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The construction of mental health as a technological problem in India

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Abstract

This paper points to an underexplored relationship of reinforcement between processes of quantification and digitization in the construction of mental health as amenable to technological intervention, in India. Increasingly, technology is used to collect mental health data, to diagnose mental health problems, and as a route of mental health intervention and clinical management. At the same time, mental health has become recognized as a new public health priority in India, and within national and global public health agendas. We explore two sites of the technological problematisation of mental health in India: a large-scale survey calculating prevalence, and a smartphone app to manage stress. We show how digital technology is deployed both to frame a ‘need’ for, and to implement, mental health interventions. We then trace the epistemologies and colonial histories of ‘psy’ technologies, which question assumptions of digital empowerment and of top-down ‘western’ imposition. Our findings show that in India such technologies work both to discipline and liberate users. The paper aims to encourage global debate inclusive of those positioned inside and outside of the ‘black box’ of mental health technology and data production, and to contribute to shaping a future research agenda that analyzes quantification and digitization as key drivers in global advocacy to make mental health count.

Key Words: data, digital technology, ethnography, India, mental health, quantification, stress

Introduction

In 2016, India saw both the launch of a smartphone app – ‘No More Tension’ – designed as a tool for stress management, and the publication of the findings from a

comprehensive National Mental Health Survey, carried out by the National Institute for Mental and Neurosciences (NIMHANS). The survey used digital technology to gather prevalence data estimating that 150 million Indians need mental health care services, and promoting technology-based applications as a key way to ease ‘burden’ and increase reach (Gururaj et al., 2016).

India’s growing digital infrastructure is ambitious: it links biometric identification to public distribution of welfare and to mobile banking, and in doing so has created both the largest cash transfer programme in the world, as well as “the largest online digital identity platform in the world” (Aiyar, 2017, p. 185). This is supported by a range of flagship governmental programmes, such as Digital India and the Healthy India Initiative, with the use of behavioural economics to ‘nudge’ people into engagement (Sharma and Tiwari 2016). Thus, India is described as being “on the cusp of a major initiative to digitally empower the country” (Bassi et al., 2016, p. 2), with increasing areas of public health policy and everyday life embedded within its digital ecosystem. At the same time, negative affect (such as stress and anxiety) and mental health are increasingly being framed as national and global public health ‘problems’ (Prince et al., 2007) that are amenable to digital technological solutions.

Mobile health (m-health), electronic health (e-health), and ‘smart health’ play a key part in making mental health count within the global health agenda, from the production and circulation of data, to increasing access to treatment globally. For example, the WHO’s Mental Health Action Plan 2013-2020 calls for an increase in service coverage for severe mental disorders by at least 20% by the year 2020, emphasising the need for more data collection (Objective 4) and the importance of technology for ‘the promotion of self-care, for instance, through the use of electronic and mobile health technologies’ (WHO, Objective 2, No. 48, p. 14). Similarly, the UN Sustainable Development Goals (2015), which for the first time mention mental health (Mills 2018), emphasise development of new and enabling ICTs (1.4) to bridge the digital divide and develop knowledge societies (WHO, 2013, p. 15).

In this paper, and the wider research of which it is part, we document and analyse the processes through which mental health comes to be constructed as a technological ‘problem’: meaning both how mental health gets problematised through technology,

and how it is constructed as amenable to technological forms of intervention. We argue that the relationship between data gathering and technological intervention is a central mechanism of mental health policy making in India and is key to quantifying the size and scale of the issue (prevalence and burden) and used to justify technology-enabled healthcare as cheap and innovative, especially in areas that have little, or regional disparities in, formal health infrastructure. The calculation of mental disorder prevalence in India provides a good example of the intersections of quantification and digitisation as “human technologies” (Wahlberg and Rose, 2015), or ‘psy-technologies’, that are key to the construction of mental health as amenable to technological intervention.

Through focusing on both India’s ‘No More Tension’ app and its National Mental Health Survey, this paper demonstrates the mutually reinforcing relationship between quantification and digitization of mental health in India, and how both processes are central mechanisms of mental health policymaking at national and global levels. It also shows that in India digital technology is enacted both as top-down health governance (as commonly shown in critical literature) and through individual quantified selves (more common in the techno-optimistic literature of the global North). Thus, in India, digitisation and quantification are not a one-directional export of ‘Western’ technology onto a ‘passive’ population. Rather, technology mediates the connection between local and global public health agendas in novel ways that both discipline and empower.

Methodology

Our methodological focus in this paper lies in exploring how the technological problematisation of mental health works to “black box” - render invisible and hence incontestable—the complex array of judgments and decisions that go into the creation of mental health technologies (including classificatory systems and the data they produce) (Porter, 1995, p. 42). Such “black-boxing” obscures the conditions of possibility for, and production of, technologies that calculate prevalence or operate as mental health interventions, meaning they come to seem only open to challenge from technological insiders. The wider research project from which this paper stems explores wider complex constellations through which specific mental health data and digital technologies are produced, used, reworked, locally appropriated, or resisted, and how they mediate social relations and ways of being in certain contexts. This paper is the

first step in a series of step by step investigations exploring the ways that mental health technologies get enacted and negotiated locally and globally.

