RESEARCH PAPERS

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Smartphone Use and Training Support for PVI

An Exploration of Smartphone Use by, and Support for People with Vision Impairment: A Scoping Review

https://doi.org/10.1080/17483107.2022.2092223

Disability and Rehabilitation: Assistive Technology

Authors: Tan, H. L., Aplin, T., McAuliffe, T. & Gullo, H. (2022)

Purpose: Smartphones have become a core piece of assistive technology (AT) for people with vision impairment (PVI) around the world. This scoping review sought to provide a comprehensive picture of the current evidence base of smartphones for PVI.

Blind Rehabilitation Programs Teach iPhone and iPad Use to Improve Independence in Veterans with Low Vision or Blindness

https://doi.org/10.1177/0264619211026708

British Journal of Visual Impairment, 41(1)

Authors: Miskin, H., Silberlust, J., Blondet, Z., Lares, G., Mandi, D., & Silverman, M. (2021)

Abstract: While many individuals affected by blindness or low vision utilize accessibility applications on iPhone and iPad devices, few receive professional training on application use. Determining the impact of a smartphone and tablet-based curriculum at a Blind Rehabilitation Center (BRC) on functionality and independence can help patients and physicians understand the value of these training programs. Between January 2015 and December 2019, a pre–post initiative evaluated patient functionality and independence scores before and after exposure to a technology educational curriculum at the West Palm Beach Veteran Affairs BRC. A total of 337 patients with impaired vision or complete blindness participated in a 1-month, 35-hr iPhone and iPad learning course. This course was led by technology instructors trained in working with patients with low vision or blindness. [...continued on next page]

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The level of function and independence was determined before and after the educational curriculum using a modified Functional Independence Measurement (FIM) Scale from 1 to 7, with 1 indicating no independent functionality and 7 indicating complete independence. After completion of the course, patients were stratified by age, gender, ethnicity, and eye-related diagnosis. All demographic groups noted an increase in FIM score, with average improvement of 3.75 points. A factorial analysis of variance (ANOVA) revealed that younger age groups displayed a statistically significant improvement in FIM score compared to older groups with an F ratio of $F(3, 295) = 4.503$, $p = .004$. Eye diagnosis did not have an impact on FIM score change. These results suggest any patient may benefit from professional training in the use of iPhone and iPad applications with younger patients showing greater rates of initial improvement. The authors recommend increased utilization of smartphone and tablet training programs at BRCs by all individuals with low vision or blindness.

Developing Accessible Technologies for A Changing World: Understanding How People with Vision Impairment Use Smartphones

https://doi.org/10.1080/09687599.2021.1946678

Disability & Society, 37(1), 111-128

Authors: Locke, K., McRae, L., Peaty, G., Ellis, K. & Kent, M. (2021)

Abstract: Over a six week period, 845 people with low vision or blindness responded to our survey regarding how they used their smartphone, contributing to the first ever large-scale research project on the importance of smartphones in the Australian blind community. The results were significant – 79% of people with vision impairment use smartphones. They are part of their everyday lives and used for a broad range of purposes. Furthermore, the broad adoption of this device is a recent phenomenon – there has been a 365% increase in smartphone use in less than five years. While the rapid uptake of the smartphone by the vision impaired community demonstrates one level of 'access' is being achieved, we also identified ongoing issues impacting users. Our research demonstrates that people with disability must be included in the development process in order to ensure technological advancements are empowering and inclusive, especially in challenging times.

Exploring the Use of Smartphones and Tablets Among People with Visual Impairments: Are Mainstream Devices Replacing the Use of Traditional Visual Aids?

https://doi.org/10.1080/10400435.2019.1682084

Assistive Technology : The Official Journal of RESNA, 34, 34 - 45.

Authors: Martiniello, N., Eisenbarth, W., Lehane, C. M., Johnson, A. P., & Wittich, W. (2019).

