The digital health and wellbeing needs, or otherwise, of a deprived Scottish community.

MCVEAN, S. and YUILL, C.

2022

The Digital Health and Wellbeing Needs, or otherwise, of a Deprived Scottish Community.

Digital health, deprivation, health, wellbeing, digital health technologies, community

Abstract

Healthcare is becoming increasingly digitised. Access and usage of digital health technologies however is unequal in deprived communities. Despite this disparity, research remains silent on digital health and health inequalities. The present study investigates the health and well-being needs of a deprived community and how digital health technologies could be implemented to meet those needs. An interpretative, qualitative approach was adopted. 18 residents from the deprived community of Raploch, Stirling were recruited. Participants were split into two age cohorts 26-49 (N=4) and 50+ years of age (N=14). Three focus group discussions and a semi-structured interview were used to explore the digital health needs of the residents using open-ended questions. The findings revealed that there are multitude of accessibility relations that influenced the everyday experience of the residents. The complex assemblage of relations must be understood and addressed if digital health interventions are to be successfully implemented into a deprived community.

Introduction

In 2018 *Scotland's Digital Health and Care Strategy: Enabling, Connecting and Empowering* (SDHCS) was published. The strategy highlighted a broad vision on how to improve Scotland's health with the use of digital technologies. The strategy was refreshed in late 2021 in response to how the COVID-19 pandemic had affected the provision of healthcare in Scotland hastening the uptake and usage of digital technologies across various settings within the healthcare landscape. Instead of widening the use and uptake of digital health technologies[i] as the original strategy has envisaged, the refreshed version now seeks to make it an integral part of everyone in

Scotland's interactions with health and social care. A core aspect of the refreshed strategy consequently highlights the necessity of digital inclusion, acknowledging that as with health, digital inequalities exist in Scotland, and that everyone in Scotland should have access to digital health care in some form or other.

The strategy can be seen as one element in a suite of initiatives and polices that seek to develop an empowered digital citizenry within Scotland. For example, the Scottish Council for Voluntary Organisations (2022) *Digital Participation Charter* calls for everyone in Scotland to develop essential digital skills. While the Scottish Government's (2014 np) sets out its ambition for '…a digitally confident, creative and skilled population that is able to make full use of any time, any place, anywhere connectivity', in its *Digital Participation: A National Framework for Local Action* strategy. Though as Rimpiläinen et al (2018) note Scotland requires capacity building in this area as the requisite skills base is lacking in Scotland's workforce.

Digital health technologies appear to offer low cost and accessible healthcare solutions (McAuley 2014). The technologies are portrayed to have a transformative impact on public health by empowering individuals to be in control, monitor and self-manage their own health and well-being in order live a more productive and happy life. A focus on digital health as central to healthcare in Scotland could, however, be problematic for those living in deprived urban communities which experience a range of social and economic inequalities. Without acknowledging the social complexity of inequalities in health, well-being and digital technology usage, the increased digitisation of healthcare in Scotland raises questions on the benefit a move towards increased usage of digital health could have for communities classed as deprived. This is not to dismiss digital health out of hand. Findings by Ruthven et al (2018 a,b), for instance, found that online forums are becoming a central source of support for young mothers living in deprived communities. Through the forums young mothers discussed their emotional and material needs especially when they felt overwhelmed and doubted their abilities.

Our research provides insights into how people living in a deprived community relate to digital health technologies and raises questions concerning access that can highlight the

challenges of what lies ahead in try to achieve what the refreshed strategy terms '…world-leading levels of digital inclusion' (SDHCS 2021 n.p.). The research was conducted throughout 2019 to just before the pandemic was declared in the United Kingdom in early 2020. At that point we were researching how digital health technologies could be introduced into deprived communities in line with researching how the use of digital health could be widened as per the 2018 strategy. The findings are still very relevant. They indicate the deeper structural issues that shape and condition the lives of people living in areas of multiple deprivation. Deeper structural issues that as a variety of commentators and researchers (for example, McCartney et al 2021) have noted only worsened during the pandemic and need to be overcome to achieve the levels of digital inclusion desired by the Scottish Government.

Health inequalities are experienced throughout the world (Marmot 2015). A clear and continual social gradient to health exists, with those that are higher up the gradient leading healthier lives and have a longer life expectancy than those that are further down (Marmot 2015). These inequalities represent a systematic difference in health of people occupying unequal positions in society (Graham 2009, pp.3). The inequalities are socially produced, and therefore, avoidable, unfair, and unjust (Smith, Bambra and Hill 2016).

Deprivation shapes the health and wellbeing of many communities in Scotland. Life expectancy and healthy life expectancy in deprived communities are significantly lower than the Scottish national average (Walsh et al 2016). Overall, burden of disease, or disability adjusted life year (DALY), is twice as high in the most deprived areas of Scotland than the least deprived. In addition, years of life lost (YLL) due to premature mortality is nearly three times as frequent. Furthermore, years live with disabilities (YLD) is also higher in the most deprived areas. Deprivation contributes to several health issues in the communities lower on the social gradient. Therefore, it is vital to consider and understand the variety of determinants of health that contribute to the lived experience of deprivation.