This paper explores two sites of the technological problematisation of mental health in India: a large-scale survey calculating prevalence, and a smartphone app to manage stress. It brings to bear on these two sites a large ethnographic literature on the social life (cultural constitution and circulation) of health-related technologies and diagnosis. Despite rich ethnographic work into diagnosis more generally (Pickersgill 2013; Nissen and Risør 2018), ethnographies of medical technologies, digitisation, and quantification have rarely been applied to explore technology-enabled mental healthcare or mental health metrics (see Lovell 2014; and Wahlberg and Rose 2015), especially in the context of low and middle-income countries (LMICs).

The social, cultural and political processes that underlie quantification are important because the production of these numbers “has significant implications for the way the world is understood and governed” (Merry, 2016, p. 5), and in the present case, for the way that mental health is understood and governed. Here we see that attempts to measure the world also “create the world they are measuring” (Merry, 2016, p. 21), with numbers acting as “inscription devices”, constituting “the domains they appear to represent” (Rose, 1999, p. 198). In relation to this paper, then, how does the quantification of mental health create mental disorder as it seeks to count it? And what role do quantification and digitization play in making “mental health a reality for all” (Patel et al., 2011, p. 90) - to recall the slogan used in the early days of the Movement for Global Mental Health? Data and technology intersect in multiple ways to make mental health a global priority, and the following sections seek to unravel the complex connection between quantification and digitization in relation to mental health with reference to current digital and mental health interventions in India.

What makes this paper unique is that ethnographic research into the “black-boxing” of judgments and decisions underlying the creation of data and technology (Porter, 1995, p. 42) has rarely been applied to technology-enabled mental healthcare or mental health metrics (for notable exceptions see Cooper, 2015; Lovell, 2014; Wahlberg and Rose, 2015). By adding an analysis of developments in India, this paper marks a timely intervention within the debate around how mental health is taken up, understood, and

implemented as a concern for public health. The inclusion of mental health in the UN Sustainable Development Goals (SDGs), and subsequent discussions around devising suitable indicators to measure change, alongside India's digital revolution, makes this an important historical moment to engage in critical interdisciplinary debate about mental health in relation to quantification and digitization, in India and globally.

Analysis and findings

We now turn to two sites in the technological problematisation of mental health, and our findings from reading these through ethnographic ‘social life’ research. Following this, the paper draws out convergences and differences between the Indian context and existing critical literature, and the extent to which the digitization and quantification of mental health both disciplines and empowers users.

The National Mental Health Survey of India

India has seen numerous attempts to quantify the prevalence and burden of mental disorder nationally. The 2013 findings of the influential Global Burden of Disease studies were used to inform calculations of the different disease burden profiles of India and China, as part of the *Lancet/Lancet Psychiatry* China–India Mental Health Alliance Series. According to these findings, India accounted for 15% of the global mental, neurological, and substance use disorder burden (accounting for 31 million Disability Adjusted Life Years [DALYs]) (Charlson et al., 2016).

Studies that highlight the burden of mental disorder in India often raise the issue of a large rural population, and that India has only 0·3 psychiatrists per 100,000 people, setting the scene for technology to be positioned as useful in “extending mental health services to remote areas” (Patel et al., 2016, p. 3080), and fitting well within attempts to deliver mental health services through task-sharing with community workers (Shidhaye and Patel, 2012). Here technology is centred within the “reach paradigm” of public mental health, where inequalities are conceptualised as a problem of access, and technologies are positioned to extend reach and close the global treatment gap (Knibbe, Vries, and Horstman, 2016, p. 434).

The comprehensive first National Mental Health Survey of India was carried by the National Institute for Mental and Neurosciences (NIMHANS), out at the behest of the

Ministry of Health and Family Welfare (Gururaj et al. 2016). The survey aimed to quantify the burden of mental disorder in India, and to identify baseline information for later development of mental health systems across the country. Over two years, 125 investigators collected data from 39,532 individuals across 12 states. To achieve this, “computer enabled data collection on tablets” (Gururaj et al., 2016, p. 6) was used, meaning that diagnostic criteria consistent with the International Statistical Classification of Diseases and Related Health Problems (ICD10), namely the Mini International Neuro-Psychiatric Inventory (MINI) adult version and the MINI-Kid version, were administered by trained staff as surveys on electronic hand-held devices, door to door in chosen areas. The report justifies the choice of the MINI diagnostic criteria because it can be administered in a short time, it “provides ICD 10 compatible diagnostic categories for mental illness based on predefined algorithms”, and “most importantly the availability of the MINI instrument on a digital platform enabling its use on tablets and reducing a number of problems faced with traditional pen and paper methods” (Gururaj et al., 2016, p. 9). Thus, the availability of this particular diagnostic inventory in digital format was key to the choice to use it within the National Mental Health Survey.

The core findings of the study were that 150 million Indians need mental health care services, but less than 30 million receive treatment. The release of these findings took on social lives of their own, receiving “public and media attention in an unprecedented manner” (Murthy, 2017, p. 21). Media headlines (documented in Murthy, 2017, p. 1) included: “India needs to talk about mental illness”, and “Every sixth Indian needs mental health help”. Media reports mentioned the role played by technology within the Survey, with one article explaining that “primary data collection was done through computer-generated random selection by a team of researchers” (Afshan, 2016). Use of technology to calculate burden of mental disorder and the large treatment gap in India was complemented by recommendations within the official report of the Survey’s findings to increase use of:

technology based applications for near-to-home-based care using smart-phone by health workers, evidence-based (electronic) clinical decision support systems for adopting minimum levels of care by doctors, creating systems for longitudinal follow-up of affected persons to ensure

continued care through electronic databases and registers can greatly help in this direction. *To facilitate this, convergence with other flagship schemes such as Digital India needs to be explored* (Gururaj et al., 2016, p. 44, emphasis added).

