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Abstract

Provider and Older Patient Responses to Rapid Expansion of Telehealth in an Urban Cancer Center: Mixed Methods Critical Incident Evaluation

Robin T Higashi^{1,2}, PhD; Bella Etingen³, PhD; Suzanne Cole^{1,2}, MD; John Mansour^{1,2}, MD; Jessica L Lee¹, MPH; Timothy Hogan^{1,2}, PhD

¹University of Texas Southwestern Medical Center, Dallas, TX, United States

²Harold C Simmons Comprehensive Cancer Center, Dallas, TX, United States

³Edward Hines Jr VA Hospital, Hines, IL, United States

Corresponding Author:

Robin T Higashi, PhD

University of Texas Southwestern Medical Center

5323 Harry Hines Blvd

Dallas, TX, 75390-8557

United States

Phone: 1 2146483645

Fax: 1 214 648 3232

Email: robin.higashi@utsouthwestern.edu

Abstract

Background: Synchronous video visits (“telehealth”) were rapidly adopted by many cancer centers across the nation to facilitate provision of care during the COVID-19 pandemic; however, in many cases, there was little time to comprehensively assess patient and provider needs related to this rollout. In addition, attitudes toward telehealth use among older patients with cancer, who may face increased vulnerability to inequities in access to care due to limited digital literacy, were largely unknown at that time.

Objective: The objectives of this concurrent mixed methods study were to (1) assess stakeholder experiences with telehealth since its rollout during the COVID-19 pandemic at an urban comprehensive cancer center and (2) solicit suggestions to optimize workflow and enhance telehealth implementation beyond the pandemic.

Methods: We conducted surveys and critical incident interviews with providers, staff, and older patients (aged ≥60 years) from a comprehensive cancer center in a large urban area. Data collection occurred from December 2020 to November 2021. We analyzed survey data using descriptive statistics and qualitative data using deductive and inductive thematic content analysis facilitated by NVivo 12.0 (QSR Australia).

Results: We completed a total of 106 provider or staff surveys, 128 patient surveys, 20 provider or staff interviews, and 14 patient interviews. While the majority (70.7%) of surveyed providers and staff agreed or strongly agreed that the technology used to support telehealth visits at Simmons fit well within their clinical workflow, several suggestions were offered to enhance telehealth implementation, including conducting proactive, systematic training and technical assistance; making appointment scheduling and rooms flexible for in-person or telehealth conversion in real time to streamline workflow; expanding availability of telehealth to supportive care services and physically frail patients; and increasing provider engagement via telehealth meetings and conferences. Less than a third (30.8%) of providers or staff agreed or strongly agreed that the institution did a good job of preparing patients for their first telehealth encounter, and patients reported experiencing challenges with joining video visits (29%) and understanding the telehealth process (28%). Participants suggested several strategies to assist patients with limited digital literacy, including offering video tutorials of the connection process, creating “fake appointments” to practice web-based connections, and hiring a digital navigator to assist with technical difficulties and setup of the web-based portal. Despite challenges, a majority of surveyed patients (65.7%) and providers or staff (76.9%) intend to continue using telehealth after the COVID-19 pandemic passes.

Conclusions: Use of telehealth for cancer care was received positively by older patients and providers or staff. Taking targeted steps to support enhanced implementation post pandemic could reduce barriers to care, including among older adults and other populations with limited digital literacy, thereby promoting greater equity of access to telehealth and the potential benefits it offers.

Conflicts of Interest: None declared.

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coronavirus; COVID-19; implementation; health services delivery; qualitative; digital literacy

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Abstract

Care Continuity, Telehealth Use, and Quality of Diabetes and Hypertension Care in Community Health Centers Before and During the COVID-19 Pandemic: Repeated Cross-sectional Study

Aaron Alexander Tierney¹, BA; Denise D Payán², MPP, PhD; Timothy Brown¹, PhD; Adrian Aguilera¹, PhD; Stephen M Shortell¹, MBA, MPH, PhD; Hector P Rodriguez¹, MPH, PhD

¹University of California, Berkeley, Berkeley, CA, United States

²University of California, Irvine, Irvine, CA, United States

Corresponding Author:

Aaron Alexander Tierney, BA
University of California, Berkeley
2121 Berkeley Way
Berkeley, CA, 94720
United States
Phone: 1 650 722 0742
Email: aat2143@berkeley.edu

Abstract

Background: Community health centers (CHCs) pivoted to remote chronic care services during the COVID-19 pandemic. While care continuity is associated with improved care quality and patients' experiences, telehealth's impact on these relationships is unclear.

Objective: We aimed to examine the association among care continuity, telehealth use, and quality of diabetes or hypertension care in CHCs before and during the COVID-19 pandemic.

Methods: We collected electronic health record data from a cohort of 20,792 patients with diabetes or hypertension with ≥ 2 visits per year from March to December 2019 and 2020 among 166 California CHCs in the OCHIN Accelerating Data Value Across a National Community Health Center Network Collaborative. Logistic regression models estimated the association between care continuity (modified, modified continuity index [MMCI]) and telehealth adoption and blood pressure or hemoglobin A1c (HbA1c) testing. Generalized linear regression models for 2019 and 2020 estimated the association between MMCI and blood pressure or HbA1c, exploring telehealth as a mediator.