As other research indicates inequalities from deprivation carry over to inequalities in digital technologies. A report by Inspiring Scotland (Halliday 2020) found that digital

inequality was widespread in Scotland. Around a third of low-income households do not have internet access, with a complex relationship existing between wider social inequalities and digital inequality. These inequalities have intensified during the Covid pandemic according to Audit Scotland (2021). Longley and Singleton (2009) found that areas of England characterised with high levels of deprivation experience low levels of digital engagement and lower levels of internet usage. An international survey investigating Swedish and British citizens found that digital exclusion is concentrated among the populations that are most socially disadvantaged (Helsper and Reisdorf 2017). Elsewhere, Helsper (2012) modelled the process of digital exclusion which indicated that inequalities in social, cultural, economic, and personal capital in the offline world reflect inequalities in the online world. These findings suggest that the features of deprivation negatively impact digital technology usage. Baum et al (2012) conducted focus groups to investigate the implications of exclusion from digital technologies are likely to be for the social determinants of health. Their findings suggested that people from low socio-economic groups are '…restricted in the ways that they can access and use digital ICTs and that this limited access and use can, in turn, affect their access to a range of social determinants of health' (ibid p353). They describe digital exclusion as a vicious digital cycle that exacerbates existing social determinants of health.

Study Design.

Context of The Raploch

The research was conducted in The Raploch[1] area (population c.3,000) of Stirling. The Raploch is one of the most deprived areas within Scotland. Robertson et al (2008 p84) note that The Raploch '…is one of Scotland's archetypal 'problem' housing estates', and it has long attracted an unfair territorial stigma as a place of violence and danger (Altenberger 2013). The area is a patchwork of different social housing schemes and estates built in the 1920s, 1930s, 1950s, 1970s and 2000s. During the early 2000s The Raploch hosted the La Sistema project (renamed Big Noise in Scotland), a now global

[1] We have adopted the residents' nomenclature of the area. Raploch is the official name, but it is always referred to as 'The Raploch' by people who live there.

initiative that seeks through the playing of classical music to raise the lives of children living in deprivation. The involvement of La Sistema was intended to assist in the regeneration of the area.

The Scottish Index of Multiple Deprivation (2020) identifies that The Raploch displays a range of health and social inequalities and is placed in the lowest quantile of deprivation in Scotland. Health and wellbeing data that specifically refers specifically to The Raploch is however limited. Area data concerning health inequalities in Stirling indicate that considerable differences exist between deprived areas (of which The Raploch is one) and the rest of the city. For example, between 2016/17 and 2018/19 the most deprived areas have a 58% higher early mortality rate, 40% more coronary health disease patients and 122% more Chronic Obstructive Pulmonary Disease hospitalisations than the average for Stirling (ScotPHO).

Recruitment

One of the authors, SM, is from Stirling and has lived there for most of his life. He possesses an understanding of the textuality of the community, a knowledge of the area and the social issues facing the residents. His positionality as a researcher and coming from Stirling helped build bridges with the community and reduced the social distance between the researchers and the residents.

Raploch Community Partnership (RCP) was identified as a key contact for recruiting participants for focus groups as they hosted various events weekly that were open to the public to attend. SM then met with community workers at the community hub to explain the research and ask for recommendations on recruiting residents. SM attended community groups that had been suggested by community workers to meet residents, and give a short presentation to explain the purpose of the research, the inclusion criteria and to hand out leaflets.

Meeting residents allowed them the opportunity to ask questions about the research. It also allowed SM to establish the time and place of the focus group that would best suit their needs. If interested, the residents were asked to sign a sheet with their name, age group and contact information. SM revisited the community groups on several occasions to access as many residents as possible. Posters were displayed at the

community hub with the relevant information to recruit participants including when and where the focus groups were to take place.

Residents and RCP members informed residents that did not attend community groups of the research to recruit more participants through snowball sampling. Finally, the day before the scheduled focus groups/interview the residents were contacted to confirm they would be in attendance. In total, 18 residents were recruited. Table 1 outlines participant information. All names have been anonymised.

Table 1: Participant Information

Resident	Group	Age Range	Sex
Angela	FG1	50 +	Female
Trina	FG1	50+	Female
Olivia	FG1	50+	Female
Jim	FG1	50+	Male
Jessie	FG1	50+	Female
Robert	FG1	50+	Male
Grace	FG1	50+	Female
Eta	FG1	50+	Female
Leslie	FG2	50+	Female
June	FG2	50+	Female
Lewis	FG2	50+	Male
Peter	FG2	50+	Male
Alannah	FG2	50+	Female
Cathy	FG3	26-49	Female
Sarah	FG3	26-49	Female

Linda	FG3	26-49	Female
Christie	FG3	26-49	Female
Ian	Interview	50+	Male

The research was funded by the Digital Health and Care Innovation Centre, with a grant to fund training for Masters level research.

