal. It is just around my wrist always and it records as I go about my work" (Ava, 45 years, home manager).

Lupton (2013), Nettleton and Burrows (2003) and Oudshoorn (2012) argue that digital technologies tend to extend the medical gaze into the homes and daily routines of individuals making them adopt certain attitudes and behaviours restricted to health professionals. This can be seen in the vignettes above as the participants used their mHealth technologies daily to check their heart rates, blood pressure, vitals, among others. Paradoxically, participants do not necessarily consider their activities as clinical activities but as everyday routines to maintain their health.

4.2 Consumerism in Health

Consumers are often viewed as autonomous, competent and responsible individuals in the marketplace seeking to maximise their benefits (Lupton, 1996, 1997a; Defossez, 2016)). Much the same way, consumerism in health portrays individuals as knowledgeable, responsible, accountable and independent in managing health and health care (Lupton, 1997a; Sointu, 2005). Additionally, individuals also tend to be sceptical of biomedicine (Hardey, 1999; Lupton, 1997a) and will want to seek ways on what to do to maintain health, what to do become healthier and may define health in their own way. In this theme, I discuss how some participants may portray patients-consumers.

4.2.1 Sub-theme: Expressions of personal responsibility

Though I did not ask participants if they considered health their responsibility, various remarks by participants throughout the interviews demonstrated a sense of personal responsibility when it comes to managing their health and health care. For instance, Carla reiterated "… because I am a mother, I am responsible for my health, my children's and my husband's" during the interview. Sointu (2005) in a study of discourses of wellbeing argues that wellbeing is a 'normative obligation' by which individuals in consumer cultures adopt different lifestyles. Similarly, Fries (2014) reasoned in his study on the use of Complementary and Alternative Medical Therapies (CAM) to resist the biomedicalization of ageing that health is a 'moral obligation' by which the participants adopted different self-care practices. Carla positions herself as a mother who is responsible for the health of her family members and hers. It can be said that Carla has a moral obligation towards her health and that of her family. This can be said of some of the participants as well.

When Olivia was talking about her involvement in health, she explained:

"My health is something I take upon myself. Even though I go to the doctor for regular checkups, there is also some percentage that I have to take up to contribute to my health. My doctor can prescribe certain prescription drugs and other practices I can take on to be in a good shape. But everything will have to depend on me and if I am to follow those advice and prescriptions. At the end of the day, if I come back home and do not follow and also do certain things that can improve upon myself then I am the one to be blamed. What are you doing as an individual to also help yourself because it is not always every time you can even visit for instance a dentist or others? For me, it is more about what I need to do to help myself, how do I get better?" (Olivia, 33 years, adults support worker).

In this illustration, for instance, Olivia portrays that she is ultimately responsible for her health. She also mentioned the fact though she may keep up with doctor's appointments, follow the counsel and prescriptions of her doctor among others, her health and wellbeing are her duty. This

aligns with Ella's views that depict personal responsibility. According to Ella, when her doctor begun expressing concerns about her health (discussed earlier), she realised that it was up to her to take on the duty to bring the required changes that will help her:

"We are responsible for ourselves. When I started having health issues with my weight, sugar levels and all that, I was 22. During that time I realised that there is no one in this world who can fix me if I don't want to get fixed. If I didn't put in the efforts, I may not be well as I am today. The motivation came from my doctor, family and friends. But it was when I became responsible that it brought about these benefits (Ella, 28 years, teaching/research assistant).

Similarly, Daniel emphasized his personal responsibility when talking about his health and lifestyle:

"It is me; it is my life and I am accountable to myself! ... I should know everything and take care of myself. I should know and understand very well. I should know everything about my health, the benefits, the outcomes, negative or positive to prevent health problems." (Daniel, 42 years, security personnel).

Daniel's comments, like the participants above towards their health and wellbeing, portray that of personal responsibility in health. In the context of consumerism in health care, the emphasis is placed on the notion of individual responsibility whereby lay individuals have the autonomy to manage their health (Defossez, 2016; Lupton, 1997a, 1997b). Hence, the actions of Daniel and the participants reflect consumerism in health.

When Mia was talking about the importance of health, she mentioned that she never took her health serious neither did she feel accountable to herself for her health until she migrated to Canada. She admitted she had had her fair share of encounters with doctors from her home country, having had issues with her health. According to her, she had always viewed health as one that doctors had to manage until she moved to Canada.

I: So, you mentioned before coming here, you never took your health seriously and never felt responsible for your health, how did this change come about?

"for me, it had always been whatever mmm… take life as it is right, it was never a priority. But then, I would say that the culture here just shed light on health. You know, even back home, we say that health is wealth, but it seems not much emphasis is placed on it. It was not like an awareness thing that was emphasised in our culture. I guess coming here, health is more emphasised, more in the open, there so much awareness on health, on the television, on billboards, anywhere, people are talking about health. There are advertisements on health-related items, support groups related to health and all that. And you need this to help, that to help… and everything has to be done in moderation because even whether you are eating healthy, there are still some things you might be lacking so you just have to use everything in moderation. I think I appreciate this culture because at least as they emphasise health, you get some form of guidelines to assist you. This wasn't so back home unless you are sick" (Mia, 35 years, sales executive).

It is seen from Mia's comments that there are lots of health resources available to people which enables them to take care of their health and prevent diseases in Canada. This was not the case in her country of origin, Sudan. Defossez's (2016) discussion on health and personal responsibility in the context of neoliberalism is relevant here. Defossez (2016) argued that the introduction of direct-to-consumer genetics and self-diagnosis questionnaires for mood disorders in the United States, for instance, shifts health responsibility on individuals as they become independent in managing health and health care. It can be argued from Mia's narrative that, the wide availability of health products and resources for individuals' personal use in Canada implicates her to take on the role of managing her health.

Daniel took on the responsibility for his health due to age. He remarked that he was growing older and he had to be responsible to avoid any of the diseases associated with old age. He mentions he would adopt routines geared towards a healthy life, but he would give up along the way. He read an article on health and that influenced him to take responsibility for himself.

"Actually, I got involved in this health, exercising and all that because I didn't know about myself. I am growing older and I feel like I cannot work like I used to. And I went on to google and when I was reading it, I got so scared. Because according to my weight, I must know how my blood pressure is and I bought the device. Then I started looking for more knowledge on pressure stuffs and doing some research and reading so much so that it works out for me.

Because I had got the device, I wanted to know what the best pressure for my age is, for my weight so I needed to know and that made me start researching. But later on, I felt I needed medical advice from my doctor as well (Daniel, 42 years, security personnel).

Amber also articulated similar views regarding personal responsibility in health.

"…mmm because I found out that as you are growing older, health becomes more important to you than it was before. You become concerned and responsible. Also, a lot of things you used to do when you are younger, you don't get to do them anymore… especially eating anyhow and all those things" (Amber, 27 years, junior accessor).
I: so, is this what happened in your case?
"[laughs], I am not getting younger. yes, I think so, I kind of got concerned and involved in my health as I became older. Like 5 years ago, I won't be this interested (Amber, 27 years, junior accessor).

In comparing Amber who is twenty-seven years to Daniel who is forty years, age may influence people to assume responsibility for their health. Though these two participants do not fall into the category of older adults (Fries, 2014; Petry, 2002), they recognise that they are ageing. This influenced them to adopt different practices and behaviours to maintain their health. In a study by Fries (2012) on the use of Complementary and Alternative Medical Therapies (CAM) to resist biomedical ageing among older adults in Canada, he noted that the older adults viewed health as their responsibility and used CAM as a means to gain control over themselves and their bodies and prevent biomedicalization of ageing. Though the participants in this study are younger than the participants in Fries' (2012) study and are not necessarily preventing the biomedicalization of ageing, their attitude towards health responsibility changed as they grew older.

Another issue that was raised by participants which may reinforce personal responsibility in health is the structure of health care settings. Participants patronised medical services from different doctors ranging from family physicians to general walk-in clinics. Often, the assumption in some Canadian provinces and other western societies whenever people do various medical tests in various health care settings, is "the patient will be contacted should in case, they

find anything wrong in the tests" (Callen, Westbrook, Georgiou, and Li, 2012; Milne, Joshua, and Stasiuk, 2016). According to Ava, she has had medical tests where she was not contacted although there were issues noticed by the health care professionals regarding the tests. Due to this negligence or lack of communication regarding medical tests, she related she prefers to take a greater role when it comes to health and health care:

"No matter what you go to see the doctor for, they don't do follow-ups. They may be busy, but things are swept under the carpet. There are times where you even go in for blood work and tests and all that and the result is sent in and you don't even hear any other thing. The assumption is if there is nothing wrong, we won't be calling you. But I have had instances where I called and there was something... Like the other day, I did a general blood work. Like always, the closing remarks was if we have not called you and then there is nothing wrong. After a week, I intentionally called, and the nurse picked my file. Apparently, I had very high iron content in my blood and I was also taken iron pills. This is bad. If I hadn't followed up, I will still be taking the pills and wouldn't know what would happen in let's say a month or two. So follow-ups, there is no follow-up and that is why things get swept under the carpet. I am not saying its all the time, but then it happened to me. So, before you realise the thing may get worse and we are now trying to find the cause and all that. I will rather take it upon myself to do follow-ups to make sure I am well" (Ava, 45 years, house manager).

Ava's case confirms that there is a growing mistrust of doctors by patients due to medical negligence (Aitkin et al., 2017; Kaba and Sooriakumaran, 2007). With these issues of mistrust, individuals like Ava are taking active participation in their health (Lupton, 2012). In adding up to this view from her use of mHealth when her doctor required her to monitor her blood pressure, she recounted:

"Honestly, if I had not been doing it, or if I had not bought the device or I have not gone to the stores and did as he said, I doubt it would matter to him. This is because when I went to the stores and it wasn't working for me, I did not do it for a couple of weeks and there was no follow-up. The agreement was- go to the stores, record every day and come back after two weeks and that did not happen and there was no follow-up. Until I decided to put my own life in my hands and the one pharmacist suggested that I should get one. He said it might not be 100% correct as the one in the clinic or the store but I should just make do with that. And he suggested one brand and I bought that one and I started monitoring. Then I went in later with the

information from the device. So, if I had not done that, I doubt he would have noticed it" (Ava, 45 years, house manager).

Furthermore, the comments by the participants expressing personal responsibility may denote that of empowerment as participants used phrases like "… put my life into my own hands", "it is my life, my choice" and "my health is something I take upon myself". Participants may thus have a sense of empowerment when it comes to managing their health and wellbeing. However, the extent of how this empowerment plays in their relationships with their doctors, I will discuss later in this analysis.

4.2.2 Sub-Theme: Accountability and Prevention

According to Daniel, owing a mHealth device is a necessary means to knowing or discovering hidden information about his body such that any diagnosis concerning his health by a doctor will not come out as a surprise to him:

"It helps you to be comfortable with your health. It helps you to accept your health status so in case there is challenges about your health, it is not new. You are more knowledgeable about your body other you going to the hospital and they are like man, you are going to develop high blood pressure. But when you are monitoring your health, you see the ups and downs of it. So, if someone tells you that you have an ailment, or about to have an ailment, it is not new. I mean when the doctor is telling you something and you have not been involved in your health, it will sound completely new to you and maybe you could have prevented it. I monitor my health to know exactly where I stand, to also work upon yourself before things get bad" (Daniel, 42 years, security personnel).

Daniel's view on monitoring his health with his mHealth technology is illustrated in Swan's (2012) 'Health 2050' where the concept of medicine is moving from curing diseases to personalised preventive medicine. In this instance, Daniel uses his mHealth device for self-monitoring, avoiding risks of high blood pressure and managing his health and wellness. With this, Daniel places himself in a position where he is accountable to himself. This is noted in the interviews with other participants as they mentioned their mHealth technologies makes them

accountable to themselves. Though they may want to manage their bodies and health, they believe it is easier for them to fall away and not take active interests in maintaining their health. MHealth thus enables them to be accountable and keeps them updated on health. For instance, Sophia said:

"I feel like it makes me accountable and again it makes you realistic too about how much you are actually doing… So, it makes you a little bit more realistic especially if there is a health goal you want to achieve. but yeah, I definitely feel more knowledgeable for sure about my body too" (Sophia, 28 years, student).

Sophia's remarks also exemplify that of a 'reflexive actor' in modern consumer cultures described by Giddens (1991) and Lupton (1997a). Sophia's use of 'accountability', 'health goal' and 'knowledgeable' reflects that of a reflexive individual who is always seeking knowledge, learning, acting on their bodies in order to reach their maximum health. Similar to Sophia's comments, Jude remarked:

"So, it keeps me on track honestly. Like, it makes me accountable. Because having the device has enabled me to keep up with body. I know what I am doing that makes me feel good and those things that make my body feel terrible. Like my nutrition, I know what my body needs daily, the fats, carbohydrates and all that…uh I know how my body reacts to some foods and I avoid those foods that make me terrible" (Jude, 21 years, sales representative).

Like the 'reflexive actor' (Giddens 1991; Lupton, 1997a), Jude through the interaction of his mHealth technology, body, daily habits and food, is able to generate knowledge of himself. The knowledge, in this case, is the types of food he eats that makes Jude unwell and he is able to use this knowledge to influence his eating habits without the involvement of his doctor.

4.2.3 Sub-theme: Financial Cost

Only two participants brought up the cost of having and using mHealth technologies during the interviews. Jude mentioned:

"It was the Apple watch that got me interested in finding a device on my own that tracks everything. But then, who wants to pay 300 and something dollars for apple watch? Not me [laughs]. So, I started searching for something strictly for health and fitness and maintain my health and body, nothing fancy. I was getting ideas from people and settled on my Fitbit. I fell in love with the product and I got it at reasonable price..." (Jude, 21 years, sales personnel).

As indicated by Jude, mHealth technologies may be expensive. Hence, not everyone is likely to buy mHealth technologies to prevent diseases and maintain health. Likewise, when Olivia was reflecting on the challenges she experiences with her mHealth devices, said:

"like the aura app and the calm app, these two are great. I used other mental health apps before I settled on these. But it can be challenging and expensive. It is free but when you want to access other features, they ask for premium subscription fee which is around CAD 30. That is the annoying part" (Olivia, 33 years, adults support worker).

