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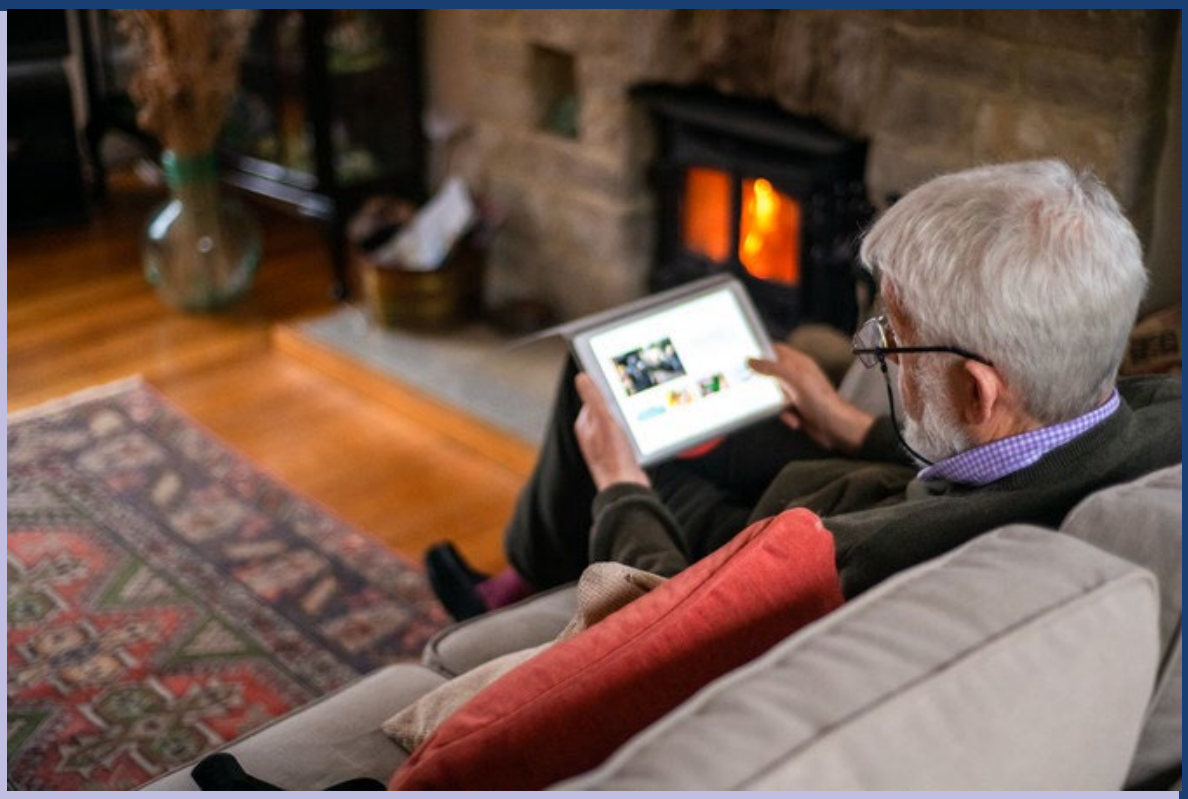

Digitalisation of health and care services for older adults; what can we learn from the COVID-19 pandemic

Executive Summary

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Background

For at least a decade, the World Health Organization (WHO) has been encouraging digitalisation to improve health and care services, and it is a key driver in the NHS. There is a growing role for digital technologies in society, but ongoing concerns that older adults are being disadvantaged by the growth in use of these technologies. The COVID-19 pandemic necessitated governments worldwide to mandate lockdowns and social restrictions. In many countries, this was accompanied by rapid implementation of digital services to try and maintain the delivery of essential health and care. As inequalities in health amongst older people widened during the pandemic, questions have grown over the contribution of the digital divide. In this project, we undertook a mapping review to identify which health and care services have been digitalised during the pandemic, the types of technology used, and which outcomes were measured. We also describe how equity issues were explored, using the PROGRESS-Plus framework, with a view to guiding research in future stages of the project.

Review aims and objectives

This review aimed to map the evidence on the digitalisation of health and care services for older adults since the start of the COVID-19 pandemic in January 2020, using the following question:

> What types of evidence are available / currently being sought on the digitalisation of health and care services/digital delivery of interventions or practice for older adults during the COVID-19 pandemic?