Results: Patients experienced reduced care continuity (2019: MMCI=0.71, SD 0.28; 2020: MMCI=0.63, SD 0.36; $P<.001$) and more blood pressure (99.99% vs 99.75%) and HbA1c (53.38% vs 48.99%) assessments in 2019 vs 2020. Telehealth accounted for 0.33% of 2019's visits and 9.55% of 2020's visits. MMCI scores were associated with higher odds of telehealth use in 2020 (odds ratio [OR] 1.96; $P<.001$). MMCI (2019: OR 1.72, $P<.001$; 2020: OR 1.66, $P<.001$) and telehealth use (2019: OR 2.44, $P<.001$; 2020: OR 6.82, $P<.001$) were associated with greater HbA1c testing. MMCI was associated with lower HbA1c values in 2020 (-0.40 , $P=.01$) and lower systolic (2019: -1.64 , $P=.045$; 2020: -2.40 , $P=.001$) and diastolic (2019: -1.24 , $P=.007$; 2020: -1.33 , $P=.001$) blood pressure. MMCI and telehealth were not associated with HbA1c values in 2019. In 2020, telehealth mediated the relationship between MMCI and HbA1c testing (percent mediated 59%), but not between MMCI and other study outcomes.

Conclusions: Care continuity facilitates telehealth use and enables resilient performance on process measures. Elucidating how care continuity influences telehealth adoption may provide insights about implementing patient-centered innovations.

Conflicts of Interest: None declared.

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telehealth; care continuity; community health centers; diabetes; hypertension

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Abstract

Predicting Participant Engagement in a Social Media–Delivered Lifestyle Intervention Using Microlevel Conversational Data: A Pilot Feasibility Randomized Trial

Ran Xu¹, PhD; Matthew Schroeder²; Joseph Divito³; Richard Bannor³; Sherry Pagoto³

¹Department of Allied Health Sciences, University of Connecticut, Storrs, CT, United States

²Indiana University, Bloomington, IN, United States

³University of Connecticut, Storrs, CT, United States

Corresponding Author:

Ran Xu, PhD

Department of Allied Health Sciences

University of Connecticut

Koons Hall, Room 326

Storrs, CT, 06269

United States

Phone: 1 8604862945

Email: ran.2.xu@uconn.edu

Abstract

Background: Social media–delivered lifestyle interventions have shown promising outcomes, often generating modest but significant weight loss. Participant engagement appears to be an important predictor of weight loss outcomes in these interventions, but engagement generally declines over time and is highly variable within and across studies. Research on factors that influence participant engagement remains scant in the context of social media–delivered lifestyle interventions.

Objective: The objective of this study was to identify predictors of participant engagement in a social media–delivered lifestyle intervention, including the characteristics of the participants, the posts, and the conversations that followed the posts.

Methods: We performed secondary analyses using data from a pilot randomized trial that delivered 2 lifestyle interventions via Facebook. We analyzed 80 participants' engagement data (defined as replies/comments) for each of the 761 posts generated over the 16-week intervention period and linked them to predictors, including characteristics of the posts they engaged on, conversation sentiment, and participant characteristics, using a mixed-effects model. We also performed machine learning–based classification to explore how well the aforementioned measures can predict whether participants will engage with a specific post.

Results: We found that the probability of participants' engagement with each post decreased by 0.28% (95% CI 0.16%-0.4%; $P<.001$) each week, and the probability of participants engaging with posts generated by interventionists was 6.3% (95% CI 5.1%-7.5%; $P<.001$) higher than their probability of engaging with posts generated by other participants. Participants also had a 6.5% (95% CI 4.9%-8.1%; $P<.001$) and 6.1% (95% CI 4.1%-8.1%; $P<.001$) higher probability of engaging with posts that directly mentioned weight and goals, respectively, rather than other types of posts. Participants were 44.8% (95% CI 42.8%-46.9%; $P<.001$) and 46% (95% CI 44.1%-48%; $P<.001$) more likely to engage with posts when they were replied to by other participants and by interventionists, respectively. A 1 SD decrease in the sentiment of the conversation on a specific post was associated with a 5.4% (95% CI 4.9%-5.9%; $P<.001$) increase in the probability of participants' subsequent engagement with the post. Participants' engagement on previous posts was also a predictor of engagement in subsequent posts (95% CI 0.74%-0.79%; $P<.001$). In addition, an ensemble of gradient boosting machine and deep learning–based classification algorithms confirmed the importance of the predictors previously identified and achieved an accuracy of 90.9% in terms of predicting participants' engagement, using a balanced testing sample with 1600 observations.

Conclusions: Our findings revealed several predictors of engagement derived from the content generated by interventionists and other participants. Our results have implications for increasing engagement in asynchronous, remotely delivered lifestyle interventions, which could improve outcomes. Our results also point to the potential of data science and natural language processing to analyze microlevel conversational data and identify factors influencing participant engagement. Future studies should validate these results in larger trials.

Conflicts of Interest: None declared.

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social media; weight loss intervention; engagement; predictors; machine learning

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Abstract

Delivering a Post-Partum Weight Loss Intervention via Facebook or In-Person Groups: Results from a Randomized Pilot Feasibility Trial

Molly E Waring^{1,2}, PhD; Sherry L Pagoto^{1,2}, PhD; Tiffany A Moore Simas³, MPH, MEd, MD; Loneke T Blackman Carr⁴, RD, PhD; Madison L Bracken^{1,5}, MA; Brooke A Libby¹, MPH, MS; Valeria Herrera¹, BS, RD; Lauren R Rudin^{1,6}, BS; Justin Wang⁷, PhD; Grace E Heersping¹, BS; Abigail R Burdick¹, BS

¹Department of Allied Health Sciences, University of Connecticut, Storrs, CT, United States

²UConn Center for mHealth & Social Media, University of Connecticut, Storrs, CT, United States

