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‘It's like having a physician in your pocket!’ A critical analysis of self-diagnosis smartphone apps

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ABSTRACT

More than 100,000 mobile phone software applications (‘apps’) have been designed for the dissemination of health and medical information and healthcare and public health initiatives. This article presents a critical analysis of self-diagnosis smartphone apps directed at lay people that were available on the Apple App Store and Google Play in mid-April 2014. The objective of the analysis is to contribute to the sociology of diagnosis and to critical digital health studies by investigating the phenomenon of digitised diagnosis via apps. We adopted a perspective that views apps as sociocultural artefacts. Our analysis of self-diagnosis apps suggests that they inhabit a contested and ambiguous site of meaning and practice. We found that app developers combined claims to medical expertise in conjunction with appeals to algorithmic authority to promote their apps to potential users. While the developers also used appeals to patient engagement as part of their promotional efforts, these were undermined by routine disclaimers that users should seek medical advice to effect a diagnosis. More research is required to investigate how lay people are negotiating the use of these apps, the implications for privacy of their personal data and the possible effects on the doctor–patient relationship and medical authority in relation to diagnosis.

1. Introduction

Mobile software applications (‘apps’) have become an important element of smartphone and tablet computer use since their emergence in 2008. Millions of apps designed for smartphones, tablet computers and other mobile devices have been developed since their first appearance. The two largest app stores by far, Google Play and the Apple App Store, both offered over a million apps each by mid-2014 (1.3 million for Google and 1.2 million for Apple) (Stastista, 2014). Medical and health apps constitute a major part of this market. (Both the Apple App Store and Google Play allow developers to categorise their apps in pre-determined categories such as ‘health and fitness’ and ‘medical’, and it is the apps that are thus categorised to which we refer here.) Over 100,000 medical and health apps for mobile digital devices have now been listed in the Apple App Store and Google Play (Jahns, 2014).

Given the newness of the many digital health technologies that have recently emerged, including medical and health-related apps, little is known about how people are using these apps, whether the apparent benefits they promise are met and what their unintended consequences may be (Krieger, 2013; Lupton, 2014e, 2015b). However some research suggests that they are becoming used by increasing numbers of lay people. One survey of adult smartphone users in the United States found that the average number of hours respondents spent per month on using apps exceeded 30 h, and that the respondents used an average of 26 apps each (Nielsen, 2014a). Other American research has found that one fifth of smartphone users have used their phone to download a medical or health-related app. The most popular of these apps were related to monitoring exercise, diet and weight (Fox and Duggan, 2012). A recent market research study found that almost one-third of American smartphone users (equivalent to 46 million people) had used apps from the health and fitness category in January 2014 (Nielsen, 2014b). Many medical practitioners and other healthcare workers are also beginning to use apps as part of their professional practice (Buijink et al., 2013).

Despite the prevalence and apparent popularity of medical and health apps, very little critical sociocultural analysis has been

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undertaken to investigate the ways in which app developers present their wares and to site apps within the broader landscape of digital health technologies. Studies of health and medical apps have predominantly appeared in the medical and public health literature, and have taken an instrumental approach, directed at such issues as their effectiveness for behaviour change, the medical accuracy of the content or legal and regulation issues. Yet from a sociological perspective, digital devices such as health and medical apps have significant implications for the ways in which the human body is understood, visualised and treated by medical practitioners and lay people alike, for the doctor–patient relationship and the practice of medicine (Jutel and Lupton, 2015; Krieger, 2013; Lupton, 2014e, 2015b).

The research reported in this article analyses apps that have been formulated for the purposes of self-diagnosis of medical conditions by lay people. Our study engages in a critical content analysis of these apps, seeking to provide a perspective that incorporates the sociology of diagnosis with a focus on the role played by digital technologies: that is, addressing the topic of digitised diagnosis. As such, the study fits the perspective adopted by one of us as part of a critical digital health studies that seeks to challenge a techno-utopian and solutionist approach to digital health (Lupton, 2014d, 2014b). We sought to examine the ways in which self-diagnosis apps were portrayed on the Apple App Store and Google Play websites; specifically how the developers sought to frame the apps as useful, important and authoritative to attract downloads, and the implications of the apps' content for medical authority, personal data, the doctor–patient relationship and power relations in the act of diagnosis.