This convergence between the quantification of mental health and the resultant recommendation of digital interventions is not accidental. Indeed, health is a key component of the Government of India's Ministry of Electronics & Information Technology 'Digital India' campaign, which aims to "transform India into a digitally empowered society and knowledge economy" by changing the "entire ecosystem of public services through the use of information technology" (see Digital India website <http://digitalindia.gov.in/>). As well as revolutionizing the way populations interact with national health services, m-health particularly is conceptualized as a way to realize the SDGs (Gupta, 2016). Seen in this context, mental health forms part of a wider turn in which India's public health programmes increasingly incorporate global health expertise with "top-down imaginaries of public health" and technocratic solutions (Sunder Rajan, 2017, p. 33).

India, like many global south countries, is adopting strategies and domestic policies "to embed and integrate networked technologies as an essential part of everyday life" (Roy and Lewthwaite, 2016, p. 483). India is often described as undergoing a digital revolution, where the digital sector is comprised of a unique mixture of low income (development) uses and higher income marketised fee-paying applications for personal use, and where the promotion of a digital agenda comes from centralised government. This digital agenda helps to calculate, and is framed as being amenable to provide interventions for, the 150 million in India estimated to experience mental disorder (Gururaj et al., 2016).

Thus, the digitisation of mental health care in India is closely interlinked with its quantification. This relationship is twofold: on the one hand, the evidence used to support claims for the usefulness of m-health for mental health is often based on calculations of the high prevalence and burden of mental disorder; while on the other hand the calculation of prevalence makes use of digital technology (particularly

electronic tablets) in collecting survey data and processing diagnoses through diagnostic algorithms, such as the MINI instrument (above).

MINI is not the only tool based on the ICD used in India. The WHO's Mental Health Gap Intervention Guide (mhGAP-IG), an algorithmic protocol to aid clinical decision making designed to be used by 'non-specialists', such as community health workers, is currently being trialled in India. The Public Health Foundation of India (PHFI), who see the advance of technology as central to public health, collaborates with a number of international projects developing and implementing the mhGAP-IG, such as Emerging Mental Health Systems in Low-and Middle-Income Countries (EMERALD), and the Programme for Improving Mental Health Care (PRIME) (Lund et al., 2012).

The enactment in India of tools based on ICD, such as the MINI instrument and mhGAP, are evidence of the inscription of culturally specific rationalities of diagnostic criteria deeply into projects of national and global mental health. Such tools enable ICD criteria to be applied quickly, often aiming to reduce time involved in diagnosis of mental disorder. For example, the MINI was chosen for use in the NIMHANS survey both for its availability on a digital platform but also because it "takes a shorter time to administer than other instruments" by overcoming the usual two-stage interview required in field surveys (Gururaj et al., 2016, p. 9). However, as the ICD gets adapted for use within such tools, its social life pre-production, i.e. its conditions of possibility and the debates that framed its creation, get further obscured in favour of quicker standardisation. This is important given evidence of both huge controversy of what gets included in diagnostic criteria and who gets to decide, but also of the social life of diagnostic texts – how they shape, and are shaped by, a wide range of actors; the rights and responsibilities they enable and constrain; and the "importance of diagnosis to the governance of social and clinical life" (Pickersgill, 2013, p. 521). Here Pickersgill (2013) draws our attention to the circulation of diagnostic texts alongside the subjectivities, affects, hopes, and expectations that circulate around diagnosis itself.

Up to its fifth version, the ICD was produced by the French Government, coming in its sixth revision to be published in 1948 by the newly formed WHO. Yet the psychiatric section of the manual proved problematic, and 11 years later had only been adopted in

four countries (Fulford and Sartorius, 2009). Thus, the WHO established a commission to put together ICD-8. ICD was framed as a symptom-based public classification model- “most valuable for epidemiological work since we need to make comparisons of findings in different countries, and unless there is uniformity of usage, that is impractical” (Fulford and Sartorius, 2009, p. 35). Thus the aim to “improve the comparability of statistical information about rates of mental disorder between different parts of the world” (Fulford and Sartorius, 2009, p. 39) was written into the ICD from an early stage. In fact, convergence between digital technology and diagnostic protocols has shaped the design of psychiatric nosology and classification systems and spurred the development of systematized symptom reporting since the 1970s onwards (Orr, 2006, p. 244). The nomenclature from ICD-8 was adopted by the American Psychiatric Association (APA) in the Diagnostic and Statistical Manual (DSM) II, replacing earlier psychodynamic and theoretical frameworks.

Here we see evidence of the displacements that occur in the development of global diagnostic criteria. This raises questions of what is displaced when the MINI instrument and the ICD are used in India, ranging from epistemological displacements of other/ed worldviews of distress (Davar, 2014), to displacements that occur as tasks previously carried out by psychiatrists are distributed to community health workers through ‘task-sharing’ (Mills and Hilberg, in press). This also opens avenues for the creative use and appropriation of these tools in varied local contexts.