³Departments of Obstetrics & Gynecology, Pediatrics, Psychiatry, and Population & Quantitative Health Sciences, University of Massachusetts Medical School/UMass Memorial Health Care, Worcester, MA, United States

⁴Department of Nutritional Sciences, University of Connecticut, Storrs, CT, United States

⁵Department of Psychological and Brain Sciences, University of Massachusetts, Amherst, MA, United States

⁶Department of Kinesiology, University of Connecticut, Storrs, CT, United States

⁷Social Sciences Department, Community College of Rhode Island, Warwick, RI, United States

Corresponding Author:

Molly E Waring, PhD

Department of Allied Health Sciences

University of Connecticut

358 Mansfield Rd., Unit 1101

Storrs, CT, 06269

United States

Phone: 1 8604861446

Email: molly.waring@uconn.edu

Abstract

Background: Postpartum weight retention contributes to weight gain and obesity. Remote lifestyle interventions may overcome barriers to attending in-person programs during this phase.

Objective: We aimed to conduct a randomized feasibility pilot trial of a 6-month postpartum weight loss intervention delivered via Facebook or in-person groups. Feasibility outcomes were recruitment, sustained participation, contamination, retention, and feasibility of study procedures; percent weight loss at 6 and 12 months, exploratory outcomes.

Methods: Women with overweight or obesity who were 8 weeks to 12 months post partum were randomized to receive a 6-month behavioral weight loss intervention based on the Diabetes Prevention Program lifestyle intervention via Facebook or in-person groups. Participants completed assessments at baseline, 6 months, and 12 months. Sustained participation was defined with intervention meeting attendance or visible engagement in the Facebook group. Retention was defined as completing follow-up assessments (providing weight or completing the survey). We calculated the percent weight change for participants who provided weight at each follow-up.

Results: Among uninterested individuals, 69% (72/105) were not interested in or could not attend in-person meetings and 3% (3/105) were not interested in the Facebook condition. Among individuals excluded at screening, 18% (36/195) were ineligible due to reasons related to the in-person condition, 12% (24/195) related to Facebook and 3% (5/195) were unwilling to be randomized (all preferred Facebook). Randomized participants (n=62) were a median of 6.1 (IQR 3.1-8.3) months post partum with a median BMI of 31.7 (IQR 28.2-37.4) kg/m². Retention was 92% (57/62) at 6 months and 94% (58/62) at 12 months. Overall, 70% (21/30) of Facebook participants and 31% (10/32) of in-person participants attended the last intervention module. Further, 50% (13/26) of Facebook participants and 58% (15/26) of in-person participants would be likely or very likely to participate again if they had another baby, and 54% (14/26) and 70% (19/27), respectively, would be likely or very likely to recommend the program to a friend. Moreover, 96% (25/26) of Facebook participants reported that it was convenient or very convenient to log into the Facebook group daily versus 7% (2/27) of in-person participants who said it was convenient or very convenient to attend group meetings each week. Contamination was low, and study procedures were feasible. Average weight loss was 3.0% (SD 7.2%) in the Facebook

condition and 5.4% (SD 6.8%) in the in-person condition at 6 months and 2.8% (SD 7.4%) and 4.8% (SD 7.6%) at 12 months, respectively.

Conclusions: Barriers to attending in-person meetings hampered recruitment efforts and intervention participation. While women found web-based groups convenient and stayed engaged in the group, weight loss may be lower. Research is needed to further develop care models for postpartum weight loss that balance accessibility with efficacy.

Conflicts of Interest: None declared.

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Abstract

Is Telehealth a Feasible Mode of Intervention Delivery to Improve Social Communication Skills in Children With Autism Spectrum Disorder? Results From a Pilot Randomized Controlled Trial

Ashlie N Delskey^{1‡}; Pari M Patel¹; Nidhi Amonkar¹; Sudha Srinivasan¹, PT, PhD; Wan-Chun Su²; Corina Cleffi²; Anjana Bhat²

¹Department of Kinesiology, University of Connecticut, Storrs, CT, United States

²Biomechanics and Movement Science Program, University of Delaware, Newark, DE, United States

[‡]Sudha Srinivasan

Corresponding Author:

Pari M Patel

Department of Kinesiology

University of Connecticut

3107 Horsebarn Hill Rd

U-4137

Storrs, CT, 06269

United States

Phone: 1 8604861121

Email: pari.m.patel@uconn.edu

Abstract

Background: Children with autism spectrum disorder (ASD) demonstrate impaired verbal and nonverbal communication, deficits in emotional regulation, higher rates of repetitive behaviors, and poor motor planning and body coordination. Our past studies have demonstrated that engaging in rhythmic movement interventions can advance gross motor skills while promoting spontaneous verbalization, joint attention, and improved behavioral regulation in children with ASD.

Objective: This study compares the effects of 2 whole-body movement interventions to a standard-of-care intervention on social communication skills in children with ASD. Due to the pandemic, the study transitioned from face-to-face intervention (F2F) to a telehealth (TH) format. This poster will compare the efficacy of F2F and TH intervention delivery modes in promoting social communication skills.

Methods: A total of 45 children with ASD between 5 and 14 years old participated in a 10-week study. Children were randomly assigned to receive 8 weeks (2 sessions/week, 60-75 minutes/session) of creative movement (play), general movement (move), or seated play (create) training. Training sessions involved interactions between the child, an expert trainer, an adult model, and caregivers. Outcome measures include training-specific measures of the percent duration of socially directed and self-directed verbalization (with respect to the total verbalization time) measured during early and late training sessions as well as the type of verbalization (spontaneously initiated versus in response to partner bidding or prompting). We will also compare the magnitude of training-related change in verbalization in children seen F2F versus via TH.