In the case of the health applications Olivia uses for her mental health, the user needs to pay a subscription fee to access other features. This may be costly for people and raises the issue of the class of people likely to be consumers-patients. The issue of class in consumerism in health is discussed by Zadoroznyj (2001) in her research on consumerism and medicalised encounters among pregnant women in Australia. She argued that highly educated women were likely to adopt consumerism approaches in choosing gynaecologists and even tended to act as consumers during encounters with their gynaecologists. Aside from the cost of mHealth technologies, none of the participants mentioned any challenges such as interpreting surveillance data related to their use of their devices. Though this study was opened to all individuals from diverse financial and educational backgrounds, the people who responded are educated individuals with educational backgrounds from the diploma level to ongoing doctorate levels. Also, all the individuals are working except for Carla, who is unemployed and received her mHealth device as a gift from a friend. It appears from this study that educated individuals with stable incomes

may use mHealth technologies as consumerism approaches to health and health care reflecting Zadoroznyj's (2001) argument.

4.2.4 Sub-Theme: Uncertainties About Medical Knowledge

In addition to the participants' use of mHealth technologies for preventive medicine and to achieve maximum health, comments by some participants emphasised their own forms of uncertainty towards doctors. For some of the participants, their scepticism towards doctors was not due to personal experiences with doctors but experiences of family members or friends and others their personal convictions. For instance, Olivia mentioned:

"ah, we are not perfect. We are all human beings right [laughs]. Excuse me, a times, I feel like no one knows more than the other person ill. Depending on the patient also, the patient might have researched and actually found some accurate answer to whatever is happening to him or her" (Olivia, 33 years, adults support worker).

Oliva's account shows that doctors are not infallible pointing to the fact that they are also humans. Also, her reference to the patient can be likened to the role of patient-consumer (Hardey, 1999; Lupton, 1996; 1997a) who researches health issues and is well-informed. Sophia shared similar views with Olivia. Sophia recounted:

"Because you have a degree, of course that is the only difference between you and I. at the same time, we all have brains right, and we have all seen the world, we have seen how it works. There are times the patient knows more than the doctors. Yeah… because it is my body and I know what I am going through… I have been to walk-ins and whatever and the doctor is googling the symptoms in front of you" (Sophia, 28 years, student)

The excerpts above support Lupton's (1996; 1997a) view that patients as consumers are highly sceptical of medical knowledge. Unlike the participants above who appeared to have an extreme uncertainty towards doctors, Amber and Ethan appeared to be on a middle ground:

"within reason, I feel like we should all challenge everything right. Err…The point is we should be able to challenge things. But at the same when we go to the doctor's, we have to go with the

idea that we are seeking help from them. We must listen to them when they tell us there is something wrong with us, but we shouldn't just believe that every diagnosis they give to be the right one. …Yeah, I mean, we should not just go there to receive and leave, we must be a little critical of them" [laughs] (Amber 27 years, junior accessor).

From Amber's view, patients should regard the expertise of doctors but should not completely accept the doctor's view on diagnosis She also pointed out that patients should also challenge doctors' knowledge. In this sense, patients will not just be passive individuals (Kaba and Sooriakumaran, 2007; Lupton, 1997a) who simply accept the counsel of doctors. In adding to this view, Ethan recounted:

"Sometimes, you have to take their word for it, they know better I should say. And if they tell you that this is the issue, it is always best to get a second opinion as well if you don't feel comfortable or whatever it is" (Ethan, 25 years, recreational therapist).

Amber and Ethan's comments on patients to challenge the knowledge of doctors and seek second opinions regarding medical diagnosis reinforces the existing literature (Lupton, 1996; Mold, 2010; Stewart Loane and D'Alessandro, 2014). The authors noted that patients, as consumers tend to treat medical services like other services in the marketplace and patients, tend to change their doctors as they see fit. Also, it can be seen here that Ethan reference to a second opinion is to seek another doctor's opinion or counsel if needed.

Nevertheless, not all participants were sceptical of doctors or biomedicine. These participants showed faith in doctors and seemed to put doctors on a higher status than themselves. For instance, when Daniel was describing doctors, established that: "… a doctor is a person who knows your medical history, he knows your health and all that, so he knows too much." Daniel's statement puts doctors in the position of 'all-knowing individuals' who can tell discrete aspects of patients' lives and wellbeing. Similarly, Carla said:

“Doctors! They are like your mini-god. Your health is important because if you are not doing well health-wise, you are going to die and these doctors, they hold your life in their hands. That is their job- to keep you alive. If you do not have a good relationship with them, they might not tell you many things. Your attitude to them too will show them if you need help or not” (38 years, stay-at-home mother).

Like the ‘all-knowing individual,’ Carla also compares a doctor to a ‘supreme being’. Also, the phrase by Carla that ‘they hold your life in their hands’ is used in some of the interviews, including some participants who expressed uncertainties towards doctors. These statements and words used by participants denote the reverence participants have for doctors. These accounts reaffirm the authority doctors have in doctor-patient relationships (Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956) as participants believe doctors can help them when they are sick; they have the power over the life and death of their patients. Additionally, Jude likened the doctor to the mother:

“We all have people we go to when we feeling down or when something is wrong, right. For me it's my mother. And when something is wrong in your system and you have no idea about, you go to your doctor right. So, they are just like your mother right but then this is in health or health-wise. Your mother doesn’t know that much about health so these are the people you look up to figure out whatever it is happening inside your body” (21 years, sales personnel).

Despite Jude assuming the role of a consumer-patient who may be expected to be sceptical of doctors (Hardey, 1999; Lupton, 1997a), Jude also has confidence and faith in doctors as he compared them to mothers or someone you look up to.

4.3 mHealth Technologies, Health Decisions, and Doctors

Some participants expressed that information retrieved from mHealth technologies may or may not be essential during medical encounters. According to Mia, the health information she receives from her health device is different from that she discusses with her doctor during medical encounters:

"… Because the questions I ask from my doctor is not about my heart rate, calories or weight issues or anxiety but mostly about my ulcer situation. The knowledge I am getting from there is definitely different from what I am getting my mHealth because they are different situations. Whenever I go for any reason at all, it will be the issue I went there for, let say my ulcer. And I just allow her to do her thing. We will just talk about that and I will leave" (Mia, 35 years, sales executive).

From the above, Mia separates the knowledge from her mHealth technologies from that of her doctor citing differences in the context. Thus, Mia may be using the information she creates on herself for other purposes and other than presenting it to her doctor to aid in diagnosis or treatments. Similar views are reported by Lupton (2016) and Till (2014) that some users of mHealth technologies may retrieve information from their devices for leisure, sharing with friends and families, personal uses other than share with their doctors. However, this was not the case with all the participants as some shared the data from their devices with their doctors and also approached their doctors to make final judgements regarding their health. Herein, we witness the other of the two subject positions outlined by Lupton (1997a, 2013) in her examination of the medical encounter; the passive patient and the active and engaged patient also considered the consumer-patient. I discuss how participants demonstrate passive patients or the consumer-patient during medical encounters despite been informed on their health.

4.3.1 Sub-Theme: Consumer-Patient in the Medical Encounter

A consumer-patient is the individual who looks out for him or herself in managing their medical care and health through the consumption of appropriate lifestyles, resources and technologies that leads to positive outcomes in their health (Lupton, 2013,1997a). Also, they tend to be active during medical encounters and may act as partners with their doctors in diagnosing and treating diseases (Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956). They also do not passively accept the views of their doctors but instead may engage in dialogues

with their doctors on the best ways to treat diseases and maintain their health (Hardey, 1999, 2001; Lupton, 1997a).

According to Daniel, he started monitoring himself when he took on responsibility for his health. He developed a diet plan for himself and other routine fitness activities. After months of monitoring his blood pressure, physical activities, sleep and maintaining a "balanced" diet, he decided to see his doctor with regards to his heart health using the data he had gathered over time on himself.

"I had been reading online on my blood pressure and from the figures I was getting, I felt I needed to see my doctor… and when I went to see my doctor, I told her I need you to check my blood pressure. She was like you ok and there is nothing wrong with your blood pressure. I told her I have been monitoring it for a while and I need you to see how it is because I am not comfortable. So, she told me it's a little bit high, but I wouldn't worry about it but since you insist, lets do a follow-up. So, she gave me those papers and sheets for following up and I had to take to her, the results after 2 weeks. So that is how she started monitoring but it was after me insisting I needed to do a follow-up" (Daniel, 42 years, security guard).

Based on the health knowledge retrieved from his monitoring, Daniel initiated a medical encounter similar to that seen in the case of Larry Smarr (Ramirez, 2013; Smarr, 2012) discussed in the literature. Daniel may be identified as a consumerist patient (Lupton, 1997a, 2013) who is knowledgeable about his health and is able to engage with the doctor on his health (Hege Kristin Andreassen and Dyb, 2010; Parikh, 2013; Swan, 2012) Also, it can be noted that Daniel ignored the doctor when the doctor suggested that Daniel should not worry about it. This action by Daniel is in line with patients-consumers in the doctor-patient relationships who do not submissively submit and accept the recommendations given by their doctors but tend to challenge medical knowledge (Hardey, 1999, 2001; Lupton, 1997a; Robinson, 2013). Another thing that can be seen from Daniel's narrative is that he eventually went to see his doctor regarding the figures from his initial monitoring. This is in support of the argument by

Oudshoorn (2012) that even though individuals use mHealth devices for health and health care, they tend to let their doctors make final judgements on their health. Hence, participants with the help of mHealth devices may replicate the work of doctors but they do not completely ignore their doctors on the final judgements regarding their health.

This was also the case for Ella, who often presents data regarding her heart condition from her self-monitoring to her doctor. She mentioned that whenever she goes to her doctor for anything at all, she sometimes discusses her health data retrieved from her mHealth device.

"yes, for my cardiovascular health, he expressed concern the first time we met after we ran some tests. He told me that my BMI was high, and I had some trouble in the cholesterol part of my body. He told me that at my age, its not good. He asked me if I had a family history of heart disease and I said yes and he told me that if I don't do enough cardio and if I don't check my diet, then I can develop these 2 things. So since then, whenever I go there, I show him my recordings and how far I have come and periods my heart rate is fluctuating. I discuss it with him and he checks all that if that it is all normal or not. He gives me time to ask questions and goes through my report with me" (28 years, research/ teaching assistant).

Ella engages with her doctor on her self-monitoring activities; she tends to show her doctor her data, asks questions and also works on her health and health care with the doctor. Hence, it can be said that Ella is leaning towards a consumerist patient (Lupton, 1997b, 2013); she is an informed, active patient and works in partnership with her doctor to attain maximum health (Hege Kristin Andreassen and Dyb, 2010; Parikh, 2013; Swan, 2012). This form of relation between Ella and her doctor also typifies the mutual-cooperation model of doctor-patient relationships (Emanuel and Emanuel, 1992; Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956). Additionally, there is a constant negotiation between Ella and her doctor on how best to improve her health based on the surveillance data Ella sends to the clinic. The action by Ella to always discuss her self-monitoring data with her doctor also reinforces the view that mHealth technologies have the potential to reduce power imbalances in doctor-patient

relationships since she has access to health data which can discuss with her doctor (Bradway et al., 2015; Hardey, 1999, 2001; Klein, S., Hostetter, M. and McCarthy, 2014; Meskó, Drobni, Bényei, Gergely, and Győrffy, 2017; Robinson, 2013; Shan, Wang, Luan, and Tang, 2019).

When Sophia was diagnosed with anxiety, she wanted to avoid the situation where she was constantly on drugs. According to her, she used her mHealth device, to track the pattern of the anxiety and her heart rate. She realised from her tracking that the episodes of anxiety were connected to her menstrual cycle. She presented that information to her doctor so he could prescribe a type of medication that will help her. Sophia mentioned:

"I was able to go to the doctor and say like it is not a consistent depression anxiety but it is actually following my cycle and so we were able to go through that together and find medication that I could take. So as long as I could track it, then I can take medication at this time and so that was really helpful. I avoided the situation where I was constantly on medication" (28 years, student).

With the data collected, Sophia was able to construct patterns of anxiety that are unique to herself and this gave way to treatment based on her personalised knowledge of the disease. This scenario supports Swan's (2012) argument that when patients use mHealth technologies, they are able to produce knowledge on themselves which can be used by medical practitioners to provide treatments that are unique to the patient. Also, Sophia's relationship with her doctor, in this case, typifies the mutual-cooperation model (Emanuel and Emanuel, 1992; Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956) of doctor-patient relationships.

Sophia also disclosed that she was worried about going to her doctor to present the information to him because she did not know how her doctor was going to react. This is because she was coming in with information about herself, something she had not done before. She said

"well, I was kind of nervous because I feel like if you are coming in and saying that I am anxious or whatever and it is not everyday… as it was diagnosed. Not that he won't believe you… it

looks off I will say. So, it was kind of nice to have the information from the watch to kind of back up what I was saying, and so that way I was like hey, I am not making this up. And so he was really good about it and then we were able to find some medications that worked well in my situation" (Sophia, 28 years, student).

Sophia's narrative showed she was expecting her doctor may not be accommodating and may have disregarded her health data. On the attitudes of physicians towards the adoption of mHealth technologies by their patients, Kong, Scott, Li, and Wichelman (2020) revealed that some doctors preferred not to recommend mHealth technologies to their patients though they do not mind if their patients used this. Though this analysis is on patients and Sophia's doctor was not contacted on his view on patients coming in with surveillance data, Sophia's account shows that the doctor side of the medical encounter may also be changing in response to consumerism in health. This is where doctors do not persuade patients to follow prescribed health interventions but engage in dialogue with patients as clients to mutually develop health care interventions for patients (Emanuel and Emanuel, 1992).

4.3.2 Sub-theme: Passive Patient in the Medical Encounter

The passive patient is the individual who takes a minimal role in managing health and fully relies on his or her doctor in diagnosing and treating diseases and managing their health (Hellin, 2002; Lupton, 1997a; Szasz and Hollender, 1956). Unlike the participants above who approached their doctors with their health knowledge, the other participants would rather not discuss their data with their doctors. For them, they tend not to discuss anything they found through their personal health monitoring such as like weight control, anxiety, blood pressure, and heart rate measurements and others with their doctors. When they go to their doctors for anything at all, they just tell the doctors their symptoms while allowing their doctors to diagnose and then prescribe medication.