In India’s National Mental Health Survey, diagnostic criteria were used for the purpose of counting rates of mental disorder. Ethnographic literature on quantification shows that counting things requires stripping them of their context, history and meaning, in an attempt to create a space of equivalence (Merry, 2016; Desrosières, 2002; Lingard, 2011). Such decontextualization converts messy realities into seemingly objective categories and numbers (Jasanoff, 2004). This matters within mental health, experiences of which are closely linked to an individual’s sense of self and to culturally meaningful scripts of healing (Antonovsky, 1979). The conversion of the messy realities of distress into numbers has been critiqued for decontextualizing affective responses, pathologising ‘normal’ distress, and over estimating prevalence (Horwitz and Wakefield, 2007); and overlooking different cultural explanatory models of distress that have coherence in specific vernacular spaces (Kirmayer, 2006). The translation of

diagnostic nosology developed in the global North into algorithmic diagnostic tools used globally also overlooks different epistemological and ontological understandings of personhood that may not be ‘equivalent’ or comparable (and may in fact be contradictory) to categories in the global North, and masks widespread critique of diagnostic classifications as being ‘Western’ centric, lacking validity and being racially coded (Summerfield, 2008; Thomas et al., 2005).

While India’s National Mental Health Survey may be the most comprehensive attempt to calculate the prevalence of mental disorder in India to date, quantification of mental disorder in India is not new. In 1871, the British colonial administration carried out two censuses to compare the rates of ‘insanity’ between the colonisers (England and Wales), and India (then a British colony). Findings showed that India had one-eighth the level of insanity than England and Wales, which was explained by a popular belief at that time that insanity was a trait associated with civilisation (Sarin and Jain, 2012).

Thus, the measurement of mental health has a long genealogy that links calculation and enumeration to domestic and colonial forms of governance. Appadurai finds that quantification reinforces the link between colonialism and orientalism (1993), and is key to the statistics/state relationship (Hacking, 1982). For example, the East India Company developed a huge bureaucracy to collect data on sickness of employees. According to Appadurai, (1993, p. 124) “the political arithmetic of colonialism was taught quite literally on the ground and translated into algorithms that could make future numerical activities habitual and instil bureaucratic description with a numerological infrastructure”, which provided the conditions of possibility for later disciplinary regimes required to conduct censuses, and surveys, such as India’s National Mental Health Survey.

Adopting a historical and postcolonial perspective raises questions about the increasing digitization of health programmes and of personal care that go beyond statements of its potential to “transform mental healthcare” (Hollis et al., 2015, p. 263) and empower. While some focus on digital health as a “new field of investigation” that raises new questions about identity and healthcare (Rich and Miah, 2017, p. 86), there is a need to connect ‘new’ technologies and their effects to a history of colonial measurement in India. For example, Ajana challenges the idea of ‘newness’ in relation to biometrics and digitization because “the body has for so long been the subject of control,

measurement, classification and surveillance” (2013, p. 45). Similarly, Beer makes the point that data are already implicated in shaping our social world and argues that this influence is now merely intensifying (Beer, 2015). Thus, historical conditions of possibility shape the social life of mental health technologies, illuminating what might be lost in an analysis that focuses on only what is ‘new’ and revealing colonial and governmental logics that trouble claims that such technologies are inherently empowering.

The following discussion of the ‘No More Tension’ App uses the critical ethnographic perspective outlined above to contextualize governance structures with technology’s focus on the individual as the main site of affective transformation. This discussion points out that the individualization of distress through technology is evident not only in prevalence surveys and their promotion of technological interventions to extend reach of treatment, but also in the Indian government’s attention to stress and the promotion of its individual management through smartphone apps and online calculators.

No More Tension

The ‘Digital India’ campaign aims to give “power to empower”, explicitly linking mobile phone penetration with empowerment. The George Institute’s scoping study on the use of m-health in India emphasises that m-health will put patients “in control of their own health” (Bassi et al., 2016, p. 2). These assumptions require an appraisal of the conditions under which digital technologies are expected to ensure the attainment of self-care and promote the inclusion of the individual into health services.

Within the Indian context, the individual is addressed in a number of ways by current digital health projects. The ‘Healthy India Initiative/Swastha Bharat-ek pehal’ website¹ was launched in 2007 and is the product of collaboration between the Public Health Foundation of India and the Government’s Ministry of Health and Family Welfare. The website includes online calculators for body mass index (BMI), diabetes, smoking and heart risk; a calorie meter and an online stress analyser. The stress analyser encourages those accessing the website to “take this stress test to evaluate how you cope with stress and whether you’re missing out on the little joys in life...”. As well as calculating stress,

India's Ministry of Health and Family Welfare launched, in 2016, a 'No More Tension' app, claiming to measure and manage stress levels. The app, available on Google Play² quickly became one of the Government of India's fastest ever downloaded apps (Gupta, 2016). Shri J P Nadda, Union Minister of Health and Family Welfare, explained that the launch of the app, "which is part of the Government's Digital India programme, is in line with its commitment to prioritize public health and strengthen citizen-centric health services by leveraging India's expanding mobile phone penetration" (Ministry of Health and Family Welfare, 2016). As part of the ambitious 'Digital India' strategy, soon all health mobile apps launched by the Health Ministry will be available through a National Health Portal (NHP).

