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EDITORIAL

Remote cardiac rehabilitation services and the digital divide: implications for elderly populations during the COVID19 pandemic

Carolyn M. Astley [1]*, Robyn A. Clarke [1], Susie Cartledge [2], Alline Beleigoli [1], Huiyun Du[1], Celine Gallagher [3,4], Sindy Millington[3], and Jeroen M. Hendriks [1,3,4]

[1]Flinders University, College of Nursing and Health Sciences, Sturt Campus, University Drive, Bedford Park 5042, Australia; [2]Monash University, School of Public Health, St Kilda Road, Melbourne 3004, Australia; [3]University Adelaide, Centre for Heart Rhythm Disorders, North Tce, Adelaide 5005, Australia; and [4]Department of Cardiology, Royal Adelaide Hospital, North Tce, Adelaide 5000, Australia

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Introduction

Cardiovascular disease (CVD) is a leading cause of mortality particularly in elderly populations. In developed countries, such as the USA, Europe, and Australia, the combined prevalence of CVD in those over 75 years of age is >50% for conditions, such as coronary heart disease, heart failure, arrhythmias, and stroke.[1] Cardiac rehabilitation (CR) is a complex intervention offered to patients diagnosed with CVD. These outpatient programmes aim to reduce the risk of a recurrent event and, whilst significant variations exist, may include health education, cardiovascular (CV) risk reduction, physical activity, and stress management advice.[2] Cardiac rehabilitation can be a powerful tool, reducing cardiovascular mortality and hospital readmissions and improving exercise capacity, quality of life, and psychological well-being.[3]

Evidence is emerging that the coronavirus (COVID19) pandemic has compromised the effective delivery of traditional face-to-face CR, by deployment of resources from outpatient care to COVID-urgent priorities and the need to ensure social distancing.[4] However, as highlighted in this journal by Neubeck *et al.*,[5] the importance of maintaining usual care has never been more important. It is essential that CR and secondary prevention care maintains the core elements of individualised assessment, exercise, education, and psychosocial support, and this can be assisted using remote CR services.[4,5] Implementation of adaptive models of healthcare delivery via telephone and digitally based platforms (e.g. video-consultations, telemonitoring, internet websites, smartphone applications, and text messaging) during the pandemic has provided the opportunity to develop remote CR service delivery.[6] However, we must ensure that these models of delivery promote patient engagement and are accessible to everyone in need.

The digital divide

While the pandemic period has led to rapid adoption of digitally based services amongst some consumers, this accelerated culture change may be challenging for others, including the elderly, highlighting the problem of the digital divide.[7] The digital divide is the gap between groups that have resources, motivation, and skills to access digital technology and groups that do not and may be accentuated by societal demographics and socioeconomic inequalities (education, resources, access, and opportunity).[7] Thus the fast-tracked implementation of digital platforms for service delivery may be leaving elderly populations behind. This article aims to raise awareness and considerations about the digital divide and how it may affect elderly patients trying to access CR services in the COVID19 environment.

Social isolation and COVID19

Neubeck *et al.*[5] explain that we are currently navigating the world's largest quarantine during the COVID19 pandemic. The quarantine environment carries many negative consequences for elderly consumers, including increased social isolation, anxiety and depression, alcohol consumption, and less opportunity for physical and social activities.[5] Digitally based services have the potential to either decrease or increase these factors depending on their design, use, and variability in an individual's ability to access and the skills to use the internet and/or mobile devices.[7] Designing digital-based health services to decrease the digital divide, must therefore consider levels of eHealth literacy. In another 2020 editorial in this journal, Brors *et al.*,[8] define eHealth literacy as the ability to use digital technology, motivation and skills to seek, find, understand, and critically appraise information and apply the knowledge gained, to address a health problem.