Ava started monitoring her blood pressure when her doctor asked her. According to Ava, whenever she visits her doctor, she just gives him her records and does not engage him in interaction unless he makes the initiative:

"I send the information to him. I book an appointment. I show him my record from the device. He goes through the days and he also use his own instrument to take it and he compares with the previous meeting" (Ava, 45 years, house manager).

Ava may be recognised as a passive patient (Lupton, 2013). Though Ava takes on the role of responsibility in health and actively engages in different health practices to promote her health, she tends not to discuss her mHealth endeavours with her doctor. This goes against the characterisations expressed by researchers (Hardey, 1999, 2001; Parikh, 2013; Robinson, 2013) that mHealth technologies make patients active and empowered participants in doctor-patient relationships. Meanwhile, Ava expressed herself as an 'expert' on blood pressure. According to her, she knows when her blood pressure is high even when she has not checked her device, her daily routines and foods that triggers hypertension and can accurately explain her figures to others. Ava's case confirms the argument by Mort and colleagues (2009) and Oudshoorn (2012) that often lay individuals tend to be passive recipients even when they use digital technologies for health promotion. This is because lay individuals still tend to their doctors for interpretation and also conform to the counsel of their doctors.

Amber uses the WebMD application[4] in addition to her health monitoring. Though she mentioned there has not been a situation where she had to go to her doctors with her personal health information, she often checks for symptoms she is experiencing on WebMD. During the

[4] WebMD is a health application available on app stores that provides information on symptoms, various treatments, prescriptions, sometimes provide local listings of doctors among others (WebMD LLC, 2016).

medical encounter, she appears to take on the passive role (Kaba and Sooriakumaran, 2007; Lupton, 1997a) and does not engage her doctor in her health data or personal health research.

"but for WebMD, I use it a lot. Any little thing I am feeling, I will open the app and check.
[I: ok, so what do you use the information from WebMD for?]
mmm… it helps me decide if it is worth booking an appointment to the doctor. There are times I have gone to my doctor and whatever my doctor says is what they are also implying… [I: ok]. So exactly that is why I trust the app. But I don't tell my doctor about it. He always tells me not to follow online stuff and I don't want to sound like I don't respect his views" (Amber 28 years, junior accessor).

Amber's case illustrates the active-passivity doctor-patient relationship where the patient is submissive and adheres to the doctor's instruction (Emanuel and Emanuel, 1992; Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956). Though Amber does not follow her doctor's counsel on not to engage in using the internet for health information, during medical encounters, she tends to portray that of a 'good patient' (Hellin, 2002) that follows her doctor's orders. This 'good patient' may indirectly be portraying attributes of a passive patient (Emanuel and Emanuel, 1992; Hellin, 2002; Lupton, 1997a).

Jude relayed that he would like to talk to his doctor about the personal health and health care endeavours that he is involved in. However, it happens that whenever he is to book an appointment, it tends to be for a particular illness. Also, he mentioned the yearly hospital visits tend to be rushed and sometimes feels uncomfortable bringing up his mHealth endeavours. On a regular medical encounter, he allows his doctor to examine him, prescribe the medication and goes with the recommendation given.

"for my watch, I have gathered so much information like my sleep patterns, heart rate, weight. And there are sometimes I want to ask my doctor like hey what do you think about this but then… hmmm… I don't know if it something he is interested in. When I first changed my diet, I thought I should talk it over with him but then I just went for it and it's been ok. No problems so far, so good" (Jude, 21 years, sales personnel).

Jude's case reiterates the view by Lupton (1997) that patients may want to be passive patients or consumers-patients during the medical encounter depending on the context. In Jude's context, medical encounters may not be encouraging as he revealed his yearly medical appointments tends to be rushed.

Similarly, Ethan's encounter with his doctor about his self-monitoring and health knowledge confirms Lupton's (1997) view that depending on the context, patients may want to passive patients. According to Ethan, the reception given to him by his doctor provoked him to bring up his self-monitoring and personal health knowledge during medical encounters. In this case, Ethan would have been a passive patient during the medical encounter but changed to a consumer-patient. Below is what ensued between Ethan and his doctor.

"I had constant body ache or something and I booked an appointment to see my doctor. From my fitness tracking, I had realised I was gaining weight. I was a little concerned but never thought much of it. When I got in, he looked at me and said without any examination it seems you have gained weight. And I was like err…yeah…
[I: so, do you think that opened up a conversation on your health tracking and what you had gathered about yourself?]
yes, because when he said it, I told him I had noticed it too that I have gained weight, despite eating well and exercising. So, he asked what I had been doing and he suggested I do those blood tests and all that and we should monitor it for a while and see. It was such a good feeling. He saw it and pointed it out first" (Ethan, 25 years, recreational therapist).

Also, this narrative by Ethan supports the claim by Andreassen and Dyb, (2010) that health technologies facilitate conversations between patients and doctors. This is because Ethan used his mHealth device to generate health data on his weight gain and daily practices which he mentioned to his doctor. The doctor then asked questions based on the information provided by Ethan and requested to do some medical tests. In this instance, Ethan's mHealth device indirectly facilitated conversations between Ethan and his doctor.

4.3.3 Sub-theme: Personal Health Knowledge and Health Decisions

Amber reported in our interview that she uses the services of a family physician and has been going to him for two years now. She also sometimes visits a walk-in clinic near her residence when she feels it is convenient for her. Amber is indifferent in her relationship with her doctor and remarked she likes the fact that he is around if she needs him. In our conversation, she related an instance where she made a decision based on information from her device and never thought to involve her doctor.

> "it sometimes sends me automatic prompts if my heartbeat is going out of normal."
> [I: and in that case what do you do?] if I am exercising, I know I am exercising. It's only when I am exercising that it does that actually… (long pause). Oh! There was a time it did happen some time ago, I wasn't doing anything that required much pressure. And, I figured I may not have had enough sleep and I just took a break from work" (Amber, 27 years, junior accessor).

It can be observed from Amber's remarks that she believed the cause of her elevated heart rate was lack of sleep and she decided to take a break from work. Amber's actions may portray that of an empowered patient as described in the literature (Finch, Mort, Mair, and May, 2008; Hardey, 1999; Nettleton, Burrows, and O'Malley, 2005; Petrakaki, Hilberg, and Waring, 2018). This is because Amber made an informed decision regarding her health using the resources available without necessarily involving her doctor in that decision. This scenario by Amber was observed in the interviews between Daniel and Sophia.

Daniel has been with his doctor for about four years. Before he involved his doctor in his blood pressure and fitness monitoring activities, he revealed he would always find ways to lower his blood pressure. Though now his doctor is involved, and he is on medication, he still tries to look for alternate means to lower his blood pressure other than taking the medication given to him by the doctor.

"… like when I started to monitor my pressure, you know blood pressure can be chronic and I do not want to be on medication all my life. I found out that some days it was high and some days it was ok. So, I tried to know why it is high on those days and find ways on getting it down- I will go out for a walk and check what I ate previously, avoid salt and whatever.
[I: so on days you realise the figures appear to be high or low than usual, what do you do about it?]
mmm… I just check myself like what I have been doing or eating and just take a break. I sometimes take the medication too if I feel it will help" (Daniel, 42 years, security guard).

From the above, it seems Daniel does not want to take the medication given by his doctor to manage the blood pressure but lookout for potential causes that may lead to the fluctuations in his blood pressure and deal with the causes. Though he eventually reveals in the follow-up question that he takes the medication, his initial decision regarding fluctuation in blood pressure is not to follow the doctor's recommendation (taking the medication). This places Daniel as an empowered patient (Hardey, 1999; Stewart Loane and D'Alessandro, 2014) who is able to manage his blood pressure as he sees fit.

Sophia has been with her family physician for several years now. She describes him as personable and engaging and does not only focus on why she came in for an appointment but appears interested in other areas of her life as well. In our conversation, she revealed an instance when she felt unwell but decided not to consult her doctor.

"A few weeks ago, I was playing in a softball tournament, and the weather was way… hotter than had been predicted. I usually drink 3.5-4 litres of water a day, and at the tournament I had only brought 1 water bottle. I didn't think anything of it because I thought we would have more time between games than what was actually scheduled. About halfway through the game I started to feel off. I was dizzy, uncomfortable, and hot. I was only back catcher, so I wasn't doing anything particularly active except throwing the ball back to the pitcher, yet I could feel my heart racing. I checked my device and it said my heart was beating at 140 beats per minute!!!! (My average resting heart rate is 59bpm). I knew something was wrong, and the watch confirmed my suspicions. Between innings, I asked a friend to buy several bottles of water and sat out the next inning until I could get my heart rate (and likely dehydration) under control. Once my heart rate returned to normal, and I chugged a bunch of water, I was able to return to the game" (Sophia, 28 years, student).

Sophia also expressed a form of empowerment (Hardey, 1999; Petrakaki et al., 2018; Stewart Loane and D'Alessandro, 2014) since she made a health decision without medical personal.

4.3.4 Sub-theme: Convenient Health care

During interviews, some participants revealed that waiting times for doctor's appointments leads some to prefer to adopt mHealth technologies and other resources in order to maintain their health. Though Ella reports that she is satisfied with her relationship with her doctor, she also wants to have regular hospital appointments to see the status of her health. She articulated the challenges she has to set up appointments:

"I always try to work on myself, stay healthy and my device also helps. I do not like going to the doctor's unless there is nothing I can do about it… it is not always the easiest access. It not always the easiest when I need an appointment, and I find that I have to wait a lot for one. So, I prefer to use everything I have to stay healthy as possible" (Ella, 28 years, teaching/research assistant).

The issue of waiting time for clinical appointments has been reported in existing literature (Sanmartin, Berthelot, and McIntosh, 2007) and some researchers (Dé, 2011; Swan, 2012) argue that existing challenges in medical services such as access to care by patients make mHealth technologies convenient in managing and treating of diseases. Ella's narrative shows that challenges like wait-times for medical appointments make it convenient for her to use mHealth device and other resources to look after her health. Like Ella, Ava narrated a situation she had with her doctor during COVID-19 lockdowns which makes mHealth technologies convenient to use.

"During this COVID, I will say it is worse. Because a lot of it is telephone conversation. I had an injury and I called, and we spoke for less than 5 minutes. He said he will send a requisition to

radio whatever centre for me to get an x-ray and that was it. And I will say that was worse. And even the appointment took a while. Because when I called the clinic and they were like, the next available appointment was Tuesday or Thursday, I think. So, I waited for 3 days to have a 3-minute conversation on the phone … huh! [laughs] (Ava, 45 years, home manager).

Though Ava and Ela want to visit doctors regularly, scheduling challenges discourage them from doing so. In order to avoid situations where their health will deteriorate, they use their mHealth technologies to help manage their health. Hence mHealth technologies become a convenient choice for these participants in managing health. Also, their use of mHealth technologies does not necessarily reduce or prevent them from medical visits with their respective doctors, it is the challenge of wait times. The choice of mHealth technologies been a convenient tool for managing health can also be seen in Ethan's narrative. Ethan preferred technology as a medium to manage his health and health care.

"I use WEB MD app right. If someone told me I don't have to see the doctor fine, I wouldn't. I love using tech and I prefer this form of interaction. [I: so, about the WEB MD app, do you use it often?] Ethan: yeah, I do. All the time… So if I check whatever symptoms I am having and I do not have go to the doctor. Then fine. Like the other time, I experienced err… I will say tissue tearing in my gum. So, I checked and it said that I was taking too much hot things and it was causing me to burn the upper tissue of my gum… I think it was right because … I think I was eating hot foods then… but it went away and it saved me from booking doctor's appointment and waiting. The issue is, if I don't find anything substantial, and going to the doctor is going to be the final say on what is going on with me. I am ok with it, but I would rather not go" (Ethan, 25 years, recreational therapist).

Sophia preferred using mHealth rather than visiting doctors:

"I think our health care system is relatively reactive and I find that I am not going unless I am sick or unless they tell me I have to. So I feel the health care system is kind of like the last resort and I always get nervous going to the doctors because I don't like it so I find that I often try to avoid it as often as I can. It is one of the last resort, I am happy that it is there and it is there when I need it but most of the times I try not need it at all" (Sophia, 28 years, student).

Olivia articulates similar views, however, she also expressed that she is not satisfied with her relationship with the doctor.

"well, these apps I think it a temporary means to a good health. It can be deleted or they may run out of business. Well, one may ask why waste your time on these apps and not go to the hospital or see a professional when I have a problem. Because I have had bad experiences with doctors doesn't mean it is the same everywhere else. It is because I use more of this app because I am a student. I don't have time to always book an appointment and go to the clinic. If like it is an emergency situation, I will definitely book to see a doctor. I wouldn't always rely on these but again it is to maintain some form of health temporarily. But in serious cases, I will see a doctor" (Olivia, 33 years, adults support worker).

Like the participants above, mHealth technology made it convenient for Olivia to control and manage her health as she sees fit. It can be said that participants do not completely ignore the expertise of doctors but they want the convenience of accessing health care at their convenience as noted by (Ball and Lillis, 2001).

4.4 Interpersonal Doctor-Patient Relationships

As noted earlier, participants in this study may be considered consumer-patients who have adopted mHealth and other resources to manage and improve their health and wellbeing. Additionally, some participants shared their views and expectations on the nature of doctor-patient relationships they wanted. I categorised these views and expectations as interpersonal doctor-patient relationships which I examine below.

Ava has seen her family doctor for over ten years now and also uses a walk-in clinic. During the interview, she revealed that she preferred the doctor at the walk-in clinic she frequents over her family doctor. She said the doctor at the walk-in clinic is very friendly and sociable and takes time to chat with her while carefully explaining any concerns she has. This, she barely gets from her family physician. In recounting incidences, she has had with her family doctor, she narrates:

"I don't know if it is a personality thing but often there is no eye contact. He is seating in front of the computer, he is typing or doing something else and not actually looking at you. I expect

contact, I expect some sort of connection. It is not so much as personal I will say, compared to the doctor at the walk-in" (Ava, 45 years, home manager).