Data Collection

Three focus group discussions and one semi-structured individual interview provided the primary sources of data. Each lasted around 1.5 hours. The procedure, including the questions and activities, for the focus groups is described below:

Activity one: The participants were asked to introduce themselves individually and say one thing they enjoy doing in their spare time. Next, they were asked what for them constituted good health and well-being.

Activity two: The participants were split into smaller groups of two or three people. They used a flipchart to summarise using text, pictures or both their responses to two prompt questions. The first question asked them to summarise their time living in The Raploch. The second question asked them to list what the main health and well-being issues of the area are.

Activity three: The participants were invited to share their ideas with the wider group to identify common themes.

Activity four: The focus changed to how they thought the health and wellbeing issues could be improved. They were asked to discuss as a group any healthcare solutions that have or have not worked well in the area. The topic of digital health care and digital health technologies was then introduced. The participants were given a clear description of the topic and examples where appropriate.

Activity five: The focus group was divided into the same smaller groups. Using the flipchart they were asked to respond to two questions. Firstly, "do you think digital technologies could work in improving the health and well-being issues of the area?" And secondly, "Building on this, if you had the opportunity to design a piece of digital technology or implement an existing one into the community, what would the technology do?".

Activity six: Their ideas were shared among the group and participants discussed each other's ideas. The session was then concluded. SM collected the flipcharts. The participants were handed and read the debrief form. They were thanked for their participation and received a £20 supermarket voucher each.

After: SM made notes on the focus group including the main themes that were emerging or important. SM later transcribed the digital recordings onto word documents for analysis.

Data Analysis

Analysis comprised of two stages: initial and selective coding. NVivo 11 was used as a tool for data analysis during the initial stage of coding. Categories between codes were formed by grouping concepts that related to the same phenomena. SM ceased using NVivo 11 in the second stage to engage with the contextuality as it was crucial to be grounded in the context of the discussions. All codes were instead transferred onto a Microsoft Word Document for analysis to continue manually. The selective stage coding synthesised, sorted, and organised the data into thematic categories.

Findings

1. Low-Income, Unemployment and Access.

Low-income was a thread throughout discussions of the focus groups. It shaped the lives of the participants, framing their lived experiences, set limits on what they could and could not afford and contributes to a sense of alienation and powerlessness. The

extent to which low-income frames the lives and wellbeing of participants is evident in this exchange:

SM: How do you think low income contributes to health and well-being?

Sarah: Well because Sainsbury's here and it's the dearest supermarket.

Linda: Yeah.

Sarah: And if you're on a low income, and you don't drive, and bus isn't working in the scheme[2] anymore…

Cathy: And you've got a couple of kids

Sarah: And you've got a couple of kids… you'd quickly just nip up there but you're not able to get much…

Linda: because it's so expensive

Cathy: But then healthy foods need to be reduced in prices because it's cheaper to feed a family of four on unhealthy stuff than it is on healthy stuff…

The resident's responses indicate that there is a shared experience of being disempowered. As illustrated above from dialogue in FG3, the challenges of living on a low-income are further intensified by poor transport accessibility and food insecurity.

When prompted as what the participants thought were the causes of poor health and wellbeing, low-income and unemployment were singled out as the principal reasons for being unable to lead a healthy life. Jessie (FG2) identified unemployment as the "*the base of*" (Jessie FG2) poor health and well-being in the community. Participants

[2] 'Scheme' in Scots refers to a social housing estate. It can sometimes carry the connotation of a more deprived and marginalised area, sometimes associated with criminality and devaince.

understood unemployment as a principal reason for being unable to lead a healthy life. They emphasised that it reduces opportunities and limits positive choices:

Because being unemployed leads to them having a difficult lifestyle which in turn can lead to drink and drugs and if you dinnae have money you can't buy nice healthy food. So that aspect of [local church] helps, that provides schoolchildren free meals, and leads to lots of illnesses as well if you're no feeding yourself, no looking after yourself. (Lewis FG2)

Any adoption of health technologies therefore is mediated by low income and unemployment. During FG3 Christie provided an indicative example of how living on a low-income limits access to digital health technologies when she explained how she could not afford a mental health app recommended to her by the GP:

Christie: I know there's a lot more now, but I remember at the time my doctor was telling me about this app that I was gonna have to pay £5.99 for. But he gave me all these exercises and it was all gonna be really good. But at the time I was like I can't afford that when I'm paying for everything else, ehm, so I know there is more stuff now. But it's not always affordable

Sarah: Available… it takes you back to the low income ae…

Christie's capacity to afford the MHealth app depended on meeting a multitude of different financial responsibilities, mainly providing for her family, which needed to have precedence. Managing personal finances was a precarious balancing act with each outlay and expenditure carefully assessed as to its cost and usefulness. The participants' approach to purchasing health technologies was therefore based on judging them to be either a necessity or a luxury. The phrase *"beneficial but it's not always affordable"* was used by Sarah (FG3) on several occasions, which summarises this perspective. FG3 raised the point that it is not always affordable for personal use:

Sarah: I'm meaning for the area … like it is beneficial but it's not always affordable, like the Nintendo switch or the Nintendo Wiis like its' not always affordable… for families like

the FitBit's it's not always affordable… if you've got a family with five people in that d'you know what I mean its….