Abstract: Smartphones and tablets incorporate built-in accessibility features, but little is known about their impact within the visually impaired population. This study explored the use of smartphones and tablets, the degree to which they replace traditional visual aids, and factors influencing these decisions. Data were collected through an anonymous online survey targeted toward visually impaired participants above the age of 18, whom had been using a smartphone or tablet for at least three months. Among participants (n = 466), 87.4% felt that mainstream devices are replacing traditional solutions. This is especially true for object identification, navigation, requesting sighted help, listening to audiobooks, reading eBooks and optical character recognition. In these cases, at least two-thirds of respondents indicated that mainstream devices were replacing traditional tools most or all of the time.
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Users across all ages with higher self-reported proficiency were more likely to select a mainstream device over a traditional solution. Our results suggest that mainstream devices are frequently used amongst visually impaired adults in place of or in combination with traditional assistive aids for specific tasks; however, traditional devices are still preferable for certain tasks, including those requiring extensive typing or editing. This provides important context to designers and rehabilitation personnel in understanding the factors influencing device usage.

Smartphones-Based Assistive Technology: Accessibility Features and Apps for People with Visual Impairment, and its Usage, Challenges, and Usability Testing

https://doi.org/10.2147/OPTO.S336361

Clinical Optometry, 13, 311–322

Authors: Senjam, S. S., Manna, S., & Bascaran, C. (2021)

Abstract: Smartphones are less likely to be considered as assistive technology for visual impairment among a large majority of health care providers, excluding vision rehabilitation professionals, and the general public who are not familiar with accessible features and apps. The present review aims to highlight accessible features and apps along with usages, including educational, and access to smartphones as assistive technology for visual impairment and blindness. It also includes advantages and challenges faced by users, and usability testing by app developers. There have been significant recent developments in mobile technology that incorporate computer technology relating to electronic information, communication, and touch-screen accessibility. Such advances in technology are transforming the use of smartphones from a traditional visual interface to a truly visual free interaction using alternative body senses, such as haptic, gesture, and so on. [...continued on next page]

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There are many built-in accessible features and third-party accessible applications that enable people with visual impairment to perform daily activities, independent functioning, movement, social inclusion and participation, education, etc. They are universally designed, so they are unlikely to induce social stigma or negative reactions from peers or public. Healthcare practitioners, not limiting to eye care, and caregivers, family members, teachers, or special educators should be informed about the potential uses and benefits of smartphones for visually impaired in developing nations. Evidence shows that most of the users train by themselves. Enhancing the awareness along with training for teachers and caregivers would be helpful to improve access and skills among users with visual disabilities. Developers are continuously producing more innovative applications for visual impairment, which indicates the need for having a training guideline on the use of smartphones.

Social Contact for Older People with Visual Impairment Through Mastery of Smartphones: Barriers and Suggested Solutions

https://doi.org/10.3233/SHTI210417

Studies in Health Technology and Informatics, 282, 415–428

Authors: Fuglerud, K. S., Tunold, S., & Kjæret, K. (2021)

Abstract: Older people with visual impairment are more prone to feeling lonely than their seeing peers. Research suggests that learning to use smartphones can improve psychological well-being in older adults. We seek to further explore and find solutions to three barriers for increased use and mastery of smartphones by older people with visual impairment, namely how to a) reach and motivate this group to learn to use a smartphone; b) improve the provision of training for this group, and c) organize support after training to increase the possibility for continued use. Data is collected through interviews and meetings with various stakeholders on a national and local level in Norway. Based on the results we provide some recommendations for future work to lower the barriers and to improve inclusion of older people with visual impairment into the information society.

Teaching the iPhone with VoiceOver Accessibility to People with Visual Impairments

https://doi.org/10.1177/0145482X1611000

Journal of Visual Impairment & Blindness, 110(5), 369–372

Authors: Celusnak, B. M. (2016)

Abstract: Moving from a conventional telephone keypad to a cellular telephone with a touch-screen can seem quite challenging for some people. When one is visually impaired, there is always the option of using VoiceOver, the iPhone's built-in access technology that is designed to allow individuals with visual impairments the ability to access the visual information on the device's screen (see, for example, Apple, n.d.). This accessibility feature also allows items on the screen to be spoken aloud when touched. With the use of additional finger gestures (taps and flicks or swipes of one or multiple fingers on screen), VoiceOver is designed to provide users with visual impairments the same amount of information as is accessible to sighted users using the device.