On reflecting on what she would like from her family doctor, she said:

"I think my doctor should be relaxed. You go in to see a patient, see the patient as a person, see the patient as someone with concerns that is there for your medical advice… yeah as a person not just as a patient. I have an issue, I have fears and I am walking in and it's like you are here for just 15 minutes so we need to talk and … I can attend to the one after you. This is simply because the doctor is seeing me as feeble, not as a person. So I expect a cordial relationship, one in which I am identified as a person and not a patient, a relationship that gives me room to relax and talk about what is going on with me" (Ava, 45 years, home manager).

It can be said that Ava wants a deeper relationship with her doctor and a not clear-cut one as 'doctor' and 'patient' with power structures as seen in the active-passivity model of doctor-patient relationships (Emanuel and Emanuel, 1992; Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956). She wants her doctor to treat her as a person who can communicate and understand. Ava's expectation confirms the existing literature (Stone, 2003; Zadoroznyj, 2001) that individuals want a doctor-patient relationship that they can freely express and communicate themselves to their doctors.

Ella recounts that when she first came to Canada, she was assigned a doctor who exceeded all her expectations for how doctors relate to their patients. She described her doctor as easy-going and understanding. Her doctor encouraged her to get involved in her health and wellness due to complications she was having with her weight and constant skin breakouts. The doctor moved out of the city and was assigned a new doctor who she is uncomfortable with stemming from a misdiagnosis of ear infection.

"But she left because she was moving out of the city and I was given someone else as my family doctor and that one I feel that she doesn't have much knowledge on stuffs. She misguided me on an ear infection and twice she gave me a lot of anti-biotics for ear infection and when she gave me the 2nd time, she sent me to an ear specialist and he told me I had never had it and my ears

are so healthy he thinks I never had ear infection. I was misdiagnosed and I lost faith in her" (Ella, 28 years, teaching/research assistant).

Currently, she sees a doctor at a walk-in clinic. Though she prefers seeing this doctor, she notes that the doctor is male and would prefer a female doctor. Ella was the only respondent who brought up the issue of the gender of the doctor regarding the kind of doctor-patient relationship she wants. This confirms the study by Monzani and colleagues (2020) that gender places a role in the preference people have for the kind of doctors they want. Ella said:

"But when I go to that clinic, there is another doctor [name within], he is not my family doctor but I just see him when I have questions. But again, I feel more comfortable with a female doctor because if I am discussing some things. But haven't been able to get a good one yet" (Ella, 28 years, teaching/research assistant).

Ella has been seeing the male doctor for close to two years now and I asked her why she has been with him though she expressed concerns about the gender of the doctor.

"The male doctor I see sometimes, he showed concern about blood results with the cholesterol and he called me back to discuss what I should do the first time I went there. So I think that is what got me. Since then, whenever I go there, I am able to discuss my fitness progress with him and my cardio since he showed interest. I am able to ask him questions and he answers my questions. He even recommended the fitness watch and a nutritionist to me and he called back to ask about it. I do think all doctors should take note of this, they will give you a test and send you to a specialist and forget about you. I know it is hard, they must have a lot of patients but they must have time to discuss your health" (Ella, 28 years, teaching/ research assistant).

Even though the gender of the doctor is not what Ella would like as she prefers a female doctor, she does like the way the doctor shows concern, follows up after appointments, and enables her to communicate whatever issues she has. This supports Stone's (2003) and Wiles and Higgins' (1996) argument that patients want doctors to show concern in doctor-patient relationships.

Carla is very positive about her doctor-patient relationship. She expressed that she is comfortable with her doctor, freely communicates with her and also, talks about things outside medicine and sickness during medical encounters.

"… she is a Christian. And I believe that helps a lot. I am able to ask a lot of questions and she is always ready to answer my questions. So every time I go to her, we talk about the Bible too and what is going on. I am really free with her and I am relaxed. We have a very good relationship and even because she is a Christian" (Carla, 38 years, stay-at-home mother).

As noted by Lupton (1996) and Frank and Stollberg (2004), often patients value interpersonal features of doctors over their medical knowledge where doctors show concern and patients can freely relate with their doctors This can be seen in Carla's relationship with her doctor who shares the same religious faith. This could also be seen in Sophia's narrative concerning her doctor. She mentioned that her doctor not only engages her on the symptoms and reasons for the medical encounters but shows interests in other aspects of her life as well. Sophia is satisfied with her doctor-patient relationship. In describing the doctor, she said:

"... he is really personable and very nice and always asks urmm… he doesn't just focus on what is wrong… How is your degree going? How is your husband? It feels really nice because I feel like he actually cares about other aspects of my life that are important to health" (Sophia, 28 years, student).

In addition to their regular doctor-patient interactions, Mia liked the fact that her doctor is open-minded and culturally accommodating. Mia has been with her doctor for four years now and likes the fact that her doctor is reassuring and acknowledges the differences in their cultural backgrounds.

"Whenever she says I know you have your traditional foods and all of that, just look for the ones that fall in healthy foods, acknowledging differences, acknowledging diversity is really helpful so I will say yeah. Also if there is a change negatively, also pointing that out. You used to be good! You know, what is happening? I feel like she is always like honest with me and she she also acknowledges the fact that she says things like I know you are putting in effort, I know you are trying and that kind of thing. So acknowledging my efforts and not disregarding me like oh, you are still sick, that kind of thing. And she always like celebrates every victory and growth, no matter how little it is. So that is very encouraging for a patient because I am coming to you because I feel like I have a problem right. Anytime I speak to her, she always like manages set my heart at peace (Mia, 35 years, sales executive).

In a study on patients trust in the medical encounter in the context of consumerism in health, Lupton (1996) concluded that patients want their doctors to show empathy and understanding during the medical encounter. Mia's relationship with her doctor confirms Lupton's (1996) study. It is clear from Mia's narrative that her doctor shows empathy in her relationship with Mia. Also, it can be said that Mia wants her doctor to be there, encouraging her in her efforts to maintain her health.

4.5 Summary

Participants in this research can be described as middle-class individuals with high levels of health literacy that can afford and confidently use mHealth devices for health and health care. Participants may also fit the description of consumers-patients (Lupton, 1997a, 2013) as they appeared sceptical of medical knowledge, assumed personal responsibility for health, adopted various resources for health and health care and appeared to make health decisions without the involvement of doctors or other health care practitioners (Defossez, 2016; Henwood, Wyatt, Hart, and Smith, 2003; Lupton, 1997a, 2012, 20132b; Mold, 2010; Zadoroznyj, 2001). Some participants valued the health knowledge retrieved from their devices and even shared it with doctors during medical encounters for personalised treatments on their diseases.

In addition, as participants are engaging in consumerist approaches to health and health care (Defossez, 2016; Hardey, 1999; Lupton, 1997a, 2013; Mold, 2010; Zadoroznyj, 2001) they want to freely communicate with their doctors. While participants do not appear to challenge medical expertise, they do want their doctors to acknowledge their health endeavours and also acknowledge participants' health knowledge (not passive individuals). Thus, even as participants are managing their health with the assistance of mHealth technologies, they like that they can freely communicate that with their doctors and for the doctors to acknowledge their efforts too.

Additionally, the focus of participants even as consumer-patients is on the interpersonal aspects of doctor-patient relationships. They want their doctors to show concern, empathy and engage them in other aspects of their lives and not merely the reasons for medical encounter.

Chapter 5

Discussion

This study aimed to find out how mHealth technologies influence doctor-patient relationships in the context of consumer cultures in Canada. To accomplish this task, I analysed narrative accounts of ten users of mHealth technologies who have seen a doctor in the past year in Winnipeg, Canada. The mHealth technologies used by participants ranged from blood pressure monitors, thermometers, Samsung fitness watch, Fitbit, Garmin, to anxiety and fitness health applications. The users are middle-class individuals who have educational backgrounds from diploma to ongoing doctorate degrees. The themes that were generated from the analysis are the monitored life; consumerism in health; mHealth, health decisions and doctors; and interpersonal doctor-patient relationships. These themes are consistent with existing literature (Anderson et al., 2011; Ajana, 2017; Finch et al., 2008; Hardey, 1999, 2001; Lupton, 2012b, 2013, 2015, 2016b; Swan 2012).

The findings from this study showed that mHealth technologies are an integral part of the resources that participants use in managing different illnesses and improving health through self-care. This confirms claims by promoters of mHealth technologies that mHealth technologies can be used by lay individuals to remotely manage health, improve wellbeing and prevent diseases (Anderson, Burford, and Emmerton, 2016; Dé, 2011; Hasman, 2011). In a qualitative study by Anderson, Burford, and Emmerton (2016) in Australia, the researchers found that the participants used different health applications for self-monitoring and self-care especially in managing diseases such as asthma, depression, blood pressure, and pain management among others. Three of the participants in this study had been clinically diagnosed with high blood pressure, one with clinical anxiety, but the rest did not have any diagnosed medical condition.

However, all the participants used their mHealth technologies to engage in various self-monitoring and self-care to maintain and improve their health.

mHealth technologies served as motivators that enabled participants to practice self-care and health lifestyle behaviours that improved their selves. Participants mentioned their mHealth technologies enabled them to monitor their meals, exercises, moods, fitness activities, among others. With this, they may keep up with the things they do that contributed to or promoted their health and avoid the ones that do not help them. Guided by Foucault's (1984; 1997) biopower and 'technologies of self', it can be said that participants subscribed to contemporary forms of biopower (Rabinow and Rose, 2006) where they used mHealth technologies to control their bodies and health at the individual level without the direct influence of health institutions or governments. This, in turn, had consequences for how they thought about themselves. With this, participants received rewards of health and wellbeing, independence, happiness, productivity at work, among others.

Participants used their mHealth technologies to retrieve knowledge such as level of physical activities, calories burnt, heart rate, blood pressure, moods, bowel movements and so on. It can be said that the participants are modelling themselves into a digital cyborg assemblage (Lupton, 2015). As mHealth devices enable the interaction of the human body with technology using sensors and processors that enables the body to be monitored, recorded and interpreted. When participants use their mHealth devices, they put themselves under medical assessments where their bodies interact with mHealth technologies to provide information such as their blood pressure, physical activity, mood and so on. Also, participants related the knowledge they made on themselves is beneficial in maintaining their health. This is because they found the information as unique and personalised and also gave them information about themselves which

they may not get from their doctors. This is consistent with the study by Finch and colleagues (2008) and Swan (2012) that digital technologies for remote monitoring by patients grants health practitioners information to different aspects of the person's life which otherwise would not have access to. In this study, for instance, some participants with the assistance of their mHealth devices drew correlations with sleep and mood, and food consumption with blood pressure. Thus, through the interaction of mHealth devices, bodies and lifestyle behaviours, participants generated knowledge on managing their health and diseases. They had in-depth details on their bodies and daily lifestyle activities that influenced their health outcomes and quality of life. This is consistent with a study by Kingod (2018) on Danish individuals living with diabetes. These individuals used various mHealth technologies, interaction with a support group on Facebook, personal experiences and daily lifestyle behaviours to generate personalised knowledge on managing diabetes.

One participant on the other hand was uncertain about the validity of the data produced from their devices voicing concerns on the inaccuracies of recordings. In a review on smartphone applications for measuring heart rate, the researchers (Coppetti et al., 2017) concluded there appear to be inconsistencies in some of the health applications for measuring heart rate on the market. With this, individuals need to be cautious if exclusively relying on these in maintaining their health. Some participants also mentioned that they do not exclusively rely on their mHealth applications in managing their health but liked the handiness of their mHealth devices which enables carry them around anywhere.

Almost all the mHealth technologies used by the participants had notification functions that participants used to influence themselves to take actions which they believed is beneficial to their health. For instance, some participants reported that they used their mHealth devices to set

‘hydration reminders’ and ‘physical activity reminders’ like ‘stretch’ and so on. Rich and Miah (2017) note that the use of mHealth technologies tends to incite some kind of ‘good’ behaviour among its users targeted at enhancing health and wellness. Participants voluntarily submitted themselves to the protocols by their mHealth by taking the specific actions. In the context of biopower, these real-time notifications are disciplinarily in the Foucauldian sense as they impose on the participants' specific actions to promote their health.

For the individuals in this study, the use of their mHealth devices was part of their routine daily activities that influenced their health and wellbeing. They did not consider their self-monitoring endeavours clinical activities though it involved monitoring vital signs and aspects of their bodies which would traditionally be considered activities unique for health professionals (Ajana, 2017; Lupton, 2012; Oudshoorn, 2012). In a study on the use of ECG monitors by patients in the Netherland for telecare, Oudshoorn (2012) concluded that participants in the study were uncomfortable wearing their ECG monitors in public places. This is because the participants felt notifications from their device were stigmatising as they drew attention to themselves in public. This was not the case with participants in this study as they reported they were comfortable using their various mHealth devices anywhere and did not find the notifications disturbing. They also expressed the fact that their mHealth technologies were portable which made it easier for them to wear or carry around anywhere.

Guided by the discourses of consumerism in health (Hardey, 1999; Lupton, 1996, 1997a; Sointu, 2005), it can be said that individuals in this study expressed notions of consumerism when it comes to their health. For instance, comments by the participants expressed a sense of personal responsibility in health. All the individuals mentioned that health is very important to them. In a study by Fries (2012) on the use of Complementary and Alternative Medical

Therapies (CAM) to resist biomedical ageing among older adults in Canada, he noted that his participants viewed health as their individual responsibility and they believed they had to use resources such as CAM maintain their health. Though the participants in this study are younger, their views on health responsibility reflected that of the participants in Fries' (2012) study.

Additionally, a participant noted that her move to Canada influenced her to take on personal responsibility. While reflecting on her change in attitude towards health, she mentioned that there are lots of resources and guides for people to be responsible and take on roles to maintain health and prevent diseases in Canada. In a study on changes in the concepts of health and personal responsibility in America, Defossez (2016) argued that contemporary health practices like direct-to-consumer genetics, the wide availability of pharmaceutical products for use by the lay public and self-diagnosis for mood disorders in contemporary societies influences individuals to assume personal responsibility in their health. In this sense, individuals may adopt certain lifestyles geared towards maximising health and, feel self-sufficient and accountable to themselves. It can be said that this is also the case in Canada regarding the use of mHealth technologies. In a national study on the use of mHealth technologies by Canadians, Pare et al., (2017) concluded that 32% of Canadian adults used various mHealth technologies to track their health and well-being. This confirms that in Canada, residents may have easy access to health tools that they may use for self-monitoring and self-care at home. With the availability of these health devices, participants may assume personal responsibility and individual initiative in health and health care.