The online stress calculator and app show a governmental preoccupation with stress and tension (and a slippage between the two) in India, focusing on the role of the individual in 'managing' these. Gooptu and Krishnan (2017, p. 406) point out that the rise in 'tension' in India could be seen as linked to the "affective cultures of self-making that are emerging in the context of neo-liberal transformation in India". This is a process closely linked to the configuration of stress as amenable to technological intervention and as governable through technology. Here 'tension' comes to be seen as a problem best managed individually through self-care practices, for example yoga, meaning that the "structural inequalities and socio-economic circumstances underlying the growing incidence of tension" are circumvented (Gooptu and Krishnan, 2017, p. 404). Here we see evidence that newer digital forms of self and health-making in India are tied to both neoliberal and older forms of top-down health surveillance, sometimes simultaneously.

A significant amount of literature in the global North has begun to study the influence of digital technology on subjectivity as the emergence of a 'quantified self' (Lupton, 2016; Neff and Nafus, 2016), and of 'algorithmic life' (Amoore and Piotukh, 2015). The notion of a 'quantified self' was originally framed by a movement of people, largely in the global North, who began to use digital technology for the purpose of self-tracking, closely connecting quantified measurements of the body and questions of identity. Yet these technologies are not always used by choice of the individual alone. The connection between policy or business aims and personalized digital technology is especially obvious in cases informed by behavioral economics that 'nudge' or 'nag' the

subject to take on responsibility for making healthy decisions in their everyday lives (for example, through SMS reminders to take medication or exercise) (Sosnowy, 2014), and also acts as a free resource and unpaid producer of potentially highly profitable forms of data (Till, 2014). In India, the digital health projects mentioned above take place in the context of debates about the need for privacy legislation in relation to the Aadhaar biometric identification system, which aims to collect biometric information (finger prints and iris scans), linking this to a 12 digit number assigned to every Indian citizen (Aiyar, 2017). This is justified as a means to put a stop to corruption and to enable more targeted welfare distribution, especially as the 12 digit number is linked to people's mobile phone and bank account. Privacy is briefly mentioned in India's 2017 Mental Healthcare Bill (article 24.2), which emphasizes the applicability of the right to confidentiality to information stored in digital format in virtual space. If mental health data were linked to Aadhaar – for example, to enable access to subsidies around mental health – then ethical questions around privacy and the potentially enabling yet discriminatory effects of such technology will need to be raised.

The sheer scale of the Aadhaar project and the government's role in promoting individualized health interventions such as the 'No More Tension' app highlight convergences and crucial differences between the Indian context and current theorizations of digital selves. Critical digital health literature has thus far tended to focus on "people who live in the United States and who self-track for health or fitness purposes" (Lupton, 2016, p. 30), often doing so voluntarily. In India, the digital sector is comprised of a unique mixture of actors (including marketised applications and large-scale development projects). A 2016 scoping study of the current landscape of mobile healthcare technology in India (Bassi et al., 2016) found that the "intended technology end users" were most often community health workers (59%), while 28% were community or patient groups (p.9). Thus, the assumption of self-tracking individuals (within literature on the quantified self) is simultaneously enacted and problematized by the use of technology-enabled mental health practices in India.

Discipline and liberate: discussion and conclusion

This paper explored a contemporary preoccupation in India with the production of metrics on, and the technological governance of, negative affect (such as stress) and

mental health. By focusing on a stress management app and the 2016 National Mental Health Survey, the paper set out the ways mental health and negative affect are conceptualized and situated within India's diverse and ambitious digital infrastructure. This analysis showed how the mutually reinforcing relationship between data and technology constructs mental health as a technological 'problem' in India: both problematising mental health through technology, and constructing it as amenable to technological forms of intervention. The paper explored how this manifests in 'new' ways yet is made possible by historical conditions of possibility, which include a colonial apparatus for calculating mental disorder.

Drawing on histories and sociologies of knowledge production and their application to the conceptualization of the scale up of mental health services in Africa, Cooper (2015) illustrates that mental health metrics and digital and technological mental health interventions are based on structures of knowledge underpinned by epistemological assumptions (of universalism, rationalism, objectivity) and practices of abstraction, standardization and reduction. While these processes may be compelling in their construction of universal standards and packages of care that can be scaled up, ethnographic evidence suggests they may also lead to misleading accounts that overlook the realities of lived experience and care practices that are important to people's wellbeing but not easily measured (Cooper, 2015). This leads to the categorizing of affective experiences in ways very different from how they are actually experienced (Merry, 2016), and translates distress into psychiatric classifications that may be "alien" for many in India (Addlakha, 2008, p. 132).

This is not only the case for mental health, as evidenced by ethnographies of local/global tensions in HIV/AIDS programmes, which could inform similar ethnographic work into mental health. Studies show that: 'successful' health coverage from a top-down donor perspective can be experienced as ineffectual and meaningless by local actors (Uretsky, 2017); there are cultural differences in understanding effective 'health' interventions (Hales, 2016); and local actors may perform differently for international donors (Sullivan, 2017). The construction and production of health metrics has also been criticized for its depoliticizing effects (Storeng and Béhague, 2017) and, in the context of HIV/AIDS interventions in India, for inscribing and perpetuating assumed uniform identities for different social groups (Lorway, 2017).