Christie: Mhmm it's a lot of money.

For those that purchased technologies, or the infrastructure to access online digital health, it necessitated a difficult trade-off with other commitments. Olivia (FG1) highlighted this dilemma:

That would be good because not everyone can afford the internet its really quite hard … and if you can afford the internet. You just can't afford everything else. (Olivia FG1)

Olivia's observation indicates that affording internet access in households means a struggle to afford other amenities. Access to digital health and other digital health technologies therefore encounters difficult financial choices.

2.Feeling Remote in an "accessible area"

The built environment of The Raploch and Stirling influenced the use of digital health in the community. Despite the residents describing Raploch as being an "*accessible area"* (not distant from other parts of Stirling) they experienced a sense of remoteness in accessing healthcare, which affected both younger and older age groups were affected by feeling remote. In FG3 the residents were discussing using the NHS 24/7 service to access advice on health concerns. However, despite having physical access, if the NHS 24/7 operator indicated that medical attention was required the residents experienced transport issues at certain times:

Interviewer: Do you think they're useful [NHS 24/7 service]?

Sarah: Mmm if you've got public transport… if you've got your own transport because out of hours is out of hours and if you've not got public transport because if you can't drive,

public transport is all… how you supposed to get there because they no longer do house calls

Sarah (FG3) indicates that digital health technologies in this circumstance were useful to an extent. The NHS 24/7 service worked appropriately but accessing healthcare was limited due to transport accessibility. The usefulness of digital health was reduced by the residents need for more accessible transportation. For those reliant on public transport the level of care they can access out of hours is limited and more difficult for a few reasons. First, as they do not have access to a car. Second, the affordability of a taxi as Christie (FG3) notes they "*would have to get a taxi and how much is that gonna cost me*". Third, the distance between The Raploch and the out of hours hospital *"you couldn't walk there*" (Sarah FG3). The residents are therefore reliant on public transport and feel remote despite living in an area located within a city. Like most of the accessibility issues, the problem with this form of accessibility is that it could delay receiving medical attention.

3. The importance of place and physical locations.

Access to the Community Hub is regarded as a source of resilience within the community. It empowers residents with opportunities and purpose. Having a place to socialise is crucial in creating these benefits. When asked how they understood good health and well-being, many residents responded *"socialising"*. It was important for all residents regardless of age group. Socialising is important as a strategy to encourage other residents to engage in community events. In FG2 the advantages of attending community groups such as a sewing group called 'Simple Stitches' and a healthy lifestyle group called 'health hearts' were illuminated:

And I retired ae, and I thought what am I gonna do with my life, ae, and Alannah's asked me round [to community hub] and it's been the best thing ever that I've done ae. (June FG2)

This extract displays the importance of the community hub for the residents, especially the older adults in the community. The groups give the residents more purpose and offers them new opportunities. For example, the groups give the residents the

opportunity to become more educated and aware of healthy food choices. Moreover, this is strengthened by the community workers. The relationship between the community workers at the community hub and residents is integral for their engagement in events and groups. As Jessie (FG1) describes, *"it's like one big family"*.

4. Digital Skills

The design of the technology and the skill level of the user were seen as relational to one another. The participants observed differences in digital skills between generations. During FG1 the suggestion of exercise and health apps for older adults was written onto the flipchart. However, this was argued against:

Trina: I'm looking at that [flipchart] I understand… I agree with that apps for the elderly but it's no everybody elderly …

Olivia: That can get an app

Trina: That can get that and can work a phone or a mobile.

Alongside physical access, the ability to work a digital technology was also a barrier for older adults. There was a contrast in skills identified by the residents between the younger and older residents. Trina (FG1) believed the reason for the difference was because "*they're brought up with it, we're no*"*.* The group agreed with her. The issue of digital skills was seen as a barrier for accessing digital technologies for the older adults in the community. Although, they were motivated to use the technology and noted "*we're catching up… slowly!" (Jessie FG2)* about their usage.

The participants' responses also indicated that having digital skills does not guarantee that it will have a positive outcome, or be used at all. For instance, one of the main uses of digital technology for some of the residents was to access health information. In these cases, physical access and the digital skills of the residents were sufficient to access health information. Although those that use it find it useful to an extent, it can produce anxiety and make them worried about their health. This point was conveyed in a discussion during FG3 when talking about accessing health information online:

Christie: Yeah, I used to use symptom checker and go on the NHS website quite a lot
Interviewer: Okay and d'you think it was useful?