Moreover, participants portrayed themselves as individuals who are accountable to themselves. As discussed earlier, they use their mHealth devices to constantly discover information about themselves and their bodies and also track lifestyle patterns that seem to

contribute to better health. This attitude of participants can be connected at a conceptual level to the "reflexive project of self" (Giddens, 1991) as participants continuously sought knowledge using their mHealth devices to improve themselves and prevent diseases. Also, instead of participants waiting and falling sick and then seeking treatments from their doctor, they used their mHealth devices to engage in ways to prevent illness.

mHealth technologies can be expensive to use and some participants expressed concerns about the cost of purchasing and using mHealth devices. In research on consumerism and medical encounter among pregnant women in Australia, Zadoroznyj (2001) argues that the class of pregnant women played a role in consumerism in obstetric encounters. Individuals who took part in this study were employed individuals with academic degrees ranging from diploma to university education. Apart from the two participants who complained about the cost and one who received her Fitbit as a gift, the other participants did not mention the issue of cost. Also, they did not mention any challenges relating to their use of their mHealth technologies. Thus, my participants can be considered middle-class individuals who could effectively use their mHealth devices, preventatively.

Some participants additionally, criticized biomedical knowledge and doctors. They emphasised the fact that doctors are not infallible and medical knowledge needs to be contested. The attitudes of the participants support the arguments that patients as consumers tend to be sceptical of medical knowledge and may want to adopt several resources in addition to the treatments by their doctors (Lupton, 1997a). Unexpectedly too, participants who are sceptical about medical knowledge and the other participants who aren't, recognised the value and role of doctors in health and health care. Consequently, though they appear to want to contest the views

of their doctors, they may not completely write them off when it comes to their health and health care.

Some participants indicated they do not share the knowledge created on themselves with their doctors as they felt the reasons they initiated the medical encounter during their use of mHealth technologies was separate from their self-monitoring practices. This confirms the studies by Lupton (2012, 2016) that users of mHealth devices may not necessarily share their health knowledge with doctors but for leisure, share with friends and families and others.

Nonetheless, some individuals in this study share their mHealth information with their doctors during medical encounters. It can be seen from the narratives that the personalised health knowledge enabled these participants to work as partners with their doctors. This was done in such a way that their health knowledge adds to the factors their doctors considered when diagnosing and managing their health for effective health outcomes. As noted by Finch, Mort and May (2008), with technologies for remote monitoring by patients, doctors will not only be restricted to examining symptoms of patients in diagnosing and treatments but will look out for other aspects in diagnosis and treatments. Hence surveillance data can be used to complement symptoms in diagnosing and treating diseases. With their health knowledge, they engaged in dialogue with their doctors and their doctors provided appropriate medicine and care to them. Hardey (1999, 2001) argues that technologies have the potential to change doctor-patient relationships since lay individuals have access to health knowledge which they approach the medical encounters ensuring an equal level of power in the relationship.

However, there was one participant who could be classified as a passive patient (Kaba and Sooriakumaran, 2007; Lupton, 1997a; Szasz and Hollender, 1956) during the medical encounter. In a review on the use of new health technologies such as telecare by Mort et al.

(2009), the researchers argued that though health technologies for self-monitoring and management of diseases at home make patients active and involved in their health, patients still tend to their doctors for interpretation on their self-monitoring. Despite being an active patient who uses mHealth for self-monitoring, the patient may be a passive patient during the medical encounter.

Furthermore, the context of the medical encounter may also play a role in the way a participant may be a consumer-patient or passive patient in the medical encounter. One participant described a scenario where conversations with his doctor compelled him to disclose his health knowledge to the doctor. Lupton (2013, 1996) describes doctor-patient relationships as complex and unpredictable and patients tend to be saddled with emotions and confusions during medical encounters. Thus, mHealth technologies may make individuals active and engaged in health (Finch et al., 2008; Lupton, 2013; Swan, 2012). It can also influence doctor-patient relationships by making patients, partners rather than passive patients. However, this will depend on the context of the encounter- the reception of doctors and the individual's decision on how he or she would like to approach the encounter. Patients may choose to be passive during the encounter by letting the doctors interpret the data, counsel and provide direction as to the best form of treatment to the patients.

Participants in my study cannot completely fit into the description of the stereotypical consumer-patients (Hardey, 1999, 2001; Lupton, 1997a)- one with greater autonomy in doctor-patient relationships, actively challenging doctors, deciding treatments and treating medical services as he or she would treat other services. Except for one participant who specifically insisted his doctor monitor his blood pressure when the doctor brushed it off, participants who approached their doctors with their mHealth knowledge did so as partners or allies. In this sense,

both the participants and doctors were looking out for the best ways to improve the health of the participants. There were no recounts of participants actively demanding their doctors to a particular course of action or approaching other alternatives because their doctors ignored their case like Larry Smarr (Ramirez, 2013; Smarr, 2012). These participants recognised the knowledge and experience of their doctors and would like their doctors to be also engaging, recognising their participants' health knowledge and efforts in maintaining and maximising health and wellbeing.

Participants were looking for convenient health care when they use mHealth technologies. Some participants expressed challenges in setting up clinical appointments, others preferred not to go to the doctors unless they deemed it important or urgent and preferred to manage their health and wellbeing as they wanted using their mHealth technologies. This supports the argument by Andreassen Trondsen, Kummervold, Gammon, and Hjortdahl, (2006) that mHealth is an avenue by which patients may avoid doctors visits. They want the best options that are convenient to themselves in maintaining their health. Overall, participants preferred mHealth technologies to manage their health and prevent diseases that will necessitate that they always have to visit their doctors as they take on the role of consumer-patients. Swan (2012) captured this in the article 'Health 2050' where health care is gradually moving from treatments of diseases to preventing diseases. Patients may assume greater responsibility in caring for themselves and maximising health to prevent diseases as seen with the participants with mHealth technologies. This tends to influence the traditional type of doctor-patient relationships (Kaba and Sooriakumaran, 2007; Szasz and Hollender, 1956) into consumer type relationships (Hardey, 1999; Kaba and Sooriakumaran, 2007; Lupton, 1997a) depending on the patient's preference and also, the context.

In addition, I realised from this study that participants were interested in the interpersonal aspects of doctor-patient relationships than their actual roles (active and partners or passive) in the relationships. In a study on the use of acupuncture in Germany by Frank and Stollberg (2004), the researchers noticed that participants preferred acupuncture treatments to biomedical treatments because of mundane things like home visits by acupuncture therapists outside consultation, quick appointments and reliable feedbacks. Participants in the research were not interested in the patient-centred approach used by acupuncture therapists. In a study by Lupton (1996) on consumerist behaviour in medical encounters among residents in Australia, Lupton noticed that though participants simultaneously took on the consumerist approach in the medical encounter, these participants were focused on the emotional aspects of the relationship in relation to how their doctors made them feel. Participants preferred deeper relationships with their doctors, doctors to show empathy during consultations and to check in on them outside consultations. They also wanted doctors they could relate to based on religion and gender. With this, participants as patient-consumer seemed somewhat uninterested in the power structures of doctor-patient relationships.

In conclusion, mHealth technologies influence doctor-patient relationships. When individuals start using mHealth technologies, they assume responsibility and accountability to themselves in terms of maintaining and managing their health. With the constant interaction of their bodies with mHealth technologies, these individuals are able to generate information about themselves. With this information and their mHealth devices, individuals may replicate the work of doctors or other health professionals by willingly submitting themselves to self-care protocols in order to maintain and manage their health. Like the digital cyborg assemblage, individuals become engaged and active in their health.

During medical encounters, individuals may choose to be passive patients or consumer-patient. Thus, mHealth technologies may produce consumer-patients who take active roles in managing their health and health care but are passive patients during medical encounters. Though they may be informed, yet they submissively allow their doctors to diagnose and offer treatment during medical encounters. On the other hand, other consumer-patients tend to engage their doctors on their mHealth knowledge, enabling their doctors to include this knowledge in their diagnoses and treatment. These consumer-patients transform the traditional doctor-patient relationships from one where doctors only diagnose and treat patients to partnership ones. This is where both patients and doctors engage themselves to diagnose and treat ailments.

5.1 Policy Suggestions

There are several implications for the development of policies on mHealth technologies that will better doctor-patient relationships and also lead to effective health outcomes. As seen among some participants in this research, their mHealth complements their doctor-patient interactions and contributes to maintaining their health. Hence policies need to support and guide doctors to recommend appropriate mHealth technologies to their patients that maintain the health of the general public. These policies should be such that, it does not replace doctors but enables doctors and patients to use appropriate mHealth technologies that are unique to every individual's health needs. Such policies may lead to effective use of mHealth technologies by lay individuals and also prevent situations where individuals will use faulty mHealth technologies that have not undergone rigorous testing to safeguard public health.

The cost of mHealth technologies may make them inaccessible to everyone. As seen in this research, middle-income educated individuals are likely to use mHealth technologies. Individuals outside of this group may not have access to mHealth technologies and this can

create inequalities in health care. In order to make mHealth inclusive for the greater public's health, policies should be put in place that ensures individuals in low-income families can access these technologies to better their health.

5.2 Limitations of the Study

This study looked at the influence of mHealth technologies in doctor-patient relationships in the context of consumer culture. A large body of literature has examined doctor-patient relationships and mHealth technologies separately. Some studies have looked at doctor-patient relationships and technologies like the internet, telemedicine and e-health (Ball and Lillis, 2001; Hardey, 1999, 2001; Loader, Muncer, Burrows, Pleace, and Nettleton, 2002; Stewart Loane and D'Alessandro, 2014). Also, Jutel and Lupton (2015) and Lupton (2013) conceptualised the potential of mHealth technologies in transforming doctor-patient relationships. As seen in the literature review, there appears to be a shift in the traditional roles of doctors and patients. This is seen in the growing emphasis on individualism and responsibility in health, access to health information by the lay public, consumerism in healthcare and the promotion of digital health tools like mHealth technologies for use by the lay public by vested interests. As laypeople may be gradually adopting mHealth technologies, it is important to know the extent to which people rely on these mHealth technologies and understand the role these mHealth technologies play in doctor-patient relationships to lead to maximum health outcomes.

This study focused on users of different mHealth technologies. The data from the interviews provide valuable information on the extent to which people rely on and use mHealth technologies to influence health outcomes. Also, the findings indicate the influences of mHealth technologies on doctor-patient relationships. This influence of mHealth technologies may signify an opportunity for better doctor-patient relationships for effective health outcomes. This study

can serve as a starting point for further studies on mHealth and doctor-patient relationships. For instance, some participants in this research may be described as not actually 'ill' and their experiences of health and illness may be different from someone suffering from chronic illnesses. Findings in this study show mHealth use may be a class-based phenomenon. Hence, people from different social, economic and cultural backgrounds may have different experiences with mHealth technologies and their relationships with their doctors.

Another limitation stems from the medium used in the interviews. I opted to use Zoom video conferencing for collecting data in adhering to COVID-19 protocols. The zoom conferencing went well but for two participants- there were glitches and connection breaks during the interview making some of the words of the participants inaudible. After the transcription, I sent the transcripts to the participants to go through the transcribed data to ensure I transcribed their response. While one participant responded, the other did not. That transcript was eventually taken out of the analysis.

5.3 Suggestions for Future Research

Further research on mHealth technologies and doctor-patient relationships can examine how different aspects of social location such as age, gender and ethnicity intersect to influence mHealth technology and shape doctor-patient relationships. For instance, one may study this research from the perspective of older adults. Also, future research on mHealth technologies and doctor-patient relationships may focus on individuals with particular health conditions like diabetes, asthma, clinical anxiety among others. For instance, one may look at specific mHealth technologies that use artificial intelligence and gamification to predict mood disorders and to counsel users and their relationships with doctors.

Additionally, the focus of this study was on patients (users of mHealth technologies) and their relationships with their doctors. Further research may look at this topic from the perspectives of doctors such as how doctors perceive the roles of mHealth technologies in doctor-patient relationships.

References

Abbot Laboratories (2020). FreeStyle Libre Reader™. Retrieved July 10, 2020 from https://www.freestyle.abbott/ca/en/index.html

Aitkin, M., Clancy, B., and Nass, D. (2017). *The growing value of digital health*. *IQVIA Institute for Human Data Science*. Retrieved from https://www.iqvia.com/institute/reports/the-growing-value-of-digital-health

Alessi, C. (2020). *The future of medical technology devices in the time of COVID-19.* Retrieved from https://www.mobihealthnews.com/news/europe/future-medical-technology-devices-time-covid-19

Aluttis, C., Bishaw, T., and Frank, M. W. (2014). The workforce for health in a globalized context - global shortages and international migration. *Global Health Action*, *7*(SUPP.1), 1–7. https://doi.org/10.3402/gha.v7.23611

Anderson, J., and Rainie, L. (2018). *Stories From Experts About the Impact of Digital Life*. *Pew Research Center*. Retrieved from http://www.pewinternet.org/2018/07/03/stories-from-experts-about-the-impact-of-digital-life/

Anderson, K., Burford, O., and Emmerton, L. (2016). Mobile health apps to facilitate self-care: A qualitative study of user experiences. *PLoS ONE*, *11*(5), 1–21. https://doi.org/10.1371/journal.pone.0156164

Andreassen, Hege K., Trondsen, M., Kummervold, P. E., Gammon, D., and Hjortdahl, P. (2006). Patients who use e-mediated communication with their doctor: New constructions of trust in the patient-doctor relationship. *Qualitative Health Research*, *16*(2), 238–248. https://doi.org/10.1177/1049732305284667

Andreassen, Hege Kristin, and Dyb, K. (2010). Differences and inequalities in health: Empirical reflections on telemedicine and politics. *Information Communication and Society*, *13*(7), 956–975. https://doi.org/10.1080/1369118X.2010.499953

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G. and Lawless, M. (2019). Using Zoom Videoconferencing for Qualitative Data Collection: Perceptions and Experiences of Researchers and Participants. *International Journal of Qualitative Methods*, *18,* 1-8

Baldwin, J. L., Singh, H., Sittig, D. F., and Giardina, T. D. (2017). Patient portals and health apps: Pitfalls, promises, and what one might learn from the other. *Healthcare*, *5*(3), 81–85. https://doi.org/10.1016/j.hjdsi.2016.08.004

Ball, M. J., and Lillis, J. (2001). E-health : transforming the physician / patient relationship, *61*, 1–10.