1.1. *Digitised diagnosis*

The sociology of diagnosis is concerned with diagnosis both as a process and as a category (Blaxter, 1978). It explores how these are socially framed, and in turn, frame the experience of health, illness, disease and medical care. A growing body of work has begun to focus on how diagnosis provides an important focal point for understanding the social and political elements of biomedicine. It offers a point of convergence and contestation for lay people and professionals; clinicians, administrators and politicians; corporations and scientists; and many others (Brown, 1990; Jutel, 2009, 2011; Jutel and Nettleton, 2011). Scholars addressing the sociology of diagnosis have contended that possessing the authority and legitimacy to make a diagnosis – to give a label to a collection of bodily signs and symptoms and thence to assert how illness and disease should be treated – is a source of power. This authority is a significant contributor to the status and dominance of the medical profession. The work of diagnosis legitimises the patient's complaint, organises the symptoms and gives sense to them, provides access to the sick role and distributes resources such as sick leave, benefits and therapies. It defines the lay-medical professional relationship, identifying the roles of the seeker and grantor of diagnosis, and creates sub-specialities with particular diagnosers responsible for specific diagnostic categories (Jutel, 2011).

In recent times, however, diagnosis as process and the authority of the medical profession to effect diagnoses have been confronted by changes in the practice of medicine and the doctor–patient relationship. The patient role in interpreting symptoms has entered a phase of liberalisation. Beginning with the emergence of the consumerist movement in healthcare emerging in the 1970s, patients have been encouraged to be ‘empowered’ and ‘engaged’ in their care, to view the medical encounter as a ‘partnership’ and to participate in self-management practices rather than passively accept medical advice (Andreassen and Trondsen, 2010; Bury and Taylor, 2008; Lupton, 1997b, 2013; Nettleton and Burrows, 2003).

Patient empowerment and engagement are related concepts and are often used interchangeably. Both terms tend to refer to lay people taking control over their healthcare and personal health promotion, behaving as self-responsible, knowledgeable actors who are able to make informed, autonomous decisions and position themselves as ‘partners’ with their healthcare professionals (Fox, Ward, and O'Rourke, 2005; Lupton, 1997a, 2013). The movement of medical information online has been viewed as contributing to patient empowerment and engagement (Nettleton and Burrows, 2003). The notion of the ‘digitally engaged patient’ brings digital technologies into these discourses of engagement and active participation on the part of lay people by championing the use of these technologies as part of learning more about one's health (Lupton, 2013).

This liberalisation of the patient role has changed the diagnostic process. A vast array of medical information is now available on websites and platforms, including patient support platforms and social media sites in which lay people are able to exchange their experiences of diagnosis and medical treatment (Kivits, 2013; Lupton, 2014a; Murthy, 2013). Given the panoply of online sources of information about illness and disease, the contemporary patient has much greater access to opportunities to self-diagnose. While the patient has always contributed to diagnosis — by instigating the medical consultation, presenting symptoms for consideration, and even negotiating the diagnosis offered by the doctor (Balint, 1964) — today a patient, with the help of technology, might seek out the doctor not for the purposes of deciding the diagnosis, but rather for endorsing a diagnosis she or he brings to the consultation.

Contemporary diagnostic technologies include a growing array of self-diagnosis devices designed for the use of lay people. Home testing kits for such conditions as pregnancy and blood glucose levels and devices such as thermometers and blood pressure monitors pre-date the digital era. However new digital media and devices expand the range of technologies that are available to lay people to access information about illness and disease and perform self-diagnosis. There has been a trend towards self-diagnosis on the part of patients armed with the information they have been able to access online and the growing number of digital self-diagnosis instruments and direct-to-consumer kits that are now available on the internet (Goyder et al., 2010; Hynes, 2013). Such tools appear to be quite commonly used: one study (Fox and Duggan, 2013) found that one in three of the American adults surveyed had reported using online resources to self-diagnose or diagnose another individual.

The app offers one of the most recent digital tools by which self-diagnosis can take place. The mobility, ease of access and use of apps is a particular feature that differentiates them from earlier forms of digital diagnosis. Due to their simple format and location on mobile wireless devices, apps can be easily downloaded and carried around for constant reference or for updating information about, or comments from, the user and sharing these with others. A further important difference is the issues they raise for the security and privacy of the often very personal information that some of these apps generate about their users that are subsequently uploaded to the developers' archives and become their property. The data generated by apps and other software are now increasingly endowed with economic value, contributing to the ‘big data’ knowledge economy (Kitchin, 2014; Lesk, 2013). When people accept the terms and conditions of the developers when they install the app on their device, they typically are asked to give up their geolocation, unique phone identifier and details of their contact list even before they start using the app (McAllister, 2014). Once personal details are entered into an app, even more information is collected to which the developers have access. Many developers