Christie: Eh… I think it made me more paranoid

Sarah: Yeah, I think it makes you…

Christie: Aye you're like I am dying and you're like no I am not
Cathy: Aye see when you go to the doctors for something more serious, they say "Don't google it!"

Sarah: Yeah

Linda: I don't look for conditions on the phone because it makes me more paranoid
Christie: It makes you more paranoid, aye .

Although, digital skills allow the use digital health technologies it makes them feel in less control of their health and wellbeing. This holds parallels to one of the reasons accessing a health care worker is important as the residents misinterpret symptoms and want medical information they can trust. Instead, accessing health information online and being aware of certain illnesses make the residents anxious. Furthermore, the negative emotional responses that can occur when interpreting health information online can cause some of the residents to refuse to engage in future. Consequentially, in some instances digital skills are insufficient to empower continued usage. In fact, digital skills can increase initial access but can lower sense of control over their health and wellbeing

Age and Digital Access
The participants noted that the problem of physical access is most prominent among the older adults in the community. Angela (FG1) emphasises this point when asked about using digital technologies in the community:

The problem is there are some elderly people that have no digital anything. They've no got telephones, they've no got mobile phones, they've no got computers, and some people are isolated, and they don't have any way or anybody, especially if they've not got neighbours or family. Some people are quite isolated. (Angela FG1)

Angela (FG1) is concerned about a possible disadvantage in accessing healthcare if there is a reliance on digital technologies. For her, older adults, who are both socially and digitally isolated, would not be able to experience the benefits of digital health. Elsewhere, in FG3, the participants shared a similar perspective:

Its gonna benefit the younger generation but its gonna eliminate the older generation. (Cathy FG3)

The residents recognise that there are shortcomings with integrating digital health technologies into the community as it would not be equal for all. A risk exists that older adults who cannot physically access would lag others that do have access. The participants argued that lack of physical access to digital devices is an issue that could prevent access to health care.

Digital Health Need

Not all responses raised challenges to digital health. Activity five focused on what digital health technologies or digital health service the participants thought would make a difference to the health and wellbeing of the area. Digital consultations were proposed as an idea to address many of the accessibility issues, to overcome the experience of remoteness, faced by the community. Digital consultations were agreed to be desirable for all the residents. The residents felt the implementation of such a technology would enable them to access a GP with more efficiency and effectiveness and it could help those that are isolated or physically struggle to access a GP. Here, Lewis (FG2) describes an imagined future situation that could be improved with the technology:

> *Meeting them without actually having to go into the surgery cause the last time I had to contact the doctor it was for it was because I had done something to my*

back … it was a bloody nightmare getting there you know. If I could have just done that it would have been so much better.

The above description suggests that digital consolations could be useful for those that are housebound or mobility impaired. The technology could enable greater control of their health and accessing health services. It was deemed useful for all residents due to the issues involved in accessing a healthcare provider. More specifically, the participants wanted the digital consultation technology to be embedded into a familiar form of domestic technology: the television. FG1 offered some ideas:

Interviewer: Okay, so have you thought of any ideas? I'll just go around the groups once again and see what we've got.
Jessie: I was wanting the TV one
Me: TV one?
Olivia: A doctor, a doctor online
Jessie: Switch the TV on and go to a channel and it's the doctor! A doctor online would be nice
Olivia: But make it just on some technology that isn't going to cost somebody a lot of money so that it is accessible to everybody that's the important bit
Trina: Aye I've got the same, an opportunity to talk to a doctor on skype or television or a doctor's surgery one day a week. And you don't need an appointment it could be like a drop in ae

The residents were interested in having a digital consultation that would be tuned to a specific channel on the television. By utilising an existing technology in the home participants could be more empowered to engage with the technology as they felt that it would not require learning new digital skills. As one participant noted it would be good to '…switch the TV on and go to a channel and it's the doctor'.

Despite the promising potential of digital consultations held for older adults in the focus groups, younger participants recognised that the technology may encounter the same issues that are currently involved with accessing a GP. Sarah (FG3) pinpoints that the availability of the GPs is a limiting factor:

Sarah: I suppose it would be how many GPs were there and how many were allocated to do it, because if you cannae get an actual GP then how are you gonna be able to look at their face over the phone

The availability of GPs is a factor external to the design of technology, yet, needs to be considered for it to be successful. None the less, *if* the issues were resolved then the residents believed that video consultations with their GP would empower the residents to have more control over their lives.

Discussion

The lived experience of the participants is shaped, following Delanda (2016), by a complex assemblage of material circumstances, a lack of control, poor health and wellbeing, financial restraint, location, issues of various forms of access, social isolation, low income, and unemployment. Each of those elements are powerful in creating what is and what is not possible for the participants to effect in their lives in relation to their health and wellbeing.