Beaver, L. (2018). DIGITAL HEALTH BRIEFING: Alphabet, Apple, Microsoft patents reveal health interest — NHS staff in trouble for using chat apps — Google uses expert opinion to improve AI. Retrieved January 27, 2020, from https://www.businessinsider.com/digital-health-briefing-alphabet-apple-microsoft-patents-reveal-health-interest-nhs-staff-in-trouble-for-using-chat-apps-google-uses-expert-opinion-to-improve-ai-2018-3

Bernier, J. (2003). *Disease, Medicine and Society in Canada: A Historical Overview.* The Canadian Historical Association. Retrieved https://cha-shc.ca/_uploads/5c38afd70d7cd.pdf

Bol, N., Helberger, N., and Weert, J. C. M. (2018). Differences in mobile health app use: A source of new digital inequalities? *Information Society*, *34*(3), 183–193. https://doi.org/10.1080/01972243.2018.1438550

Boyatis, R. (1998) *Transforming qualitative information: Thematic Analysis and Code Development.* Sage Publications

Bradway, M., Årsand, E., and Grøttland, A. (2015). Mobile Health: Empowering patients and driving change. *Trends in Endocrinology and Metabolism*, *26*(3), 114–117. https://doi.org/10.1016/j.tem.2015.01.001

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101.

Broom, A. (2005). Medical specialists' accounts of the impact of the Internet on the doctor/patient relationship. *Health*, *9*(3), 319–338. https://doi.org/10.1177/1363459305052903

Buijink, A. W. G., Visser, B. J., and Marshall, L. (2013). Medical apps for smartphones: Lack of evidence undermines quality and safety. *Evidence-Based Medicine*, *18*(3), 90–92. https://doi.org/10.1136/eb-2012-100885

Burgess, M. (2018). What Is the Internet of Things? A WIRED Guide | WIRED. Retrieved February 8, 2021, from https://www.wired.com/story/wired-guide-internet-of-things/

Callen, J. L., Westbrook, J. I., Georgiou, A., and Li, J. (2012). Failure to follow-up test results for ambulatory patients: A systematic review. *Journal of General Internal Medicine*. https://doi.org/10.1007/s11606-011-1949-5

Coppetti, T., Brauchlin, A., Müggler, S., Attinger-Toller, A., Templin, C., Schönrath, F., … Wyss, C. A. (2017). Accuracy of smartphone apps for heart rate measurement. *European Journal of Preventive Cardiology*, *24*(12), 1287–1293. https://doi.org/10.1177/2047487317702044

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research. (2014). Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Caron, C. O. (2013). Reflexivity at Work: Making Sense of Mannheim's, Gouldner's and Bourdieu's Sociology. Retrieved February 16, 2020, from https://curve.carleton.ca/system/files/theses/30270.pdf

Carroll, W. K., and Shaw, M. (2001). Consolidating a neoliberal policy bloc in Canada, 1976 to 1996. *Canadian Public Policy*, *27*(2), 195–216. https://doi.org/10.2307/3552197

Choudhury, N. 2014. World Wide Web and Its Journey from Web 1.0 to Web 4.0. *International Journal of Computer Science and Information Technologies. 5*(6), 8096-8100

Coiera, E. (1996). The Internet's challenge to health care provision. *Bmj*, *312*(7022), 3–4. https://doi.org/10.1136/bmj.312.7022.3

Dangerfield, K. (2021). Lockdowns, curfew, stay-at-home order: What's next in Canada's COVID-19 fight? Retrieved February 2, 2021, from https://globalnews.ca/news/7567857/coronavirus-travel-restrictions-canada-lockdown/

Daruwalla Z, Thakkar V, Aggarwal M, Kiasatdolatabadi A, Guergachi A, Keshavjee K. Patient Empowerment: The Role of Technology. *Stud Health Technol Inform*. 2019;257:70-74.

Defossez, E. (2016). Health and personal responsibility in the context of neoliberalism : Cultivating alertness, autonomy and accountability through three contemporary health practices. *The International Journal of Communication and Health*, *9*(1), 73–79.

DeJonckheere M., and Vaughn L. M. (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Fam Med Com Health 7*(2), 1-8. doi:10.1136/ fmch-2018-000057

Dé, A. (2011). Will mHealth Apps and Devices empower Patients for Wellness and Disease Management ? A Case Study. Retrieved October 9, 2019, from http://www.andyde.com/pdf/mHealth_for_Wellness_and_Disease_Management_Andy_De_2011.pdf

Dijkum, C. van, and Vegter, L. (2010). A Client Perspective on E-Health. In M. M. Cruz-Cunha, A. Tavares, and R. Simoes (Eds.), *Handbook of Research on Developments in E-Health and Telemedicine: Technological and Social Perspectives (2 Volumes)* (pp. 357–377). Hershey, PA: IGI Global. https://doi.org/10.4018/978-1-61520-670-4.ch017

Emanuel, E. J, and Emanuel L. L. (1992). Four Models of the Physician-Patient Relationship. *JAMA. 267*(16):2221–2226. doi:10.1001/jama.1992.03480160079038

Eng, Donna, S., and Lee, J. M. (2013). Mobile Health Applications for Diabetes and Endocrinology: Promise and Peril? *Pediatr Diabetes*, *14*(4), 1–12. https://doi.org/10.1111/pedi.12034.Mobile

Eng, T. R., Maxfield, A., Patrick, K., Deering, M. J., Ratzan, S. C. and Gustafson, D. H. (1998). Access to health information and support: a public highway or a private road? *Journal of the American Medical Association*, *280*(15), 1371–1375.

Engel, G. L. (2012). The need for a new medical model: A challenge for biomedicine. *Psychodynamic Psychiatry*, *40*(3), 377–396. https://doi.org/10.1126/science.847460

Esmail, N. (2017). *Complementary and Alternative Medicine: Use and Public Attitudes 1997,2006, and 2016.* Fraser Institute. https://www.fraserinstitute.org/sites/default/files/complementary-and-alternative-medicine-2017.pdf

Faulkner, S. L. and Trotter, S. P. (2017). Data Saturation. In *International Encyclopedia of Communication Research Methods. (eds J. Matthes, C.S. Davis and R.F. Potter). DOI:10.1002/9781118901731.iecrm0060*

Figueiredo, M., Caldeira, C., Chen, Y., and Zheng, K. (2017). Routine self-tracking of health: reasons, facilitating factors, and the potential impact on health management practices. In *AMIA Annual Symposium proceedings.* (pp. 706–714). Retrieved from https://www.ianli.com/publications/2011-ianli-ubicomp-understanding-my-data.pdf

Finch, T. L., Mort, M., Mair, F. S., and May, C. R. (2008). Future patients? Telehealthcare, roles and responsibilities. *Health and Social Care in the Community*, *16*(1), 86–95. https://doi.org/10.1111/j.1365-2524.2007.00726.x

FitBit (2020). Technology that is Inventing the Future. Retrieved July 10, 2020 from https://www.fitbit.com/en-ca/technology

Fox, S., and Duggan, M. (2013). *Tracking for Health*. *Pew Internet Center*. https://doi.org/10.1001/jamainternmed.2013.1221.2.

Foucault, M. (1973). *The Birth of the Clinic: An Archaeology of Medical Perception Vintage*. Routledge.

Foucault, M. (1984). *The Foucault Reader*. Pantheon.

Foucault, M. (1990). *The History of Sexuality, Volume I: An Introduction.* Penguin.

Foucault, M. (1997). Technologies of the self. In: Rabinow P (ed.) *Ethics*. The New Press.

Frank, R., and Stollberg, G. (2004). Medical acupuncture in Germany: Patterns of consumerism among physicians and patients. *Sociology of Health and Illness*, *26*(3), 351–372. https://doi.org/10.1111/j.1467-9566.2004.00394.x

Freidson, E. (1971). *Profession of medicine. A study of the sociology of applied knowledge.* Dodd, Mead and Company.

Frey, R. and Fontana, A. (2000). The Interview: From Structured Questions to Negotiated Text. In *Handbook of Qualitative Research* (pp. 645-672). Sage publications Limited

Fries, C. J. (2008). Governing the health of the hybrid self: Integrative medicine, neoliberalism, and the shifting biopolitics of subjectivity. *Health Sociology Review*, *17*(4), 353–367. https://doi.org/10.5172/hesr.451.17.4.353

Fries, C. J. (2009). Bourdieu's reflexive sociology as a theoretical basis for mixed methods research: An application to complementary and alternative medicine. *Journal of Mixed Methods Research*, *3*(4), 326–348. https://doi.org/10.1177/1558689809336660

Gastaldo, D. (1997). Is Health Education Good for You? Re-thinking Health Education Through the Concept of Bio-power. In A. R. Petersen and R. Bunton (Eds.), *Foucault, Health and Medicine* (pp. 113–133). London: Routledge.

Germov, J. (1995). Medifraud, managerialism and the decline of medical autonomy: Proletarianisation and deprofessionalisation reconsidered. *Australia and New Zealand Journal of Sociology*, *31*(3), 51–66.

Giddens, A. (1991). *Modernity and self-identity: Self and Society in Late Modern Age.* Stanford University Press

Gläser, J., and Laudel, G. (2013). Life With and Without Coding: Two Methods for Early-Stage Data Analysis in Qualitative Research Aiming at Causal Explanations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 14*(2). https://doi.org/10.1016/j.jenvp.2010.03.006

Gray, JAM (2002). *The resourceful patient***.** eRosetta Press

Greener, I. (2003). Patient Choice in the NHS: The View from Economic Sociology. *Social Theory and Health*, *1*(1), 72–89. https://doi.org/10.1057/palgrave.sth.8700002

Hardey, M. (1999). Doctor in the house: The internet as a source of lay health knowledge and the challenge to expertise. *Sociology of Health and Illness*, *21*(6), 820–835. https://doi.org/10.1111/1467-9566.00185

Hardey, M. (2001). "E-health": the internet and the transformation of patients into consumers and producers of health knowledge. *Information, Communication and Society*, *4*(3), 388–405. https://doi.org/10.1080/13691180110044416

Hasman, L. (2011). An Introduction to Consumer Health Apps for the iPhone. *Journal of Consumer Health on the Internet*, *15*(4), 322–329. https://doi.org/10.1080/15398285.2011.623567

Hellin, T. (2002). The physician-patient relationship: Recent developments and changes. *Haemophilia*, *8*(3), 450–454. https://doi.org/10.1046/j.1365-2516.2002.00636.x

Henwood, F., and Marent, B. (2019). Understanding digital health: Productive tensions at the intersection of sociology of health and science and technology studies. *Sociology of Health and Illness*, *41*(S1), 1–15. https://doi.org/10.1111/1467-9566.12898

Henwood, F., Wyatt, S., Hart, A., and Smith, J. (2003). "Ignorance is bliss sometimes": Constraints on the emergence of the "informed patient" in the changing landscapes of health information. *Sociology of Health and Illness*, *25*(6), 589–607. https://doi.org/10.1111/1467-9566.00360

Ho, A., and Quick, O. (2018). Leaving patients to their own devices? Smart technology, safety and therapeutic relationships. *BMC Medical Ethics, 19*(1), 1–6. https://doi.org/10.1186/s12910-018-0255-8

Hughes, J. (1995). *Organization and Information at the Bed-Side: the experince of the medical division of labor by University Hospitals' inpatients*. University of Chicago. Retrieved from https://www.researchgate.net/publication/34076875_Organization_and_information_at_the_bed-side_the_experience_of_the_medical_division_of_labor_by_University_Hospitals'_inpatients

Huniche, L., Dinesen, B., Nielsen, C., Grann, O. and Toft, E. (2013) Patients' use of self-monitored readings for managing everyday life with COPD: A qualitative study. *Telemedicine and e-Health 19*(5): 396–402.

Iverson, S. A., Howard, K. B., and Penney, B. K. (2008). Impact of internet use on health-related behaviors and the patient-physician relationship: A survey-based study and review. *Journal of the American Osteopathic Association*, *108*(12), 699–711. https://doi.org/10.7556/jaoa.2008.108.12.699

Jutel, A., and Lupton, D. (2015). Digitizing diagnosis: a review of mobile applications in the diagnostic process. *Diagnosis*, *2*(2), 89–96. https://doi.org/10.1515/dx-2014-0068

Jewson, N. (1976). The disappearance of the sick man from medical cosmology 1770–1870. *Sociology*, *10*(3), 225–44.

Kaba, R., and Sooriakumaran, P. (2007). The evolution of the doctor-patient relationship. *International Journal of Surgery*, *5*(1), 57–65. https://doi.org/10.1016/j.ijsu.2006.01.005

Kelner, M. (2000). The Therapeutic Relationship Under Fire. In *Complementary and Alternative Medicine: Challenge and Change* (pp. 79–98). Overseas Publishers Association.