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* Corresponding author. Tel: +41 787 3098, Email: Carolyn.astley@flinders.edu.au

Driving culture change

Prior to the COVID19 pandemic, there was slow uptake of digitally based CR services due to a concern regarding the effectiveness and cost of remote service delivery.[9] Since the pandemic, a widespread acceptance and rapid adoption into routine care has been observed, the value of which is now recognized by governments and healthcare funders.[9] A necessary culture change borne of the pandemic and the need to socially distance has led to the motivation to use technology to continue to provide best practice care. In Australia's health system, there are calls for changes to funding mechanisms to expand support for remote health services.[6] It is therefore likely that combinations of digitally based and face-to-face CR service delivery will emerge as the new normal, as we adapt to health service delivery in a COVID19 world.[6]

Digital health service design and the elderly

Between 2000 and 2016, internet use amongst the elderly increased from 12% to 67% in the USA, and currently half of all Americans aged over 65 own a smartphone.[10] Between 2011 and 2019, internet use in the UK in those aged 65–74 increased from 52% to 83%, and in those over 75 years 20% to 47%, showing that older populations are a growing group of technology users.[11] However, it is one step to access the internet or use a smartphone, it is an additional and conceivably more complex step, to access a digitally based health service. As elderly populations have not grown up with digital technology, it is important to understand what type of support they may need to use internet and mobile applications effectively so that the digital divide can be limited.[11] A study of 123 65–76-year old's, relatively inexperienced in technology use, were found to be eager to adopt new technology but were nervous about lack of clarity in instructions and support.[12] In another also published in this journal, Allemann and Poli[13] explain that for elderly people who are socially isolated, family members are not around as much to assist, and troubleshoot technology access. Lack of wireless fidelity (wifi) access at home and phone plans may limit data and are also barriers to digitally based CR service access, factors which are more pronounced in a pandemic environment.[12] To increase eHealth CR literacy among the elderly, the design of web-based and mobile applications which deliver education, risk factor modification targets and/or track physical activity need to consider design features that will improve readability and comprehension, navigation, and adoption and engagement for elderly consumers.[8,13,14] Further, the elderly need to be included in end-user testing and feedback processes in design development stages (*Table 1*).[13]

Building user confidence amongst the elderly is also important in developing digitally based CR services.[13] Whilst younger CR consumers may have a 'let's work it out' confidence about using technology, the elderly may struggle to understand websites or mobile applications, which may decrease their participation. Availability of carefully planned 'how to. . .' support and education strategies when introducing a digitally based CR service to elderly consumers is therefore essential to increasing their confidence and may result in quicker adaption and acceptability.[15] Such support packages also need to be tailored to the individual including assessing and adjusting for age-related fine motor, vision, hearing, and memory changes (*Table 1*).[10,13] Development and delivery of training and support packages for the elderly need to be tested in trials for effectiveness.[10] A systematic review of e-Health and m-Health tools used to deliver health promotion education in the elderly, found that motivation, support, and feedback were important facilitators when using video consults, smartphone applications, website and telehealth healthcare delivery.[16] The elderly, including the very old, also need to be included in randomized clinical trials of digitally based CR interventions to gather data on user support requirements.[16] For example, some studies may exclude those who do not know how to use a smartphone or have a smartphone device, therefore, disadvantaging those with low eHealth literacy and/or the economically vulnerable.[10]

Conclusion

Implementation of adaptive models of health care delivery using digital platforms has been accelerated during the COVID19 pandemic to assist maintenance of CR care. Facilitating transition to digital healthcare delivery for the community and ensuring the digital divide is

Table 1 Design development considerations for digitally-based CR interventions[10,13–16]

Readability and comprehension	Navigation	Adoption and engagement
Assess motor skills, vision, hearing, and memory of the user group	Minimal and simple steps (clicks) to a destination	Use formats which combine a visual plus an audio message
Font size	Easily recognizable 'back' or 'forward' buttons/ arrows	Provide structured training and support to increase user confidence
Large displays with clear colour contrasts	Clear, simple error messages	Tailor content, mode of delivery, support and training to the user by assessing their motivations, and personal characteristics
Size of dropdown arrows, radar buttons, and links	Error messages which are not restricted by a single format	Physician recommendation
Use short texts in simple language and combine with a visual plus an audio format	Use testing and feedback cycles from the target population in the development stages	Automatic data transfer and easy integration of data across systems/devices

considered, is a crucial challenge, especially among vulnerable groups, such as the elderly. Quality of outcomes, both positive and negative from digital models of healthcare delivery, require ongoing evaluation and elderly end-user design and support are a priority.

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