The objectives of the review were to identify the following:

- The extent to which research has explored health inequities relating to the digitalisation of health and care services, applying the PROGRESS-Plus framework
- The specific health and care service areas, and technologies, that have been investigated
- The types of study that have been conducted, the types of data that have been collected and the outcomes (qualitative and quantitative) that have been investigated
- The global regions and countries where evidence is being sought with respect to the impact of digitalisation of health and care services for older adults
- The extent to which outcomes have been explored from service user, unpaid carer, or professional perspectives

Methods

Based on initial scoping, the diverse and diffuse evidence base on digitalisation, and the need to generate a useful review product for stakeholders, a systematic mapping review was selected as the most appropriate methodology. The aim of a mapping review is to ‘map out and categorize existing literature from which to inform policy, commission further reviews and/or primary research by identifying gaps in research literature’.

As the COVID-19 pandemic may have contributed to a widening of health inequities we aimed to map consideration of equity in the evidence base, using the PROGRESS-Plus framework endorsed by the Cochrane/Campbell Equity Collaboration. The framework explores whether studies have considered factors associated with equity and comprises; Place of residence, Race/ ethnicity/culture/language, Occupation, Gender/sex, Religion, Education, Socioeconomic status, Social capital, and Plus (other features associated with discrimination including age and disabilities).

Initial public consultation work

At the outset of this review, we consulted with members of the Greater Manchester Older People's Network (GMOPN) health and social care board, to understand the experiences, concerns and research priorities of older people regarding digitalisation. The group agreed that this was an important research issue for them, although their experience was primarily related to GP consultations during the pandemic.

Search strategy

We searched three databases (WHO COVID-19, ASSIA and Social Care Online), to identify relevant published evidence. The WHO COVID-19 database contains the most current evidence relating to COVID-19 collated daily from bibliographic databases, hand searching, and other expert-referred scientific articles. ASSIA and Social Care Online provided additional care related evidence. A supplementary search for grey literature from major UK national organisations working with older people (such as Age UK), service providers, and the websites of major UK research funders (including NIHR, MRC, The Wellcome Trust and UKRI) was undertaken. All searches were limited to evidence from March 2020, when the first UK lockdown was imposed, to May 2022.

Review criteria

We included studies with older adults aged ≥ 65, or mixed age populations with a mean age of ≥ 65 where data relating to older people could be separately identified. Any form of digitalised service, intervention or way of working that had the potential to impact on patients/service users within health or care and implemented or modified during the COVID-19 pandemic was included.

Primary care and community-based health and care services and interventions were eligible, including studies of 'virtual inpatients', but not those where participants were 'in-person inpatients' in hospital. We included studies with professional staff if they related to digitalisation of services with a patient interface but excluded studies relating to digitalisation solely within the workforce e.g., technological developments in clinical testing, or delivery of training.

Evidence reviews (both systematic and narrative) or primary studies reporting outcomes on health and care service utilisation, staff or patient experience or any patient reported outcome were included. Data collection must have occurred March 2020-May 2022. Academic literature was included from any country (if written in English), but only UK study protocols and grey literature reports were included.

Study selection

Records were uploaded to Rayyan, an online platform facilitating study selection. Initial title and abstract screening and subsequent full-text screening against the inclusion criteria was undertaken by two researchers, with disagreements resolved through consensus with a third.

Data extraction and synthesis

Studies were imported into EPPI-Reviewer Web (an online tool for managing reviews) and data extracted using a proforma detailing study characteristics, population, intervention, and outcomes. One reviewer extracted the data from the texts, and 5% were independently extracted by a second reviewer. Disagreements were resolved through discussion, or with an additional reviewer. We undertook a narrative synthesis of the findings and used EPPI-Mapper software (an online tool for data visualisation) to visualise the data and create evidence gap maps.

Findings

Some 171 studies from 24 countries met the inclusion criteria; of these, 23 (13%) were UK studies. Twenty UK studies (83%) utilised primary data, compared to 63% of studies from other countries. From the UK studies 44% were in primary care and 57% in what we might traditionally think of as secondary care, including mental health services (13%), memory clinics (9%), rheumatology services (9%) and others such as hospital at home, pre-operative clinic, ophthalmology, frailty assessment, urology and alcohol treatment services (each in a single study).

The PROGRESS-Plus framework highlighted variation in the collection and use of equity information. All 23 UK studies gathered data on age, which falls under Plus, because it was one of the inclusion criteria for our review. Six studies did not collect any further PROGRESS-Plus data. The remaining 17 studies included information on between two and seven factors. Nevertheless, fewer studies utilised the variable identified within the PROGRESS-Plus framework to interpret data. The table below outlines the number of studies collecting information on each factor, and the number using this data to stratify their study findings.