Some of the elements in that assemblage, such as a lack of control, low income and unemployment exert considerable power in the participants' accounts. It is those relations that code the overall assemblage. They were identified by participants as being causal for the poor health and wellbeing that they experience and, in turn, witness among other people in their community. This observation matches the extant literature we discussed earlier that identifies the enduring and persistent nature of health inequalities. The causes of which are not reducible to individualistic explanations and would require substantial governmental policy (Bambra 2011), or deep reorganisation of class relations (Yuill 2010) to address why they exist and how they are perpetuated.

Financial resources are inextricably linked to accessing digital technologies in the community. Access to digital devices is crucial for digital health interventions to be successful. Older adults in the community were identified as being digitally excluded due to a lack of physical access. Without addressing the access issue then residents in the community have unequal and limited opportunities for accessing digital health

technologies. These findings have important implications as only 1.8% of older adults with no home e-device are likely to use the internet (Arcury 2018). Consequentially, those that lack access are also unable to access digital healthcare. The design and capabilities of the digital technology and digital skills to use them become insignificant for the residents who experience a lack of access. The low-incomes of the participants set limits on purchasing either devices (mobile phones, laptops or computers) or purchasing health and wellbeing apps. The residents perceived, in line with research by Baum, Newman and Biedrzchi (2012), digital technologies as a luxury rather than a necessity.

Any digital technology would therefore have to exist within the micropolitics of the assemblage that is defined by these powerful relations. From what is indicated here that would be a challenge for any piece of digital health technology in terms of preventing poor health and poor wellbeing existing in the first place. No app can swipe away poverty and deprivation that has, in the case of The Raploch, deep historical and structural roots.

The capacity of digital health technologies to individuate users has been critically noted by Lupton (2014). Such technologies, she argues, exist comfortably within the discourses of neoliberalism that posit the individual as both cause and solution to their problems. The importance of the Community Hub for participants provides an interesting contribution to Lupton's point. Its presence indicates that contact and interaction offline in the material world is important, playing a vital role in contributing to health and wellbeing. The Community Hub sits in the centre of The Raploch and provides a social space in which residents can meet, to socialise and for various community groups to interact. The wellbeing benefits of community interactions are well documented, and it also indicates that physically meeting and being part of a community, or part of big family as a participant put it, matters to that community.

Solidarities like this one are features of working-class life, providing valuable emotional and material social support (MacDonald et al 2005, Shildrick 2018). It could be argued that the individualistic impulses of DHTs could weaken those bonds and indirectly begin the dissolution of a vital source of wellbeing and collective resilience. Resources

therefore already existing within deprived communities could be a platform for meaningful change and their presence and potential should not be overlooked. It is perhaps these organic and existing resources that should be enabled and supported rather than a focus on a digital technology solution.

Older forms of technology were just as important - if not more so - for the health and wellbeing of residents than any potential digital technology. Non-digital technologies such as a public bus service were identified by the participants as resource that would make positive difference to their lives. A public bus service would enable travel to areas and to visit health facilities beyond The Raploch, a need created by the reduction of house visits by local doctors. Research by Eibich et al (2016) also found that access to resources such as public transport made a difference to the health and wellbeing of all age groups within a neighbourhood. Similar work by Titheridge et al (2014 p33) noted that transport poverty, while complex,' … can exacerbate poverty by reducing access to key services such as employment, education and healthcare, lead to social isolation and reduce physical and mental well-being'.

Existing non-digital technologies therefore can still contribute to the health and wellbeing of people living in poorer and deprived areas. It is making these older forms of technologies available both in terms of availability and cost that is required.

Digital consultations provided an interesting finding. Remember that this research was conducted just prior to the pandemic and lockdown and during the pandemic applications such as Zoom or Teams became a feature of life for many. As Greenhalgh et al (2020) noted the pandemic had created a natural laboratory for how the use of such platforms could transform doctor-patient interaction. The refreshed Scottish Government digital health strategy indicates that digital consultations are a desired direction of travel. Our findings indicate two points. Firstly, among the participants a desire existed prior to the pandemic for a new conduit with GP practices that would overcome problems of access. Secondly, that the preferred technology to enable accessible communication with a GP was television. It could be argued that the prevalence of video conferencing such as Zoom we have seen during the pandemic suggests that type of technology is the way forward. That position, though, presupposes

both the presence of hard infrastructure (a laptop and internet) and necessary soft digital skills.

As the discussion above indicates those pre-requisites can be absent in deprived communities. If digital consultations are to become a feature of the health and social care landscape in Scotland, then consideration may be necessary to determine through which platforms and technologies that approach is rolled out. Not everyone will have a laptop and not everyone will have the confidence or skills to use Zoom or Teams. A familiar piece of technology, such as the television, may be effective and necessary.

Conclusion

Our findings here indicate that context is important for the use of digital health technologies, with context potentially overpowering the abilities and capacities of digital health technologies to make any meaningful change. Low income, because of low-wage employment or benefits, was the organising relation for participants in The Raploch.