Results: In all groups, children engaged in greater social versus self-directed verbalization during early and late training sessions. The move group showed an increase in social verbalization with respect to the total session duration from early to late sessions (mean early 11.4, SE 1.5; mean late 15.6, SE 2.0; $P=.02$). These improvements were in children seen F2F (67% of children) and via TH (80% of children). Within social verbalization, children in all groups verbalized more toward the researchers compared to family members during training sessions. Specifically, children in the play group demonstrated an increase in percent duration of social verbalization toward the researchers (trainer and model) from early to late session (mean early 61.9, SE 6.8; mean late 70, SE 6.8; $P=.03$). Children seen via TH started at lower baseline levels of social verbalization, compared to their F2F counterparts, but showed a significant increase from early to late sessions (TH: 71% and F2F: 62.5% of children improved). In terms of verbalization type, the move and create groups engaged in greater responsive verbalization compared to the play group across early and late sessions. The create group did not show any increase in social verbalization with training irrespective of intervention delivery mode.

Conclusions: Our preliminary data suggest that the whole-body movement interventions can be used to foster social verbalization in children with ASD. The study adds to the pre-pandemic evidence on the feasibility of implementation and utility of TH-based intervention delivery in the care of children with ASD. Clinicians may choose TH-based intervention delivery to build a rapport with children to address the core impairments in ASD, provided that caregivers are available during TH sessions to ensure child engagement and compliance.

Conflicts of Interest: None declared.

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autism spectrum disorder; children with ASD; social communication; communication skills; adolescents; autistic; autism; verbalization; rhythmic movement; creative movement; music

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Abstract

Experiences of Connecticut Community Health Center Patients With Telemedicine During the COVID-19 Pandemic

Roberta Delvy¹, BA, BS; Emil Coman², PhD; Kelly Sanchez³, MPH; Wizdom Powell², PhD; Thomas Agresta^{3,4}, MD

¹School of Medicine, University of Connecticut, Farmington, CT, United States

²Health Disparities Institute, University of Connecticut, Farmington, CT, United States

³Center for Quantitative Medicine, University of Connecticut, Farmington, CT, United States

⁴Department of Family Medicine, University of Connecticut, Farmington, CT, United States

Corresponding Author:

Roberta Delvy, BA, BS
School of Medicine
University of Connecticut
263 Farmington Avenue
Farmington, CT, 06030
United States
Phone: 1 203 954 9286
Email: delvy@uchc.edu

Abstract

Background: Since COVID-19 rapidly made telemedicine a necessity, it is clear that virtual patient visits are going to be part of the new norm in continued outpatient care as we move into a postpandemic reality. However, we are still learning about patients' experiences and preferences amid the rapid and widespread deployment of telemedicine.

Objective: The aim of this paper is to determine patients' satisfaction with and experiences of telehealth services during the COVID-19 pandemic among those seeking care at Community Health Center Association of Connecticut member clinics.

Methods: Data were collected using a 24-question phone survey, which asked about telehealth use, frequency of telehealth visits, and barriers experienced. Participants were eligible if they aged 18 years or older, were English speaking, and were receiving care at 1 of 3 participating Community Health Center Association of Connecticut clinics.

Results: A total of 383 participants completed the phone survey throughout July 2021. The median age grouping was between 55 and 59 years, and the majority (63%) were female. Since COVID-19, in total, 78% reported having one or more audio-only telehealth visits (from 31% before), and 53% had one or more video telehealth visit (from 13% before). Most reported being very satisfied with their visits (86%) and that they felt confident in their provider's ability to address their needs (74%). Most did not experience technical problems or have difficulty understanding how to connect to their provider. Even among older participants (60 years and older), only 28% reported having difficulty understanding how to connect to their provider, compared with 23% of 40- to 59-year-old patients and 18% of 18- to 39-year-old patients. Moreover, 45% reported being very likely to continue using telehealth even after the pandemic. However, 52% would have liked the option of in-person visits if they had been available in the past year.

Conclusions: These results suggest that most patients find telehealth visits an appropriate and accessible means of accessing health care, though some still like the option of seeing their provider in person. Future work should compare provider and patient experiences and identify optimal means of making the encounters mutually satisfying and beneficial.

Conflicts of Interest: None declared.

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Abstract

Telehealth Implementation in Federally Qualified Health Centers During the COVID-19 Pandemic: Changes to Care Provision

Jennifer L Frehn¹, MPH, PhD; Brooke E Starn², MPH; Hector P Rodriguez³, MPH, PhD; Denise D Payán⁴, MPP, PhD

¹University of California, Los Angeles, Los Angeles, CA, United States

²University of California, Davis, Davis, CA, United States

³University of California, Berkeley, Berkeley, CA, United States

⁴University of California, Irvine, Irvine, CA, United States

Corresponding Author:

Jennifer L Frehn, MPH, PhD

University of California, Los Angeles

650 Charles E Young Dr S

Los Angeles, CA, 90095

United States

Phone: 1 310 825 6381

Email: jfrehn@berkeley.edu

Abstract

Background: During the COVID-19 pandemic, federally qualified health centers (FQHCs) experienced rapid telehealth adoption, which drastically shifted how FQHCs delivered care to underserved patients. While studies indicate clinicians and patients would like to continue to use telehealth after the pandemic, questions remain about telehealth care quality, and there are opportunities for improvement in FQHCs.

Objective: The aim of this paper is to explore changes to care provision that occurred in FQHCs between 2020 and 2021 and identify opportunities to address challenges and maximize benefits as virtual care evolves.