Ethnographic work on HIV/AIDS governance may also provide useful clues as to how, as we have seen in this paper, digital technology, in India, is enacted both as top-down health governance project (as commonly shown in critical literature) and through individual quantified selves (more common in the techno-optimistic literature of the global North), in novel ways that disrupt the binary of empowerment/disempowerment. This evokes Achuthan's finding that state and civil society responses to technology in India are not simply about acceptance or resistance of technology but instead are marked by a "constant movement between the two" (2011, p. 4). Using insights from rich ethnographic, historical and postcolonial literature on quantification and digitisation thus provides a cautionary tale both to the optimistic construction of mental health as a 'problem' amenable to technological reach, and to more critical conceptualisations of digitisation and quantification that assume a one-directional export of 'Western' technology (Arnold, 2000).

The paper has shown that it is both the coloniality of the connection between mental health, measurement and biometrics, and the simplification, decontextualisation and commensuration of distress enacted through the 'black-boxing' of quantification and digitization that fundamentally question public health assumptions and governmental promotion of digital empowerment. The increasing convergence of several flagship government programmes (Digital India, Healthy India, and Aadhaar) makes this realization an extremely timely contribution to ongoing debates in India and further afield. These developments point to a need to further explore links between financialisation and the quantification and digitisation of mental health, especially given discussions about electronic health records, linking of biometric and health information to distribution of welfare, and concerns over privacy.

Digital technologies may thus simultaneously "discipline and liberate" users, meaning analytical frameworks must be alert to creative uses of technology, to the specificities of local markets in which medical and therapeutic technologies generate value, and to the social and intergenerational relations in which they are embedded (Hardon and Moyer, 2014, p. 107). Yet Achuthan (2011) reminds us that localized and/or indigenous micro-practices are not necessarily inherently critical or resistant (as they are sometimes imagined to be in critical work on technology, see Shiva, 1990). Instead we

need to question the underlying epistemologies of individual technologies and government programmes, in order to encourage and shift global debate about mental health data and technology. Unequal global power dynamics in setting policy agendas and in devising indicators for measurement make this a crucial next step in formulating a mental health agenda that values lived experiences and care practices that may not be compatible with digitization, measurement, or standardisation.

Notes

¹ www.healthy-india.org/

² <https://play.google.com/store/apps/details?id=com.myphoneme.www.stress&hl=en>

References

- Achuthan, Asha. 2011. *Re: Wiring Bodies*. Bangalore: Centre for Internet and Society.
- Addlakha, R. 2008. *Deconstructing Mental Illness: An Ethnography of Psychiatry, Women and the Family*. New Delhi: Zubaan.
- Afshan Y. 2016. India needs to talk about mental illness, The Hindu, 23 October. 2016.
- Aiyar, Shankkar. 2017. *Aadhaar: A Biometric History of India's 12-Digit Revolution*. Chennai and New Delhi: Westland.
- Ajana, Btihaj. 2013. *Governing through Biometrics - The Biopolitics of Identity*. Basingstoke: Palgrave Macmillan.
<http://www.palgrave.com/us/book/9780230321618>.
- Amoore, Louise, and Volha Piotukh, eds. 2015. *Algorithmic Life: Calculative Devices in the Age of Big Data*. Abingdon, Oxon ; New York, NY: Routledge.
- Antonovsky, A. 1979. *Health, Stress and Coping*. San Francisco: Jossey-Bass.
- Appadurai, Arjun. 1993. "Number in the Colonial Imagination." In *Orientalism and the Postcolonial Predicament*, edited by Carol A. Breckenridge and Peter van der Veer. Philadelphia: University of Pennsylvania Press.
- Arnold, David. 2000. *Science, Technology and Medicine in Colonial India*. Cambridge: Cambridge University Press.

- Bassi, Abhinav, Oommen John, Devarsetty Praveen, Pallab Maulik, and Vivekanand Jha. 2016. *MHealth Interventions for Health System Strengthening in India*. Scoping Study Report. India: The George Institute for Global Health. https://www.researchgate.net/publication/311714874_Scoping_Health_Report
- Beer, David. 2015. “Productive Measures: Culture and Measurement in the Context of Everyday Neoliberalism.” *Big Data & Society* 2 (1): 1–12. doi:10.1177/2053951715578951.
- Charlson, Fiona J., Amanda J. Baxter, Hui G. Cheng, Rahul Shidhaye, and Harvey A. Whiteford. 2016. “The Burden of Mental, Neurological, and Substance Use Disorders in China and India: A Systematic Analysis of Community Representative Epidemiological Studies.” *The Lancet* 388 (10042): 376–89. doi:10.1016/S0140-6736(16)30590-6.
- Cooper, Sara. 2015. “Prising Open the ‘Black Box’: An Epistemological Critique of Discursive Constructions of Scaling up the Provision of Mental Health Care in Africa.” *Health* 19 (5): 523–41. doi:10.1177/1363459314556905.
- Davar, Bhargavi. 2014. Globalizing psychiatry and the case of ‘vanishing’ alternatives in a neo-colonial state. *Disability and the Global South: An International Journal*, 1(2), 266-284.
- Desrosières, Alain. 2002. *The Politics of Large Numbers - A History of Statistical Reasoning*. Cambridge, MA: Harvard University Press.
- Fulford, Bill, and Sartorius, Norman. 2009. “The Secret History of ICD and the Hidden Future of DSM.” In *Psychiatry as Cognitive Neuroscience: Philosophical Perspectives*, by Matthew Broome and Lisa Bortolotti, 32–47. Oxford: Oxford University Press.
- Gooptu, Nandini, and Sneha Krishnan. 2017. “Tension.” *South Asia: Journal of South Asian Studies* 40 (2): 404–6. doi:10.1080/00856401.2017.1296633.
- Gupta, Prastap. 2016. “Keynote.” presented at the Consensus conference on technology enabled healthcare, Delhi, December 8.
- Gururaj, G., Mathew Varghese, V. Benegal, GN Rao, K Pathak, LK Singh, RY Mehta, et al. 2016. *National Mental Health Survey of India, 2015-16: Summary*. NIMHANS Publication 128. Bengaluru: National Institute of Mental Health and Neuro Sciences.
<http://indianmhs.nimhans.ac.in/Docs/Summary.pdf>.