Where participants did indicate that an app (for example, apps that improve mental wellbeing) could help such technologies were unaffordable. As were the basics of digital infrastructure, such as mobile phones laptops and Wi-Fi connectivity. Older forms of technology should also not be dismissed. The presence of a dependable affordable public bus service was regarded as essential and important for health and well-being. The refreshed digital health strategy does acknowledge this point when it refers to offering digital and non-digital options in improving Scotland's health. Bus services may lack the cutting-edge appeal of digital technologies, but for the residents of the Raploch such technology would, they feel, make a difference to their wellbeing.

The need for a bus service also serves as a reminder that people live in physical spaces. Digital technologies can overcome some challenges of physical access, video calling

technology can quickly connect a patient with a doctor, but they are less useful when a patient requires some form of medical testing, such as a scan.

None of what we found here dismisses digital health technologies or digital health care, but rather provides insights into how the lived experiences of deprivation need to be considered when thinking of what and what not such technologies can do. As the finding concerning digital consultations indicates a desire exists for digital health approaches but they must be contextualised. This research was restricted to one location and with a small number of participants, and it would be interesting to discover if what we found here could be replicated across Scotland. Further research is therefore required, given that health inequalities are a persistent challenge within Scotland and digital health is being centred as a major direction in health policy. Similar research projects could be rolled out in other urban areas such as Glasgow and Edinburgh, and in rural locations in the Highlands and Islands where distance from health providers can be an issue.

The obdurate persistence of enduring health inequalities needs to be addressed for any substantial change for the health and wellbeing to happen. Any policy such as the Scottish Government's policies on digital health care therefore needs to be sensitive to context and the lived experience of people living in areas of deprivation. Care must therefore be taken to avoid creating an 'Inverse Digital Care Law' updating Julian Tudor Hart's (1971) classic Inverse Care Law. He noted the '…the availability of good medical care tends to vary inversely with the need of the population served' (Hart 1971). Simply put, the Inverse Digital Care Law adopts and redefines Harts (1971) original law to: *The availability of good digital healthcare tends to vary inversely with the need of the population served.*

The health of Scotland's communities needs to improve, the inequalities that blight and limit the lives of so many Scots needs to end. Digital health is one way forward, but it needs to serve the needs of everyone and not to reproduce wider social inequalities. From what we found it would be difficult for digital health technologies to make a difference unless long-term inequality and poverty are addressed. That may involve the

creation of policy that funds the purchase of apps, free internet and easy to access training in digital skills.

References

ALTENBERGER, I., 2013. *A neighbourhood through the viewfinder : an autodriven photo-elicitation of a housing estate undergoing renewal*, University of Stirling.

ARCURY, T.A. et al., 2020. Older adult internet use and eHealth literacy. Journal of Applied Gerontology, 39(2), pp.141-150.

AUDIT SCOTLAND (2021) *Digital Progress in Local Government***.** Edinburgh: Audit Scotland

BAMBRA, C., 2011. Work, worklessness and the political economy of health inequalities. *Journal of epidemiology and community health,* **65**(9), pp. 746-750.

BAUM, F., NEWMAN, L. and BIEDRZYCKI, K., 2012. Vicious cycles: digital technologies and determinants of health in Australia. Health promotion international, 29(2), pp.349-360.

CHARMAZ, K., 2006. Constructing grounded theory: A practical guide through qualitative analysis. London: SAGE.

DE LANDA, M., 2016. *Assemblage theory.* Edinburgh: Edinburgh University Press.

EIBICH, P., KREKEL, C., DEMUTH, I. and WAGNER, G.G., 2016. Associations between Neighborhood Characteristics, Well-Being and Health Vary over the Life Course. *Gerontology (Basel),* **62**(3), pp. 362-370.

FOX, N.J., 2017. Personal health technologies, micropolitics and resistance: A new materialist analysis. *Health (London),* **21**(2), pp. 136-153.

FRIEDSON, E., 1961. *Patients' Views of Medical Practice: A Study of Subscribers to a Prepaid Medical Plan in the Bronx.* New York: Sage.

GARTHWAITE, K.A., COLLINS, P.J. and BAMBRA, C., 2015. Food for thought: An ethnographic study of negotiating ill health and food insecurity in a UK foodbank. *Social science & medicine,* **132**, pp. 38-44.

GOEDHART, N.S. et al., 2019. 'Just having a computer doesn't make sense': The digital divide from the perspective of mothers with a low socio-economic position. new media & society, 21(11), pp.2347-2365.

GREENHALGH T, WHERTON J, SHAW S, AND MORRISON C. (2020) Video consultations for covid-19 *BMJ* 2020; 368 :m998 doi:10.1136/bmj.m998

HALLIDAY, A. 2020 *Digital Exclusion in Scotland*. Edinburgh: Inspiring Scotland.

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), p.11481.

LUPTON, D., 2014. Critical Perspectives on Digital Health Technologies. *Sociology Compass,* **8**(12), pp. 1344-1359.