Methods: A total of 15 semistructured interviews were conducted with clinic personnel (leaders, physicians, and staff) at 2 FQHCs in Northern California, between December 2020 and April 2021, to examine telehealth adoption and use of 2 synchronous modalities (audio-video and audio-only or phone) during the pandemic.

Results: Physicians and staff reported several positive changes as a result of using telehealth, including increases in patient reach, reductions in no-show rates, and an improved ability to discuss specific medications that patients generally have nearby for reference at home. Other changes occurring during telehealth use had mixed or negative impacts on care provision. For example, the elimination of body language cues, a reduction in the amount of information exchanged, and a reported reduced ability to develop and foster interpersonal connections affected the patient-physician relationship. Respondents also described distractions that were present in some virtual appointments, such as background noise, interruptions, or when patients were multitasking (ie, cooking and cleaning). Modifications to clinic workflow and care processes were reported as well, including the need to triage appointment types (in person vs virtual), and to conduct previsit intake interviews by phone. Clinics developed work-arounds for addressing social and nonmedical needs, such as mailing or emailing resources or pamphlets to patients or providing referrals and support by phone. Respondents also described additional considerations or processes to address newfound privacy needs of telehealth, including confirming whether patients were in a private space during the visit, switching from video to phone visits to increase privacy if necessary, and requesting follow-up from physicians if the patient was unable to share pertinent information due to a lack of privacy during a virtual appointment.

Conclusions: Telehealth implementation in FQHCs required modifications to care processes and impacted the patient-physician relationship. These findings highlight unique challenges and opportunities for disseminating and sustaining telehealth in settings that deliver care to safety net populations. Guidelines and evidence-based practices are needed to improve telehealth use in FQHCs, including strategies to increase information exchange during virtual appointments and support interpersonal connections between patients and physicians. The following are also needed: best practices for how clinics can most effectively triage virtual appointments; protocols to further mitigate privacy issues and decrease distractions during telehealth appointments; and identifying when telehealth can best supplement in-person care to improve patient outcomes and clinic efficiency.

Conflicts of Interest: None declared.

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Abstract

Predicting Clinically Significant Weight Loss in a Multimodal Commercial Digital Weight Management Program: Machine Learning Approach

Richard Bannor¹, MPH; Sherry Pagoto¹, PhD; Michelle I Cardel², PhD; Alexandra Lee²; Gary D Foster², PhD; Ran Xu¹, PhD

¹Department of Allied Health Sciences, University of Connecticut, Storrs, CT, United States

²WW International, Inc, New York, NY, United States

Corresponding Author:

Richard Bannor, MPH

Department of Allied Health Sciences

University of Connecticut

Koons Hall

358 Mansfield Rd, Unit 1101

Storrs, CT, 06269-1101

United States

Phone: 1 8606349594

Email: richard.bannor@uconn.edu

Abstract

Background: Generally, adherence to diet and physical activity in behavioral weight management programs predicts weight loss. Moreover, meeting attendance and platform or app use predict weight loss. Many weight-loss–prediction studies primarily use regression. However, little is known about the levels of adherence to specific web-based weight management program tools as well as behavioral and psychosocial variables that predict significant weight loss using machine-learning approaches.

Objective: In this paper, we aimed to examine variables that can predict clinically significant weight loss ($\geq 5\%$) in a multimodal commercial digital weight management program, including levels of adherence to intervention tools and changes in behavioral and psychosocial states using machine-learning approaches.

Methods: We performed secondary analyses using data from a one-arm trial online WW (formerly Weight Watchers) weight-loss intervention program, lasting 6 months, that recruited US adults with a BMI range of 25–45 kg/m². We used a WW Bluetooth scale and digital intervention tools such as mobile app for point tracking, weekly virtual workshops, weekly wellness check-ins and a Facebook group, and changes in psychosocial and behavioral variables (ie, food craving, Pittsburgh sleep quality index, diet, hunger, and physical activity). Using the receiver operating characteristics (ROC) curve, we identified the predictors of significant weight loss, as well as the associated cut points (CP) and area-under-curve (AUC) values for each variable. We further used a classification tree to confirm the importance of these predictors and assessed the out-of-sample prediction accuracies using 5-fold cross-validation.

Results: Participants (N=153) were 70% female and 66% White, with a mean age of 41.09 (SD 13.78) years, and had a mean BMI of 31.8 kg/m² (SD 5.0). Approximately 51% of participants lost $\geq 5\%$ weight. Using ROC curve, food tracking (CP $\geq 9.4\%$; AUC=0.744; $P < .001$), increase in self-weighing (CP ≥ 0.5 ; AUC=0.733; $P < .001$), wellness check-in attendance (CP $\geq 31.3\%$; AUC=0.723; $P < .001$), and workshop attendance (CP $\geq 35.4\%$; AUC=0.699; $P < .001$) were identified as significant predictors of achieving $\geq 5\%$ weight loss. We confirmed the importance of these variables using classification tree, and together they achieved an out-of-sample prediction accuracy of 78%.

Conclusions: ROC curve and classification tree provided consistent results of predictors of clinically significant weight loss (ie, food tracking, increase in self-weighing, workshop attendance, and wellness check-in attendance). Our study extends the weight management literature by using machine-learning approaches to identify significant weight loss predictors and specific levels of these predictors needed to achieve clinically significant weight loss.

Conflicts of Interest: None declared.