- Hacking, Ian. 1982. "Biopower and the Avalanche of Printed Numbers." *Humanities in Society* 5 (3/4): 279–95.
- Hales, Molly. 2016. "Native Sovereignty by the Numbers: The Metrics of Yup'ik Behavioral Health Programs." In *Metrics - What Counts in Global Health*, by Vincanne Adams, 125–43. Durham and London: Duke University Press.
- Hardon, Anita, and Eileen Moyer. 2014. "Medical Technologies: Flows, Frictions and New Socialities." *Anthropology & Medicine* 21 (2): 107–12. doi:10.1080/13648470.2014.924300.
- Hollis, Chris, Richard Morriss, Jennifer Martin, Sarah Amani, Rebecca Cotton, Mike Denis, and Shôn Lewis. 2015. "Technological Innovations in Mental Healthcare: Harnessing the Digital Revolution." *The British Journal of Psychiatry* 206 (4): 263–65. doi:10.1192/bjp.bp.113.142612.
- Horwitz, A.V., and J.C. Wakefield. 2007. *Loss of Sadness: How Psychiatry Transformed Normal Sorrow into Depressive Disorder*. Oxford: Oxford University Press.
- Jasanoff, Sheila, ed. 2004. *States of Knowledge: The Co-Production of Science and the Social Order*. London ; New York: Routledge.
- Kirmayer, L.J. 2006. "Beyond the “New Cross-Cultural Psychiatry”: Cultural Biology, Discursive Psychology and the Ironies of Globalization." *Transcultural Psychiatry* 43: 126–44.
- Knibbe, Mare, Marten de Vries, and Klasien Horstman. 2016. "Bianca in the Neighborhood: Moving beyond the ‘Reach Paradigm’ in Public Mental Health." *Critical Public Health* 26 (4): 434–45. doi:10.1080/09581596.2016.1142067.
- Lingard, Bob. 2011. "Policy as Numbers: Ac/Counting for Educational Research." *Australian Educational Research* 38: 355–82.
- Lorway, Robert. 2017. "Making Global Health Knowledge: Documents, Standards, and Evidentiary Sovereignty in HIV Interventions in South India." *Critical Public Health* 27 (2): 177–92. doi:10.1080/09581596.2016.1262941.
- Lovell, Anne M. 2014. "The World Health Organization and the Contested Beginnings of Psychiatric Epidemiology as an International Discipline: One Rope, Many Strands." *International Journal of Epidemiology* 43 Suppl 1 (August): i6-18. doi:10.1093/ije/dyu125.

- Lund, Crick, Mark Tomlinson, Mary De Silva, Abebaw Fekadu, Rahul Shidhaye, Mark Jordans, Inge Petersen, et al. 2012. "PRIME: A Programme to Reduce the Treatment Gap for Mental Disorders in Five Low- and Middle-Income Countries." *PLOS Medicine* 9 (12): e1001359. doi:10.1371/journal.pmed.1001359.
- Lupton, Deborah. 2016. *The Quantified Self*. Cambridge: Polity Press.
- Merry, Sally Engle. 2016. *The Seductions of Quantification*. Chicago & London: University Of Chicago Press.
- Mills, China. (2018). 'Invisible problem' to global priority: The inclusion of mental health in the Sustainable Development Goals (SDGs). *Development and Change*, 49(3), 843-866.
- Mills, China. and Hilberg, Eva. (in press). 'Built for expansion': conditions of possibility and sites of performance for the WHO's mhGAP diagnostic algorithm. *Sociology of Health and Illness*.
- Ministry of Health and Family Welfare. 2016. "Shri J P Nadda Launches 'Healthy India Initiative' Magazine and 'No More Tension' Mobile Application." *Press Information Bureau*. November 9. <http://pib.nic.in/newsite/PrintRelease.aspx?relid=153444>.
- Murthy, Srinivasa, R. 2017. National Mental Health Survey of India 2015–2016. *Indian Journal of Psychiatry*, 59(1), 21-26.
- Neff, Gina, and Dawn Nafus. 2016. *Self-Tracking*. Cambridge, Massachusetts: MIT Press.
- Nissen, Nina and Risør, Mette Bech. 2018. *Diagnostic Fluidity: Working with Uncertainty and Mutability*. Tarragona: Publicacions de la Universitat Rovira i Virgili.
- Orr, Jackie. 2006. *Panic Diaries: A Genealogy Of Panic Disorder*. Durham N.C. & London: Duke University Press.
- Patel, Vikram, Pamela Y. Collins, John Copeland, Ritsuko Kakuma, Sylvester Katontoka, Jagannath Lamichhane, Smita Naik, and Sarah Skeen. 2011. "The Movement for Global Mental Health." *The British Journal of Psychiatry* 198 (2): 88–90. doi:10.1192/bjp.bp.109.074518.
- Patel, Vikram, Shuiyuan Xiao, Hanhui Chen, Fahmy Hanna, A. T. Jotheeswaran, Dan Luo, Rachana Parikh, et al. 2016. "The Magnitude of and Health System