Usability of Assistive Technology Applications by People with Low Vision

https://doi.org/10.1590/S1413-65382418000500002

Revista Brasileira de Educacao Especial, 24(4): p. 483-500

Authors: Borges, W.F., & Mendes, E.G. (2018)

Abstract: Assistive Technology (AT) devices are potentially beneficial for people with low vision. However, the public does not use them to promote their functionality, due to lack of knowledge, economic barriers and because these resources mark the disability. At the same time, smartphone and tablet applications are new possibilities in AT and their use has become popular among people with low vision because they have less stigmatising characteristics and are more economically viable when compared to conventional resources. The present study aimed to identify and functionally characterise, from the users' point of view, smartphone and/or tablet applications that assume the role of AT resources and have been used by people with low vision.

Usage of Accessibility Options for the iPhone and iPad in a Visually Impaired Population

https://doi.org/10.3109/08820538.2015.104515

Seminars in Ophthalmology, 32(2), 163–171

Authors: Robinson, J. L., Braimah Avery, V., Chun, R., Pusateri, G., & Jay, W. M. (2017)

Abstract: Purpose: The iPad and iPhone have a number of low-vision accessibility features including Siri Voice Assistant, Large Text, Zoom Magnification, Invert Colors, Voice Over, and Speech Selection. We studied their usage within a low-vision population.

Methods: Patients were recruited to participate in an IRB-approved survey regarding their usage of the iPad and/or iPhone. Participants met one of the following criteria: best corrected visual acuity (BCVA) of 20/60 or worse, or significant peripheral visual field defects.

Results: Thirty-three low-vision patients agreed to participate (mean age 54.3 years). There were 18 different diagnoses represented and the average visual acuity of respondents was 20/119 in the right eye and 20/133 in the left eye. The most commonly used vision accessibility features were Zoom Magnification and Large Text. Conclusions: Although many patients are using the low-vision accessibility features, few are receiving training or recommendations from their eye care specialist.

Experience Based Co-Design

“Anyone Can Co-Design?”: A Case Study Synthesis of Six Experience-Based Co-Design (EBCD) Projects for Healthcare Systems Improvement in New South Wales, Australia

https://doi.org/10.35680/2372-0247.1365

Patient Experience Journal. 2019; 6(2):93-104

Authors: Dimopoulos-Bick TL, O'Connor C, Montgomery J, Szanto T, Fisher M, Sutherland V, Baines H, Orcher P, Stubbs J, Maher L, Verma R, Palmer VJ.

Abstract: Experience-based co-design (EBCD) is a quality improvement approach that is being used internationally to bring service users and health professionals together to improve healthcare experiences, systems and processes. Early evaluations and case studies of EBCD have shown promise in terms of improvements to experience and organisational processes, however challenges remain in participation around shared power and decision making, mobilisation for implementation, sustainment of improvements and measurement of outcomes. The objective of this case study was to explore the emergent issues in EBCD participation and implementation in six quality improvement projects conducted in mental health, rehabilitation, blood and bone marrow transplant, brain injury rehabilitation, urinary incontinence and intellectual disability settings by the Agency for Clinical Innovation (ACI), New South Wales, Australia (2015-2018).
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Methods: A two stage process of analysis was employed. The first stage involved a case to case synthesis using a variable-oriented approach. In this approach themes were identified within individual cases and compared across cases in workshops with all project leads. In the second stage the case themes were synthesised within an overarching thematic that was identified as the main challenge in effective participation and implementation in these EBCD projects.

The results: themes identified in the first stage of analysis related to different methods for gathering experiences and the activities used for the co-design of improvements. Variability in service user participation within co-design workshops was also discussed. Four out of the six projects implemented improvements in full. The prominent thematic overarching all six EBCD cases was the need for guidance on capability development and co-design preparedness for all participants in co-design not only project leads. In conclusion, variability in EBCD implementation makes it difficult to identify which component parts are essential for improving experiences and services, and which of these lead to sustained changes and benefits for service users and health professionals. One way to address this is to develop a model for co-design capability and preparedness that is closely linked with a set of eight mechanisms that have been previously identified as essential to achieving change in healthcare improvement initiatives.