Kingod, N. (2018). The tinkering m-patient: Co-constructing knowledge on how to live with type 1 diabetes through Facebook searching and sharing and offline tinkering with self-care. *Health (United Kingdom)*. https://doi.org/10.1177/1363459318800140

Kivits, J. (2006). Informed patients and the internet: A mediated context for consultations with health professionals. *Journal of Health Psychology, 11*(2), 269–282. https://doi.org/10.1177/1359105306061186

Klein, S., Hostetter, M. and McCarthy, D. (2014). A Vision for Using Digital Health Technologies to Empower Consumers and Transform the U.S. Health Care System. Commonwealth Fund. Retrieved from http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/oct/1776_klein_vision_using_digital_hlt_tech_v2.pdf?la=en

Kong, T., Scott, M. M., Li, Y., and Wichelman, C. (2020). Physician attitudes towards—and adoption of—mobile health. *Digital Health*, *6*, 1–10. https://doi.org/10.1177/2055207620907187

Lázaro, J., and Gracia, D. (2006). The doctor-patient relationship in histroy. *Anales Del Sistema Sanitario de Navarra*, *29*(SUPPL.3), 7–17. https://doi.org/10.4321/s1137-66272006000600002

Levin, D., and Gordon, D. (2015). mHealth's Role in Consumerism and Connectivity. *Journal of AHIMA*, *86*(1), 32–37. Retrieved from http://bok.ahima.org/doc?oid=107539#.XjrDymhKjIU

Li, I., Dey, A. K., and Forlizzi, J. (2011). Understanding my data, myself: Supporting self-reflection with ubicomp technologies. In *UbiComp'11 - Proceedings of the 2011 ACM Conference on Ubiquitous Computing*. https://doi.org/10.1145/2030112.2030166

Licking, E., Evans, J., and Bean, A. (2018). *When the human body is the biggest data platform, who will capture value?* Retrieved from https://www.ey.com/Publication/vwLUAssets/ey-when-the-human-body-is-the-biggest-data-platform-who-will-capture-value/$FILE/ey-when-the-human-body-is-the-biggest-data-platform-who-will-capture-value.pdf

Little, W., and McGivern, R. (2014). Health and Medicine. In *Introduction to Sociology, Ist Canadian Edition* (pp. 173–188). B.C. Open Textbook project. https://doi.org/10.1002/9781118515563.ch19

Loader, B. D., Muncer, S., Burrows, R., Pleace, N., and Nettleton, S. (2002). Medicine on the line? Computer-mediated social support and advice for people with diabetes. *International Journal of Social Welfare*, *11*(1), 53–65. https://doi.org/10.1111/1468-2397.00196

Lupton D. (1996). 'Your life in your hands': trust in the medical encounter. In *Health and the sociology of emotions* (pp 157-172). Blackwell Publishers Limited.

Lupton, D. (1997a). Consumerism, reflexivity and the medical encounter. *Social Science and Medicine*, *45*(3), 373–381. https://doi.org/10.1016/S0277-9536(96)00353-X

Lupton, D. (1997b). Foucault and the medicalisation critique. *Foucault, Health and Medicine*, 94–100.

Lupton, D. (2012a). *Medicine as culture: Illness, disease and the body.* SAGE Publications.

Lupton, D. (2012b). M-health and health promotion: The digital cyborg and surveillance society. *Social Theory and Health*, *10*(3), 229–244. https://doi.org/10.1057/sth.2012.6

Lupton, D. (2013). The digitally engaged patient: Self-monitoring and self-care in the digital health era. *Social Theory and Health*, *11*(3), 256–270. https://doi.org/10.1057/sth.2013.10

Lupton, D. (2014). Apps as Artefacts: Towards a Critical Perspective on Mobile Health and Medical Apps. *Societies*, *4*(4), 606–622. https://doi.org/10.3390/soc4040606

Lupton, D. (2015). Donna Haraway: The Digital Cyborg Assemblage and the New Digital Health Health Technologies. In F. Collyer (Ed.), *The Palgrave Handbook of Social Theory in Health, Illness and Medicine* (pp. 567–581). Palgrave Macmillan Limited. https://doi.org/10.31826/9781463231699-040

Lupton, D. (2016a). The diverse domains of quantified selves: self-tracking modes and dataveillance. *Economy and Society*, *45*(1), 101–122. https://doi.org/10.1080/03085147.2016.1143726

Lupton, D. (2016b). Towards critical digital health studies: Reflections on two decades of research in health and the way forward. *Health (United Kingdom)*, *20*(1), 49–61. https://doi.org/10.1177/1363459315611940

Lupton, D., and Maslen, S. (2019). How Women Use Digital Technologies for Health: Qualitative Interview and Focus Group Study. *Journal of Medical Internet Research*, *21*(1), 1–11. https://doi.org/10.2196/11481

Magee, Mike. (2003). Relationship-Based Health Care in the United States, United Kingdom, Canada, Germany, South Africa and Japan A Comparative Study of Patient and Physician Perceptions Worldwide. Accessed from https://www.researchgate.net/publication/237365324_Relationship-Based_Health_Care_in_the_United_States_United_Kingdom_Canada_Germany_South_Africa_and_Japan_A_Comparative_Study_of_Patient_and_Physician_Perceptions_Worldwide

Magner, L. N. (2005). A history of medicine. Tay and Francis Group LLC.

Mandracchia, F., Llauradó, E., Tarro, L., Del Bas, J. M., Valls, R. M., Pedret, A., … Boqué, N. (2019). Potential use of mobile phone applications for self-monitoring and increasing daily fruit and vegetable consumption: A systematized review. *Nutrients*, *11*(3), 1–16. https://doi.org/10.3390/nu11030686

Mauthner, N. S., and Doucet, A. (2003). Reflexive accounts and accounts of reflexivity in qualitative data analysis. *Sociology*, *37*(3), 413–431. https://doi.org/10.1177/00380385030373002

McGrath, C., Palmgren, P. J. and Liljedahl, M. (2018). Twelve tips for conducting qualitative research interviews. *Medical Researcher*, 41(9), 1002-1006.

McKay, F. H., Slykerman, S., and Dunn, M. (2019). The App Behavior Change Scale: Creation of a Scale to Assess the Potential of Apps to Promote Behavior Change. *JMIR MHealth and UHealth*, *7*(1), e11130. https://doi.org/10.2196/11130

Meskó, B., Drobni, Z., Bényei, É., Gergely, B., and Győrffy, Z. (2017). Digital health is a cultural transformation of traditional healthcare. *MHealth*, *3*, 1–8. https://doi.org/10.21037/mHealth.2017.08.07

Milne, V., Joshua, T., and Stasiuk, M. (2016). Medical tests: Why "no news is good news'' can be dangerous." Retrieved December 28, 2020 from https://healthydebate.ca/2016/09/topic/test-result-management

Mold, A. (2010). Patient groups and the construction of the patient-consumer in Britain: An historical overview. *Journal of Social Policy*, *39*(4), 505–521. https://doi.org/10.1017/S0047279410000231

Monzani, D., Vergani, L., Pizzoli, S. F. M., Marton, G., Mazzocco, K., Bailo, L., … Pravettoni, G. (2020). Sexism Interacts with Patient–Physician Gender Concordance in Influencing Patient Control Preferences: Findings from a Vignette Experimental Design. *Applied Psychology: Health and Well-Being*, *12*(2), 471–492. https://doi.org/10.1111/aphw.12193

Morley, J., and Floridi, L. (2019). The Limits of Empowerment: How to Reframe the Role of mHealth Tools in the Healthcare Ecosystem. *Science and Engineering Ethics*, 1–25. https://doi.org/10.1007/s11948-019-00115-1

Mort, M., Finch, T., and May, C. (2009). Making and Unmaking Telepatients- Identity and Governance in New Health Technologies. *Science, Technology, and Human Values*, *34*(1), 9–33.

Muse™ (2020). Brain Sensing Headbands that Improves Your Meditation. Retrieved July 10, 2020 from https://choosemuse.com/

Nettleton, S., and Burrows, R. (2003). E-scaped medicine ? Information , reflexivity and health. *Critical Social Policy*, *23*(2), 165–185.

Nettleton, S., Burrows, R., and O'Malley, L. (2005). The mundane realities of the everyday lay use of the internet for health, and their consequences for media convergence. *Sociology of Health and Illness*, *27*(7), 972–992. https://doi.org/10.1111/j.1467-9566.2005.00466.x

Olesch, A. (2019). How self-tracking biometrics influence patients, medicine and society. Retrieved November 18, 2019, from https://www.mobihealthnews.com/content/europe/opinion-how-self-tracking-biometrics-influence-patients-medicine-and-society

Oudshoorn, N. (2012). How places matter: Telecare technologies and the changing spatial dimensions of healthcare. *Social Studies of Science*, *42*(1), 121–142. https://doi.org/10.1177/0306312711431817

Paré G., Leaver C., and Bourget C. (2018). Diffusion of the Digital Health Self-Tracking Movement in Canada: Results of a National Survey. *J Med Internet Res*. *20*(5):e177. DOI:10.2196/jmir.9388

Parikh, R. B. (2013). The empowered patient: consumerism in American medicine. *American Medical Association Journal of Ethics*, *15*(11), 923–925. https://doi.org/10.1001/virtualmentor.2013.15.11.fred1-1311

Park, J. (2003). *Use of Alternative Health care.* (Report No. 82-003-XIE). Statistics Canada https://www150.statcan.gc.ca/n1/pub/82-003-x/2004002/article/7789-eng.pdf

Parker, I. (2005). *Qualitative Psychology: Introducing Radical Research.* Berkshire: Open Unity Press.

Parker, C., Scott, S., & Geddes, A. (2019). Snowball Sampling. In P. Atkinson, S. Delamont, A. Cernat, J.W. Sakshaug, & R.A. Williams (Eds.), *SAGE Research Methods Foundations.* https://www.doi.org/10.4135/9781526421036831710

Parsons, T. (1951). Illness and the Role of the Physician: a Sociological Perspective. *American Journal of Orthopsychiatry*, *21*(3), 452–460. https://doi.org/10.1111/j.1939-0025.1951.tb00003.x

Patton, Michael Quinn (2002). *Qualitative research and evaluation methods*. Newbury Park, CA: Sage.

Peck, B., and Conner, S. (2011). Talking with Me or Talking at Me? The Impact of Status Characteristics on Doctor-Patient Interaction. *Sociological Perspectives, 54*(4), 547-567. doi:10.1525/sop.2011.54.4.547

Peng, W., Kanthawala, S., Yuan, S., and Hussain, S. (2016). A qualitative study of user perceptions of mobile health apps. *BMC Public Health*. *16*(1158), 1-11. 10.1186/s12889-016-3808-0.

Petrakaki, D., Hilberg, E., and Waring, J. (2018). Between empowerment and self-discipline: Governing patients' conduct through technological self-care. *Social Science and Medicine*, *213*(July), 146–153. https://doi.org/10.1016/j.socscimed.2018.07.043

Petry, N. M. (2002). A comparison of young, middle-aged, and older adult treatment-seeking pathological gamblers. *Gerontologist*, *42*(1), 92–99. https://doi.org/10.1093/geront/42.1.92

Pillow, W. S. (2003). Confession, catharsis, or cure? Rethinking the uses of reflexivity as methodological power in qualitative research. *International Journal of Qualitative Studies in Education*, *16*(2), 175–196. https://doi.org/10.1080/0951839032000060635

Porter, R. (1997). *The greatest benefit to mankind. A medical history of humanity from antiquity to the present***.** Harper Collins Publishers.

Public Health Services. (2021). Coronavirus disease (COVID-19): Symptoms and treatment. Retrieved February 26, 2021, from https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms.htm

Pylypa, J. (1998). Power and Bodily Practice: Applying the Work of Foucault to. *Arizona Anthropologist*, (13), 21–36.

Rabinow, P., and Rose, N. (2006). Biopower Today. *BioSocieties*, *1*(2), 195–217. https://doi.org/10.1017/s1745855206040014

Raffler-engel, W. Von. (1989). Doctor-patient relationships in the 1980s. In W. Von Raffler-engel (Ed.), *Doctor-patient Interaction*. Amsterdam/ Philadelphia: John Benjamins Publishing Company.

Ramirez, E. (2013). Larry Smarr on Crohn's Disease and Quantified Self. Retrieved March 12, 2020, from https://quantifiedself.com/blog/larry_smarr_croneshope_in_data/#more-5853%3E

Robinson, L. (2013). Is digital health technology empowering patients? *Journal of Medical Radiation Sciences*, *60*(3), 79–80. https://doi.org/10.1002/jmrs.20

Rich, E., and Miah, A. (2017). Mobile, wearable and ingestible health technologies: towards a critical research agenda. *Health Sociology Review*, *26*(1), 84–97. https://doi.org/10.1080/14461242.2016.1211486

Riley, W. T., Rivera, D. E., Atienza, A. A., Nilsen, W., Allison, S. M., and Mermelstein, R. (2011). Health behavior models in the age of mobile interventions: Are our theories up to the task? *Translational Behavioral Medicine*, *1*(1), 53–71. https://doi.org/10.1007/s13142-011-0021-7

Robinson, L. (2013). Is digital health technology empowering patients? *Journal of Medical Radiation Sciences*, *60*(3), 79–80. https://doi.org/10.1002/jmrs.20

Rubin, H. and Rubin, I. (1995). *Qualitative Interviewing: The Art of Hearing Data.* Sage Publications Limited.

Sanders, R. (2017). Self-tracking in the Digital Era: Biopower, Patriarchy, and the New Biometric Body Projects. *Body and Society*, *23*(1), 36–63. https://doi.org/10.1177/1357034X16660366

Sanmartin, C., Berthelot, J.-M., and McIntosh, C. (2007). Determinants of Unacceptable Waiting Times for Specialized Services in Canada. *Healthcare Policy | Politiques de Santé*, *2*(3), 140–154. https://doi.org/10.12927/hcpol.2007.18679

Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, *5*(9), 9–16. https://doi.org/10.5539/elt.v5n9p9

Segall, A., and Fries, C.J. (2017). *Pursuing Health and Wellness: Healthy Societies, Healthy People.* Oxford University Press.

Shan, W., Wang, Y., Luan, J., and Tang, P. (2019). The influence of physician information on patients' choice of physician in mHealth services using China's Chunyu doctor app: Eye-tracking and questionnaire study. *JMIR MHealth and UHealth*, *7*(10), 1–16. https://doi.org/10.2196/15544

Sinhasane, S. (2018). Medical Diagnosis Apps - A Game Changer in the World of On-demand Healthcare. Retrieved November 13, 2019, from https://mobisoftinfotech.com/resources/blog/medical-diagnosis-apps/

Smarr, L. (2012). Quantifying your body: A how-to guide from a systems biology perspective. *Biotechnology Journal*, *7*(8), 980–991. https://doi.org/10.1002/biot.201100495

Sointu, E. (2005). The rise of an ideal: Tracing changing discourses of wellbeing. *Sociological Review*, *53*(2), 255–274. https://doi.org/10.1111/j.1467-954X.2005.00513.x

Statistics Canada. (2005). *Canadian Internet Use Survey.* Retrieved June 18, 2020 from https://www150.statcan.gc.ca/n1/pub/82-003-x/2008001/article/10515/5002590-eng.htm

Stavropoulou, C. (2012). The doctor-patient relationship: A review of the theory and policy implications. In *The LSE Companion to Health Policy* (pp. 314–326). Cheltenham: Edward Elgar Publishing Limited. https://doi.org/10.4337/9781781004241.00030

Stevenson, F. A., Kerr, C., Murray, E., and Nazareth, I. (2007). Information from the Internet and the doctor-patient relationship: The patient perspective - A qualitative study. *BMC Family Practice*, *8*, 1–8. https://doi.org/10.1186/1471-2296-8-47

Stewart M., Brown J. B., Weston W.W., McWhinney I. R., McWilliam C. L. and Freeman T. R. (1995). *Patient-centred medicine: transforming the clinical method.* London: SAGE.