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weight loss; digital weight management program; machine learning

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Abstract

Physicians' and Individuals' Attitudes Toward Digital Mental Health Tools: Protocol for a Web Survey Study With Physician and Stakeholder Interviews

Diogo Nogueira-Leite¹, MSc; Ricardo Cruz-Correia¹, MSc, PhD

Department of Community Medicine, Information and Decision in Health, Faculty of Medicine, University of Porto, Porto, Portugal

Corresponding Author:

Diogo Nogueira-Leite, MSc

Department of Community Medicine, Information and Decision in Health

Faculty of Medicine

University of Porto

Rua Dr Plácido da Costa

Porto, 4200-450

Portugal

Phone: 351 913667140

Email: diogo.fdnl@gmail.com

Abstract

Background: Digital transformation is impacting health care delivery and showing great market dynamism, bringing opportunities and concerns alike. Digital health applications are a vibrant segment where regulation is emerging, with Germany paving the way with its DiGA program. Simultaneously, anxiety and depression constitute global health concerns, and their prevalence is expected to worsen due to the COVID-19 pandemic and its containment measures. Portugal and its National Health System may be a useful testbed for digital health interventions seeking to manage anxiety and depression. This research methodology is very relevant in studies on mental health, making the protocol highly reusable.

Objective: The paper outlines the protocol for a research project on the attitudes of physicians and potential users toward digital mental health apps to improve access to care and patient outcomes and to reduce the burden of disease for anxiety and depression.

Methods: Web surveys will be conducted to acquire data from main stakeholders (physicians and academic community). Data analysis will replicate studies from Dahlhausen and Borghouts to derive conclusions regarding the relative acceptance and likelihood of successful implementation of digital mental health apps in Portugal.

Results: The findings of the proposed studies will elicit important information on how physicians and individuals perceive digital mental health apps interventions to improve access to care and patient outcomes and to reduce the burden of disease for anxiety and depression.

Conclusions: The results of the studies projected in this research protocol will have implications for researchers and academia, industry, and policy makers regarding the adoption and implementation of digital health mental apps and associated interventions.

Conflicts of Interest: None declared.

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Abstract

Can Hybrid In-Person and Virtual Care Delivery Models Increase Telehealth Access to Vulnerable Populations in the Post–COVID-19 Era?

Christina McGinnis¹, BS, MBS; Leah Shafran Topaz¹, BPT, MSc; Meghan Reading Turchioe¹, RN, MPH, PhD; Ruth Masterson Creber¹, RN, MSc, PhD; Brock Daniels¹, MPH, MD

Weill Cornell Medicine, New York, NY, United States

Corresponding Author:

Christina McGinnis, BS, MBS

Weill Cornell Medicine

1300 York Ave.

New York, NY, 10065

United States

Phone: 1 212 746 5454

Email: chm4020@med.cornell.edu

Abstract

Background: The COVID-19 pandemic dramatically increased telehealth use; however, it simultaneously widened the digital health divide. Several studies in New York City (NYC) demonstrated that communities with the highest COVID-19 prevalence also had the lowest telehealth use. Moreover, the social distancing measures used to curb COVID-19 led to isolation, loneliness, and the avoidance of needed in-person care. Mobile integrated health programs utilizing both in-person components and virtual components can overcome social determinants that limit access to telehealth. Our mobile integrated health program, community teleparamedicine (CTP), employs care managers and community paramedics to engage patients with chronic illness and facilitate telehealth visits with emergency physicians.

Objective: We aimed to (1) describe the CTP cohort with respect to demographics and self-reported loneliness and (2) compare CTP visit locations to COVID-19 case rates by zip code.

Methods: Demographics were collected at CTP enrollment, and patients completed the UCLA Loneliness Scale (a summed score of 7 or higher indicates significant loneliness). Patients' experiences with CTP were assessed by using anonymous postvisit surveys with a 5-point Likert scale. We presented descriptive statistics of survey results. CTP patients' home addresses were compared to modified zip code tabulation area data on cumulative rates of COVID-19 cases per 100,000 people (NYC Department of Health's COVID-19 GitHub repository).

Results: From January 2021 to February 2022, a total of 275 patients enrolled in CTP. These patients had an average age of 70 years, 49% were female, 53% were non-White, 16% were Hispanic or Latino, 42% resided in Manhattan, 30% resided in Brooklyn, 20% resided in Queens, and 8% resided in Bronx. Further, 1 in 5 patients reported significant loneliness; 37% lived alone; 61% were single, divorced, or widowed; and 70% did not have a home health aide. Only 8% did not own a computer, 4% did not have internet access, and 23% did not use a smartphone. Between April 2019 and October 2021, nearly 25% of NYC zip codes with CTP usage were among the top 50 zip codes with the highest cumulative rates of COVID-19 cases. CTP patients were satisfied with this hybrid model of virtual care; at least 95% of patients found that it was easy to connect to the physician, were satisfied with the care provided, felt less anxious about needing to return to the hospital, and agreed that CTP was easier than going to the hospital.

Conclusions: The hybrid in-person and virtual CTP program, which was specifically designed to address known barriers to accessing telehealth, successfully reached NYC communities that traditional telehealth programs did not, of which many experienced the highest rates of COVID-19. Our initial results indicate positive patient experiences; however, further qualitative research is needed to fully understand if facilitated telehealth also reduces isolation and loneliness as well as improves health and well-being.

Conflicts of Interest: None declared.