LUPTON, D., 2017. Digital health: critical and cross-disciplinary perspectives. Oxford: Routledge.

MACDONALD, R., SHILDRICK, T., WEBSTER, C. and SIMPSON, D., 2005. Growing Up in Poor Neighbourhoods: The Significance of Class and Place in the Extended Transitions of 'Socially Excluded' Young Adults. *Sociology,* **39**(5), pp. 873-891.

MACDOUGALL, C. and FUDGE, E., 2001. Planning and recruiting the sample for focus groups and in-depth interviews. Qualitative health research, 11(1), pp.117-126.

MCCARTNEY, G., DOUGLAS, M., TAULBUT, M., KATIKIREDDI, S. & MCKEE, M. 2021, 'Tackling population health challenges as we build back from the pandemic', *The BMJ*, 375(8318), article no: e066232. https://doi.org/10.1136/bmj-2021-066232

MARMOT, M., 2010. *Fair Society, Healthy Lives: The Marmot Review.* The Marmot Review.

MARMOT, M., ALLEN, J.B., BOYCE, T., GOLDBLATT, P. and MORRISON, J., 2020. *Health equity in England: the Marmot review 10 years on.* London: Institute of Health Equity.

MARMOT, M.G., 2015. *The Health Gap.* . London: Bloomsbury.

MCAULEY, A., 2014. Digital health interventions: widening access or widening inequalities? *Public health,* **128**(12), pp. 1118-1120.

PACCOUD, I., NAZROO, J. and LEIST, A., 2020. A Bourdieusian approach to class-related inequalities: the role of capitals and capital structure in the utilisation of healthcare services in later life. *Sociology of health & illness,* **42**(3), pp. 510-525.

RIMPILÄINEN, S., MORRISON, C. AND ROONEY, L. (27th April 2018). *Review and Analysis of the Digital Health Sector and Skills for Scotland*. Digital Health and Care Institute. Glasgow: University of Strathclyde. https://doi.org/10.17868/63863

RUTHVEN, I., BUCHANAN, S. and JARDINE, C., 2018a. Isolated, overwhelmed, and worried: Young first-time mothers asking for information and support online. *Journal of the American Society for Information Science and Technology,* **69**(9), pp. 1073-1083.

RUTHVEN, I., BUCHANAN, S. and JARDINE, C., 2018b. Relationships, environment, health and development: The information needs expressed online by young first-time mothers. *Journal of the American Society for Information Science and Technology,* **69**(8), pp. 985-995.

ROBERTSON, D., SMYTH, J. and MCINTOSH, I., 2008. The Raploch: A history, people's perceptions and the likely future of a problem housing estate. *Architectural Heritage,* **19**(1), pp. 83-97.

SCAMBLER, G., 2002. *Health and Social Change. A Critical Theory. .* Buckingham: Open University Press.

SCHRECKER, T. and BAMBRA, C., 2015. *How politics makes us sick.* Basingstoke: Palgrave MacMillan.

SCOTTISH COUNCIL FOR VOLUNTARY ORGANISATIONS (2022) *Digital Participation Charter.* Available from: https://digitalparticipation.scot [Accessed 9 Mat 2022]

SCOTTISH GOVERNMENT., 2018. Scotland's Digital health and care strategy–enabling, connecting and empowering. Available from: https://www.gov.scot/publications/scotlands-digital-health-care-strategy-enabling-connecting-empowering/ [Accessed 10 December 2019]

SCOTTISH GOVERNMENT 2014 *Digital Participation: A National Framework for Local Action.* Available from: https://www.gov.scot/publications/digital-participation-national-framework-local-action/ [Accessed 9 May 2022]

SCOTTISH INDEX OF MULTIPLE DEPRIVATION (SIMD)., 2020. Available from: https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/. [Accessed 10 December 2020]

SHILDRICK, T., 2018. Poverty propaganda: Exploring the myths. Bristol: Policy Press.

SMITH, K., BAMBRA, C. and HILL, S., 2016. Background and introduction: UK experiences of health inequalities. In: K. SMITH, C. BAMBRA and S. HILL, eds. Health Inequalities: Critical Perspectives. Oxford: Oxford University Press. pp.1-21.
ScotPho (THE SCOTTISH PUBLIC HEALTH OBSERVATORY) 2019. ScotPHO Profiles. Available from: https://www.scotpho.org.uk/ [Accessed 20 December 2019]
TITHERIDGE, H. ET AL., 2014. Transport and poverty: a review of the evidence. UCL, pp.1-54.
YUILL, C., 2010. The Spirit Level, economic democracy and health inequalities. *International journal of management concepts and philosophy,* **4**(2), pp. 177-193.

[i] Digital health is a term used to describe any digital technology that can be used to track, monitor or improve an individual's health (Lupton 2017). The range of technologies, such as mHealth apps and Fitbits, are increasingly becoming embedded in healthcare in an attempt to empower and support the individual to lead a healthy lifestyle and improve wellbeing.