Stewart Loane, S., and D'Alessandro, S. (2014). Empowered and knowledgeable health consumers: The impact of online support groups on the doctor-patient relationship. *Australasian Marketing Journal*, *22*(3), 238–245. https://doi.org/10.1016/j.ausmj.2014.08.007

Stoecker, W. V., Rader, R. K., and Halpern, A. (2013). Diagnostic inaccuracy of smartphone applications for melanoma detection: Representative lesion sets and the role for adjunctive technologies. *JAMA Dermatology*, *149*(7), 884. https://doi.org/10.1001/jamadermatol.2013.4334

Stone, M. (2003). What patients want from their doctors. *Bmj*, *326*(7402), 1294. https://doi.org/10.1136/bmj.326.7402.1294

Swan, M. (2012). Health 2050: The realization of personalized medicine through crowdsourcing, the quantified self, and the participatory biocitizen. *Journal of Personalized Medicine*, *2*(3), 93–118. https://doi.org/10.3390/jpm2030093

Szasz, T. S., and Hollender, M. H. (1956). A Contribution to the Philosophy of Medicine: The Basic Models of the Doctor -Patient Relationship. *A.M.A. Archives of Internal Medicine*, *97*(5), 585–592. https://doi.org/10.1017/CBO9781107415324.004

Thompson, A. G. H. (2007). The meaning of patient involvement and participation in health care consultations: A taxonomy. *Social Science and Medicine*, *64*(6), 1297–1310. https://doi.org/10.1016/j.socscimed.2006.11.002

Till, C. (2014). Exercise as Labour: Quantified Self and the Transformation of Exercise into Labour. *Societies*, *4*(3), 446–462. https://doi.org/10.3390/soc4030446

Tracy, S. J. (2010). Qualitative quality: Eight a"big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

Werber, M. (1965). Max Weber's Verstehen. *The Sociological Quarterly* 6 (2): 157 - 165.

West, J. H., Hall, P. C., Hanson, C. L., Barnes, M. D., Giraud-Carrier, C., and Barrett, J. (2012). There's an app for that: Content analysis of paid health and fitness apps. *Journal of Medical Internet Research*, *14*(3), 1–13. https://doi.org/10.2196/jmir.1977

Williams, S.J. (1995). Theorising class, health and lifestyles: Can Bourdieu help us? *Sociology of Health and Illness*, 17, 577-604

Williams, R., Weiner, K., Henwood, F., and Will, C. (2020). Constituting practices, shaping markets: remaking healthy living through commercial promotion of blood pressure monitors and scales. *Critical Public Health*, *30*(1), 28–40. https://doi.org/10.1080/09581596.2018.1497144

World Health Organization. (1978). Declaration of Alma-Ata. In *International Conference on Primary Health Care*. USSR. Retrieved from https://www.who.int/publications/almaata_declaration_en.pdf

World Health Organization. (2011). *mHealth: New horizons for health through mobile technologies. Global Observatory for eHealth Series* (Vol. 3). https://doi.org/10.1109/CBMI.2010.5529886

Xie, Z., Nacioglu, A., and Or, C. (2018). Prevalence, demographic correlates, and perceived impacts of mobile health app use amongst Chinese adults: Cross-sectional survey study. *JMIR MHealth and UHealth*, *6*(4). https://doi.org/10.2196/mHealth.9002

Zadoroznyj, M. (2001). Birth and the 'reflexive consumer': Trust risk and medical dominance in obstetric encounters. *Journal of Sociology*, *37*(2), 117–41.

Appendices

Appendix I: Consent Form

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T: 204-474-9260
F: 204-261-1216
sociology@umanitoba.ca

Title of Study: mHealth technologies and doctor-patient relationships in the context of consumer cultures in Winnipeg, Canada.

Principal Investigator: Marian Juliet Brainoo.

Research supervisor: Christopher J. Fries (PhD).

Thank you for responding to this opportunity to be interviewed. This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Purpose of Study and Participant Selection

This study seeks to examine users of mHealth technologies and doctor-patient relationships. I am interested in learning from you about your use of mHealth technology and how this may affect your relationship with your doctors. You are being asked to participate in this study because you use mHealth technologies/ devices for health and wellbeing.

Study Procedure and Time Commitment

The method of the interview is a one-on-one session with me which will be conducted online at a time of your convenience via Zoom video conferencing and it will be approximately one to one and a half hours in length. During the interview, I will ask you questions relating to your experiences with health and health care, encounters with doctors, and experiences with mHealth devices/ technologies. The sessions will be recorded using the record audio function on Zoom and I will also take notes during the session. The audio recordings will be transcribed and will be kept in a password protected folder together with the audio recordings and notes. The audio recordings, transcripts, and notes will be confidentially destroyed after I analyse the data which is expected to be by January 2021.

Potential Risks and Discomforts

The perceived risk involved in participating in this research is minimal. You may experience discomfort talking about your health care practices. You can skip questions that you are uncomfortable talking about. All information provided by you is been used for this thesis only and will be kept confidential to protect your identity.

Confidentiality

I will keep any information gathered in this research strictly confidential. The results of this study may be used for publications and presentations. Please note however that your words may be used to emphasise certain points. If any statement you made during this interview is used in a research report it will be attributed to an anonymous source identified with a pseudonym (made up name). Contextual details which may also reveal your identity will either be changed or removed so as to help protect your confidentiality. Information containing personal identifiers (e.g., this consent form) will be destroyed as soon as it is no longer necessary for scientific purposes, approximately August of 2021. Any personal health-related information mentioned in the course of the interview will be kept confidential and any name you happen to mention (e.g. names of doctors, hospitals, etc.) during the interview will be anonymized.

The audio recordings, transcripts, and notes will be stored in a password-protected folder on the researcher's computer and a password-protected university account. My supervisory committee and the Ethics board of the University of Manitoba may need to check the transcripts provided to make sure it is correct in the data analyses and the research was conducted safely and properly. Any identifying information linking you to a transcript will be removed when sending transcripts to the supervisory committee and the University for these purposes. Additionally, all the members of this committee have a professional responsibility to safeguard your privacy.

Voluntary Participation/Withdrawal from the Study

Participation is voluntary and you may skip questions that make you uncomfortable. In case you decide to continue but decide to withdraw in the course of the interview, you may do so without any consequences. Any data collected from you at this point will be confidentially deleted. Also, emails and contact numbers used in contacting me to participate will be deleted. You will no longer be contacted after this.

Dissemination

Results from this research will be disseminated in group form only at professional meetings and by publication in academic journals.

Feedback to Participants

The researchers will provide a brief written summary of the study results to those interested by February of 2021. If you would like to receive a copy of this optional summary, please indicate below:

I would like to receive information about the study findings: _____ Yes _____ No

I would like to receive the summary of results by:

Mail (please provide complete mailing address):

_____

_____

_____

Email (please provide email address): _____

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Psychology/ Sociology Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator. A copy of this consent form has been given to you to keep for your records and reference.

Participant's Signature _____ Date_____

Appendix II: Interview Guide

I'm interested in hearing your stories about your health, your relationship with your doctors (i.e. walk-in clinic, and your use of mHealth technology.

Health: I will start by asking you questions about health and health care practices.

- Please tell me how important is health to you?
- Do you consider yourself a healthy person? Please tell me about that.
- What are some health-related practices you have adopted to maintain your health?
- What does "health care" mean for you?
- To you, what does it mean to be involved in your health and health care?
- How have you been taking care of your health during this COVID-19?

The doctor-patient relation: Can we talk about your relationship with your doctors?

- When you consider the relationship between you and your doctor at this point in time, how satisfied are you? Please tell me the story of the most recent interaction between you and your doctor?

mHealth technologies: I am going to ask you questions on your use of mHealth technology/ devices (smartphone applications, wearables, etc.).

- How long have you been using mHealth devices/ technology? How often do you use it/ them? What mHealth technologies/ devices do you use?
- Can you tell me how you started using mHealth devices? (Prompts if needed: recommended to you by a physician, family, friends etc.? What was your first reaction?)
- Can you describe your most recent using your mHealth technology/ device? Can you tell me about any changes in how you have used it over time?
- Please tell me about how the mHealth device is helpful to you?
- What are some challenges you face with the use of mHealth devices if any?
- Can you tell me about how your doctor is involved in your use of mHealth technologies/ devices, if at all?
- Have you recorded conflicting information from your device and it this case, what did you do?

Now, I am going to ask you about your relationship with your doctor since you started using mHealth.

- Before you started using mHealth technologies/ devices, how would you say you were involved in your health and health care? (e.g. When it comes to decisions with your health, would you seek counsel from your doctor?) Can you give me examples?
- How have mHealth technologies/ devices influenced what you know about your body and your health, if at all?
- Do you talk with your doctor about the information you retrieve from your mHealth device? If so, can you tell me about a recent example of this? How did your doctor respond? How did you feel about this interaction?
- How have your interactions with your doctor been during this COVID-19?

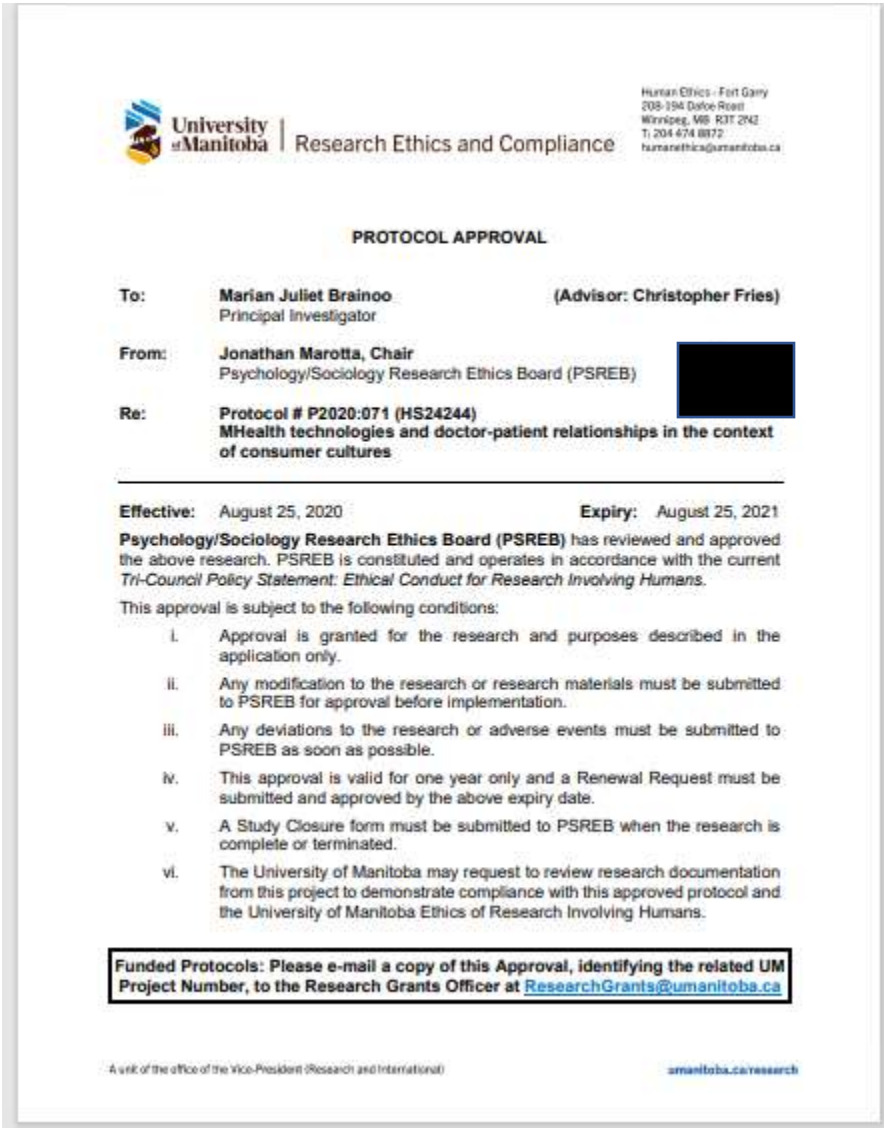
Background Information – Finally, a few background questions will help me interpret the information you have provided me:

- What year were you born?
- What is your educational background?
- Do you or did you work in paid employment? What is/was your job?

Is there anything you would like to add? Maybe something we missed during the interview or suggestions that you may have? If you remember anything about your experiences which you did not share during this session, can you send me an e-mail with details about that experience?

Thank you.

Appendix III: Ethics Approval



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PROTOCOL APPROVAL

To: **Marian Juliet Brainoo** **(Advisor: Christopher Fries)**
Principal Investigator

From: **Jonathan Marotta, Chair**
Psychology/Sociology Research Ethics Board (PSREB)

[redacted]

Re: **Protocol # P2020:071 (HS24244)**
MHealth technologies and doctor-patient relationships in the context of consumer cultures

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Effective: August 25, 2020 **Expiry:** August 25, 2021

Psychology/Sociology Research Ethics Board (PSREB) has reviewed and approved the above research. PSREB is constituted and operates in accordance with the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.*

This approval is subject to the following conditions:

i. Approval is granted for the research and purposes described in the application only.

ii. Any modification to the research or research materials must be submitted to PSREB for approval before implementation.

iii. Any deviations to the research or adverse events must be submitted to PSREB as soon as possible.

iv. This approval is valid for one year only and a Renewal Request must be submitted and approved by the above expiry date.

v. A Study Closure form must be submitted to PSREB when the research is complete or terminated.

vi. The University of Manitoba may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

Funded Protocols: Please e-mail a copy of this Approval, identifying the related UM Project Number, to the Research Grants Officer at ResearchGrants@umanitoba.ca