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Abstract

Evaluating the Efficacy of a Self-administered Speech-Language App for People With Chronic, Nonfluent Aphasia: A Pilot Study

Shivani Padhi^{1*}, BSc; Jennifer Mozeiko^{1*}, SLP, CCC, PhD

University of Connecticut, Storrs, CT, United States

* all authors contributed equally

Corresponding Author:

Shivani Padhi, BSc

University of Connecticut

2 Alethia Drive U-1085

Storrs, CT, 06269

United States

Phone: 1 203 599 5096

Email: shivani.padhi@uconn.edu

Abstract

Background: Aphasia is a language deficit that is most often caused by stroke. Speech-language therapy is effective in helping people recover lost language, and it should lead to generalization to untrained tasks and gains in functional language. However, not everyone is able to receive therapy due to a lack of finances; a lack of insurance coverage; or, most recently, COVID-19.

Objective: This study has 3 aims. For aim 1, we investigated whether a person with moderate to severe aphasia could manage the setup of an app-based treatment independently. Our second aim was to evaluate whether conducting an intensive treatment *without* speech-language pathologist (SLP) involvement was feasible. Participants with aphasia were asked to use the app 2 hours per day for 10 days, and we were interested to see if they could maintain this regimen or if frustration or boredom would promote dropout. For the third aim, we determined whether participants with aphasia in our digital treatment would make the same kinds of language gains that they would if they were working with an SLP and whether treatment gains would generalize to other language modalities, indicating that neuroplastic changes occurred due to treatment.

Methods: Our pilot study used a single-subject design, with 3 participants experiencing nonfluent aphasia at least 1 year poststroke. Participants were trained to use a comprehension and production app, with instructions to use the app 2 hours per day for 10 days (total treatment time=20 hours). Multiple standardized assessments were taken at the following three time points: pretreatment, 1 week posttreatment, and 10 weeks posttreatment. A recording device was used to capture pretreatment and 10-week posttreatment at-home conversations between the participants with aphasia and the conversational partner.

Results: Data were variable among our 3 participants (P1, P2, and P3). P1 and P3 showed clinically significant improvements on several measurements of language; P2 did not. Aphasia severity also decreased in P1 and P3. The analysis of the discourse recorded in the home environments showed that P1 and P3 each made use of the app-trained words in spontaneous conversation (increase of >63%). All 3 participants with aphasia reported positive increases in quality of life, and all continued to use the app even after the treatment period ended.

Conclusions: Independently administered, intensive treatment had salubrious effects on 3 participants with aphasia. P2's lack of improvement on language measures was attributed to not feeling challenged enough by the app. In general, the participants in this study were able to guide themselves in an independent manner to complete an intensive study, without using any SLP support. Though this study was only piloted on 3 individuals, it lays the groundwork for future studies assessing the independence of participants with aphasia in managing their own treatment.

Conflicts of Interest: None declared.

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Abstract

Single-Arm Trial of a Flexible Multicomponent Commercial Digital Weight Management Program

Sherry Pagoto¹, PhD; Ran Xu¹, PhD; Tiffany Bullard², PhD; Richard Bannor¹, MPH; Kaylei Arcangel¹, MS; Joseph DiVito¹, BS; Gary D Foster^{2,3}, PhD; Michelle I Cardel², RD, MS, PhD

¹Department of Allied Health Sciences, University of Connecticut, Storrs, CT, United States

²WW International, New York, NY, United States

³Center for Weight and Eating Disorders, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA, United States

Corresponding Author:

Sherry Pagoto, PhD
Department of Allied Health Sciences
University of Connecticut
Benjamin Franklin Koons Hall
358 Mansfield Rd
Storrs, CT, 06269
United States
Phone: 1 (860) 486 2834
Email: sherry.pagoto@uconn.edu

Abstract

Background: Hunger and food cravings predict poor outcomes in lifestyle interventions for weight management. For this reason, flexible weight management programs, as opposed to restrictive weight management programs, are needed. WW (formerly *Weight Watchers*)—a widely available, commercial weight management and wellness program—includes an approach that allows participants to obtain a personalized zero-point food (ZPF) list, which includes foods that do not need to be weighed, measured, or tracked. With over 300 potential options, ZPFs can include fruits, vegetables, legumes, whole grains, nonfat dairy, and lean sources of protein. Participants are assigned an individualized daily and weekly point target and can use ZPFs to help budget their points throughout the day, which can nudge participants toward a healthier overall dietary pattern.

Objective: In a 6-month, single-arm trial, we examined the efficacy of WW when delivered via multimodal digital tools, including a mobile app for assisting with point tracking, weekly virtual workshops, weekly 5-minute wellness check-ins, and a Facebook group in which participants could socialize and support each other.

Methods: The outcomes included weight change from baseline, as measured by the Bluetooth scales provided to each participant; hunger (visual analogue scale); food cravings (Food Craving Inventory); the intake of fruits and vegetables (The Five Factor Screener); physical activity (Global Physical Activity Questionnaire); and overall well-being (WHO-5 Well-Being Index).

Results: Of the 153 participants, 70% were female, and 66% were White. Participants' mean age was 41.09 (SD 13.78) years, and they had a mean BMI of 31.8 (SD 5.0) kg/m². Retention was high, as 91.5% provided 6-month follow-up data. Participants lost an average of 5.1% of body weight from baseline to 6 months (mean -4.4, SD 4.87 kg; $P < .01$), with 51% losing clinically significant weight ($\geq 5\%$). Hunger significantly declined over 6 months (mean percent change -14.74%, SD 64.28%; $P < .01$), as did food cravings (mean percent change -16.99%, SD 19.98%). The intake of fruits (mean percent change 65.95%, SD 188.78%; $P < .01$), vegetables (mean percent change 68.29%, SD 172.61%; $P < .05$), and salad (mean percent change 127.43%, SD 250.82%; $P < .001$) significantly increased. Engagement in moderate physical activity increased by an average of 32 (SD 133) minutes per day ($P < .01$), and sedentary time decreased by 90 (SD 24.5) minutes per day ($P < .001$). Finally, well-being significantly increased (mean change 17.77%, SD 46.21%; $P < .01$).