- Responses to the Mental Health Treatment Gap in Adults in India and China.” *The Lancet* 388 (10063): 3074–84. doi:10.1016/S0140-6736(16)00160-4.
- Pickersgill, Martyn D. 2013. Debating DSM-5: diagnosis and the sociology of critique. *Journal of Medical Ethics*, 40, 521-525.
- Porter, Theodore M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton, N.J: Princeton University Press.
- Prince, Martin, Vikram Patel, Shekhar Saxena, Mario Maj, Joanna Maselko, Michael R. Phillips, and Atif Rahman. 2007. “No Health without Mental Health.” *The Lancet* 370 (9590): 859–77. doi:10.1016/S0140-6736(07)61238-0.
- Rich, Emma, and Andy Miah. 2017. “Mobile, Wearable and Ingestible Health Technologies: Towards a Critical Research Agenda.” *Health Sociology Review* 26 (1): 84–97.
- Rose, Nikolas. 1999. *Powers of Freedom: Reframing Political Thought*. Cambridge University Press.
- Roy, Anupama, and Sarah Lewthwaite. 2016. “Critical Silences: Disability, Networked Technologies and the Global South.” In *Disability in the Global South: The Critical Handbook*, edited by Shaun Grech and Karen Soldatic, 483–500. Cham, CH: Springer International Publishing.
- Sarin, Alok, and Sanjeev Jain. 2012. “The Census of India and the Mentally Ill.” *Indian Journal of Psychiatry* 54 (1): 32–36. doi:10.4103/0019-5545.94642.
- Sharma, Yogima Seth, and Dheeraj Tiwari. 2016. “NITI Aayog Plans ‘Nudge Unit’ to Help Push Government’s Flagship Schemes.” The Economic Times. <https://economictimes.indiatimes.com/news/economy/policy/niti-aayog-plans-nudge-unit-to-help-push-governments-flagship-schemes/articleshow/54041144.cms>.
- Shidhaye, Rahul, and Vikram Patel. 2012. “A Weight on the Mind: Challenges and Approaches to Addressing Mental Health Needs in India.” *India Health Beat*, Public Health Foundation of India & the World Bank, 6 (6). https://www.phfi.org/images/pdf/policy-notes/policy_6.pdf.
- Shiva, Vandana. 1990. “Reductionist Science as Epistemological Violence.” In *Science, Hegemony and Violence: A Requiem for Modernity*, by Ashis Nandy. Tokyo: United Nations University.
- Sosnowy, Collette. 2014. “Practicing Patienthood Online: Social Media, Chronic Illness, and Lay Expertise.” *Societies* 4 (2): 316–29. doi:10.3390/soc4020316.

- Storeng, Katerini T., and Dominique P. Béhague. 2017. “‘Guilty until Proven Innocent’: The Contested Use of Maternal Mortality Indicators in Global Health.” *Critical Public Health* 27 (2): 163–76.
doi:10.1080/09581596.2016.1259459.
- Sullivan, Noelle. 2017. “Multiple Accountabilities: Development Cooperation, Transparency, and the Politics of Unknowing in Tanzania’s Health Sector.” *Critical Public Health* 27 (2): 193–204. doi:10.1080/09581596.2016.1264572.
- Summerfield, Derek. 2008. “How Scientifically Valid Is the Knowledge Base of Global Mental Health?” *BMJ* 336 (7651): 992–94.
doi:10.1136/bmj.39513.441030.AD.
- Sunder Rajan, Kaushik. 2017. *Pharmocracy: Value, Politics, and Knowledge in Global Biomedicine*. Durham: Duke University Press Books.
- Thomas, Philip, Patrick Bracken, Paul Cutler, Robert Hayward, Rufus May, and Salma Yasmeen. 2005. “Challenging the Globalisation of Biomedical Psychiatry.” *Journal of Public Mental Health* 4 (3): 23–32.
doi:10.1108/17465729200500021.
- Till, Chris. 2014. “Exercise as Labour: Quantified Self and the Transformation of Exercise into Labour.” *Societies* 4 (3): 446–62. doi:10.3390/soc4030446.
- Uretsky, Elanah. 2017. “‘We Can’t Do That Here’: Negotiating Evidence in HIV Prevention Campaigns in Southwest China.” *Critical Public Health* 27 (2): 205–16. doi:10.1080/09581596.2016.1264571.
- Wahlberg, Ayo, and Nikolas Rose. 2015. “The Governmentalization of Living: Calculating Global Health.” *Economy and Society* 44 (1): 60–90.