EBCD: Experience-Based Co-Design Toolkit

https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/step-by-step-guide/1-experience-based-co-design/

The Point of Care Foundation (2020)

What is Experience-based co-design?
Experience-based co-design (EBCD) is an approach that enables staff and patients (or other service users) to co-design services and/or care pathways, together in partnership. The approach is different to other service improvement techniques.

Patients and Staff as Co-Designers of Healthcare Services

https://www.bmj.com/content/350/bmj.g7714

The BMJ 350

Authors: Robert, G., Locock, L., Purushotham, A., Sturmey, G., Gager, M., 2015.

Introduction: Glenn Robert and colleagues describe an approach that aims to ensure that healthcare organisations realise the full potential of patients—the biggest resource they have for improving the quality of care.

Using Experience-Based Co-Design to Improve the Quality of Healthcare: Mapping Where We Are Now and Establishing Future Directions

https://www.researchgate.net/publication/262198403_Using_Experience-based_Co-design_EBCD_to_improve_the_quality_of_healthcare_mapping_where_we_are_now_and_establishing_future_directions

London: King's College London

Authors: Donetto, S., Tsianakas, V. & Robert, G. (2014)

Abstract: Experience-based Co-design (EBCD) to improve the quality of healthcare: mapping where we are now and establishing future directions Please cite as: Donetto, S., Tsianakas, V. & Robert, G. (2014). Using Experience-based Co-design to improve the quality of healthcare: mapping where we are now and establishing future directions. London: King's College London. Contact Dr Sara Donetto for further information: sara.donetto@kcl.ac.uk 2 PREFACE It is now almost 10 years since what has become the Experience-based Co-design (EBCD) approach to improving patient experience was first planned and piloted in a head & neck cancer service at Luton & Dunstable NHS hospital in England. A decade on and the roots of over 80 projects in seven different countries can be traced back to the hard work and commitment of the coming together of a small group of staff, patients and carers involved in that original work. [...continued on next page]

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Over time, naturally and quite rightly, the original 'blueprint' for EBCD has been adapted and tailored to better suit different types of healthcare services as well as a wide range of local and national contexts. As part of this evolution, the free-to-access online EBCD toolkit (http://www.kingsfund.org.uk/projects/ebcd) has recently been revised and extended. Changes were made based on the feedback of practitioners who have been directly involved in applying the approach in their own services, and further case studies have also been added to highlight the flexibility of the approach. An updated reading list has been included for those interested in digging a little deeper (see Annex 1). The end of 2013 also sees the convergence of several different strands of work relating to EBCD (please refer to the figures on the website).

Why Experience-Based Co-Design Improves the Patient Experience

https://doi.org/10.21853/JHD.2018.45

The Journal of Health Design 2018; 3(1):84–85

Author: Goodrich J. (2018)

Abstract: Given patients' first-hand knowledge of healthcare services, their ideas for change are essential to designing a successful patient experience. This editorial discusses experience-based co-design, a systematic, evidence-based approach that has been used successfully in many different healthcare settings in many countries.

About Us

Smartphone Training for PVI www.smartphone-trainingforpvi.guidedogs.org.sg/ is a co-designed web-based toolkit provides training and learning support on the use of smartphones and apps for people with vision impairment (PVI). It is a basic training guide for PVI, trainers (professionals who guide PVI to learn how to use smartphones), and family/support person (including friends and caregivers).

This toolkit has been co-designed with PVI. Our team includes researchers and a group of trainers and clients with lived experience from Guide Dogs Singapore.

Smartphone Training for PVI web-based toolkit is supported by Digital for Life Fund - Infocomm Media Development Authority. It is an initiative by Guide Dogs Singapore, Singapore Institute of Technology and The University of Queensland.