Equity factor	***Studies collecting this information***	***Studies using this to stratify data***
Place of residence, e.g., urban or rural	3 (13%)	0 (0%)
Race/ethnicity/culture/language	8 (35%)	3 (13%)
Occupation (including employment status)	4 (17%)	2 (9%)
Gender/sex	13 (57%)	3 (13%)
Religion/beliefs	0 (0%)	0 (0%)
Education	5 (22%)	2 (9%)
Socioeconomic status (including deprivation status)	5 (22%)	2 (9%)
Social capital (including who living with)	4 (17%)	2(9%)
Plus (other features associated with discrimination including age and disabilities)	23 (100%)	10 (43%)

Telephone consultations were the most used technology in UK studies (78%), although it was not always clear if these were digital/smartphone based. Video consultations for continuing care (57%), video calls for initial assessment (13%), online data capture (26%) and apps (13%) were also included in UK studies. Globally, evidence was found on a wider range of technologies than in UK studies, including webinars and wearables.

In the UK, 25% of studies focussed on the utilisation of digitalised services, e.g., how often services were accessed, by whom, using which technology, and 54% gathered qualitative experiences or perceptions of using digitalised services. This contrasts to evidence from elsewhere, 50% of which focussed on utilisation of services and only 18% on qualitative experiences or perceptions. The proportions of UK studies including quantitative experiences and perceptions (38%) and health outcomes (17%) was broadly in line with global studies (30% and 20% respectively).

Data from the review were synthesised to produce summary evidence gap maps using EPPI-Mapper. An example UK map showing the distribution of evidence relating to services, technology and outcomes is shown below in Figure A, with an expanded snapshot to show

part of the map. The online maps can be customised and data from the included studies explored in greater detail. Full maps can be accessed online using the following links:

UK Map:

- Map A. UK Services and technology vs outcomes

Global Map:

- Map B. Global Services and technology vs outcomes

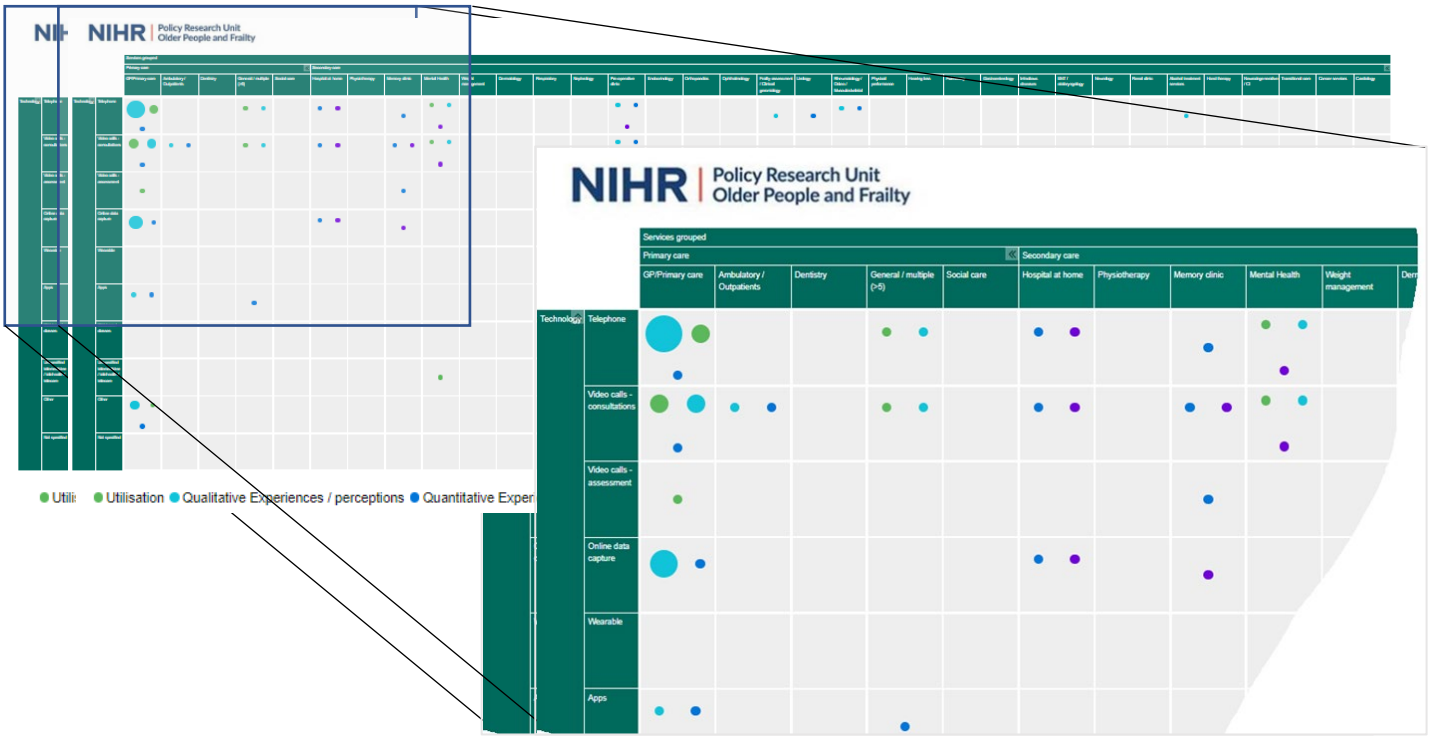

Figure A: Example of UK map showing detailed section

Discussion

Key evidence gaps related to the population, interventions, and outcomes of digitalised services.

Consideration of equity:

- A limited number of UK studies collected data around equity and an even smaller number used equity to explore their data. Apart from the consideration of age which was an inclusion criterion for our review (although only used to stratify data in 10 of the 23 studies), there was little evidence of PROGRESS-Plus factors being used to stratify data.
- Collection of data on equity factors and analysis to identify which specific groups of older people are at greatest risk of being disadvantaged by digitalisation is essential.

- More evidence is needed on the effect Place of residence, Race/ethnicity/culture/language, Gender, Education, Socioeconomic status, Social capital and other features associated with discrimination (e.g. disabilities) on the uptake and experiences of using digitalised health and care services. The relative importance of each of these factors will need to be considered depending on the means of digitalisation and service being offered.

Population:

- Larger scale studies are needed to provide population level evidence on the use of digitalised services in the UK
- The inclusion of more unpaid carers (many of whom are older people themselves) in the research would provide a greater understanding of their role in the uptake and use of digitalised services by older people. Unpaid carers can provide vital support to services users, and it is important to understand their utilisation and experiences of using services with or on behalf of those they provide care for.

Interventions:

- More clarity is needed to establish which UK health services have been digitalised, and whether digitalised services have been implemented but not yet evaluated in terms of utilisation, experiences, and health outcomes.
- The limited range of technologies included in UK studies, primarily telephone and to a lesser extent video technology, serves to highlight the lack of information about how technology is being used to deliver services which were digitalised during the COVID-19 pandemic. More evidence regarding how technology is being used would enable identification of the hardware and skills needed to use such services and help to identify potential barriers for older people.
- The small number of technologies in the UK data may also offer potential avenues to expand the evidence base on a wider range of technologies to deliver health and care services, e.g. wearable monitors or interactive whiteboards to communicate with practitioners.
- A further gap identified was the complete lack of evidence regarding digitalised services within the care sector. No UK studies met the inclusion criteria. As with other services it is unclear whether the lack of data is due to the non-digitalisation of services or lack of evaluation of services, possibly because of rapid introduction and urgency during the COVID-19 pandemic. This is an area where more research is warranted.

Outcomes:

- There is a need to collect more longitudinal data on the utilisation of digital services and health outcomes for those older people who have, or have not, used digitalised services during the pandemic. This would provide a greater understanding around differences in outcomes for those who have used digitalised services during the pandemic and may be continuing to use digitalised services moving forward, enabling a more comprehensive understanding of the impact of the digitalisation of services for older people.

Implications for policy

The digitalisation of health and care services is a key policy in the digital transformation agenda. However, to ensure digital transformation is both inclusive and sustainable, the landscape of inequity must first be understood. This mapping review has highlighted a lack of current evidence informing our understanding of the relationship between inequities and the digitalisation of health and care services for older people during the COVID-19 pandemic. Further qualitative and quantitative work is needed to develop a more granular understanding and develop insights for the future development of digitalised services.

Equally, whilst this review is limited to health and care services it offers some essential broader messages about wider digitalisation priorities (public service, benefits, etc.) which may further health inequalities.

Conclusion

This mapping review has summarised the evidence reporting the digitalisation of health and care services for older people during the COVID-19 pandemic. It has identified the limited body of evidence in the UK and positioned this within the global context. A greater focus is needed on understanding which services utilised by older people have been digitalised, and whether some have been digitalised but not yet evaluated. More evidence on how technology is being used in practice to implement digitalised services is needed, i.e., whether telephone consultations require smart phones, as this will highlight the technology, skills and support needed to access digitalised services. Further, a much sharper equity lens is needed to understand the impact these factors have and their intersectionality with technology and digital services which may magnify issues older people encounter around utilisation, experiences and barriers using digitalised services.

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