Conclusions: This program, which used a less restrictive method of food tracking and provided personalized ZPFs, resulted in significant weight loss and an increase in fruits, vegetables, and exercise, while also reducing hunger and food cravings. Future research should compare the effectiveness of these approaches to traditional programs that require the self-monitoring of all foods and beverages.

Trial Registration: ClinicalTrials.gov NCT04302389; <https://clinicaltrials.gov/ct2/show/NCT04302389>

Conflicts of Interest: None declared.

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KEYWORDS

mobile apps; diet tracking; wellness; social media intervention; Facebook; weight management; obesity; digital health; virtual counseling; WW; weight watchers

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Abstract

Black Girls Run Too: A Content Analysis of the Black Girls Run National Facebook Group

Jolaade Kalinowski¹; Christie Idiong²; Loneke Blackman-Carr³; Kristen Cooksey-Stowers⁴; Sharde Davis⁵; Cindy Pan⁴; Alisha Chhabra⁴; Lisa Eaton⁶; Kim Gans⁶; Sherry Pagoto⁴

¹The University of Connecticut, Stamford, CT, United States

²The University of Connecticut, Storrs, CT, United States

³Department of Nutritional Sciences, The University of Connecticut, Storrs, CT, United States

⁴Department of Allied Health Sciences, The University of Connecticut, Storrs, CT, United States

⁵Department of Communication, The University of Connecticut, Storrs, CT, United States

⁶Department of Human Development and Family Sciences, The University of Connecticut, Storrs, CT, United States

Corresponding Author:

Jolaade Kalinowski

The University of Connecticut

1 University Place

Stamford, CT, 06901

United States

Email: jolaade.kalinowski@uconn.edu

Abstract

Background: Recent evidence suggests that 59%-73% of Black women are not reaching recommended targets for physical activity (PA). PA is a key modifiable lifestyle factor that can help mitigate risk for chronic diseases such as obesity, diabetes, and hypertension, which disproportionately affect Black women. Web-based communities focused on PA have been emerging in recent years as digital gathering spaces to provide support for PA in specific populations.

Objective: The purpose of this study was to conduct a content analysis of the Black Girls Run (BGR) Facebook page, which is devoted to promoting PA in Black women and has over 230,000 followers. Such data can inform future social media-based interventions.

Methods: We collected 397 posts and associated engagement data from the national BGR Facebook page for the 6-month period between June 1 and December 31, 2021. We then conducted a content analysis of these posts and examined which types of posts elicited the most engagement.

Results: The content analysis revealed 8 categories of posts: shout-outs (30.7%), goals or motivational posts (16.3%), announcements (15.9%), sponsored posts or advertisements (13.6%), health-related posts (11.0%), the lived Black experience posts (5.79%), self-care posts (3.78%), and holiday-related posts or greetings (2.02%). These 397 posts attracted a total of 55,573 engagements. Of these, 33,560 were “reactions” (eg, likes) and 5082 were shares. Shout-outs elicited the highest engagement (22,268 engagements), followed by goals or motivational posts (11,490 engagements).

Conclusions: The majority of content on the BGR Facebook page (62.9%) was focused on celebrating member achievements, motivating members to become active, and announcing and promoting active events. This content also attracted 75% of the engagement on this page. BGR appears to be a rich web-based community that offers social support for PA as well as culturally relevant health and social justice content. Web-based communities may be uniquely positioned to engage minoritized populations in health behavior. Further research should explore how to best leverage web-based communities in interventions to increase PA and other lifestyle behaviors.

Conflicts of Interest: None declared.

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physical activity; social media; African Americans; women’s health; mHealth

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Abstract

Satisfaction of a Virtually Delivered Supervised Exercise Program Specific to Breast Cancer Survivors on Endocrine Therapy

Rafael Akira Fujita^{1,2}, BSc, MSc; Sam Myers¹, BSc, MSc; Kelly Mackenzie¹, BSc, MSc; Nathalie LeVasseur³, BSc, MD; Guy Faulkner⁴, BSc, MSc, PhD; Kristin Campbell¹, PT, MSc, PhD

¹Department of Physical Therapy, Faculty of Medicine, The University of British Columbia, Vancouver, BC, Canada

²Ribeirão Preto College of Nursing, University of São Paulo, Ribeirão Preto, Brazil

³Division of Medical Oncology, British Columbia Cancer Agency, Vancouver, BC, Canada

⁴Faculty of Education, Department of Kinesiology, The University of British Columbia, Vancouver, BC, Canada

Corresponding Author:

Rafael Akira Fujita, BSc, MSc

Department of Physical Therapy

Faculty of Medicine

The University of British Columbia

212, 2177 Wesbrook Mall

Vancouver, BC, V6T 1Z3

Canada

Phone: 1 6729990052

Email: rafakirafujita@gmail.com

Abstract

Background: Only 11% of breast cancer survivors currently meet the exercise oncology guidelines, and the restrictions to gyms and time outside of home related to the COVID-19 pandemic may have aggravated this situation. To address this, we are testing the efficacy of a twice-weekly, 8-week, supervised, synchronous exercise program delivered virtually for participants diagnosed with breast cancer, called the BE-FIT program.

Objective: The aim of this paper is to examine the preliminary participant's satisfaction in participating in the BE-FIT program.

Methods: Participants are asked to complete a "Participant Satisfaction Questionnaire" using a range of 1-5 for each question (1 represents "very difficult," 2 "difficult," 3 "neutral," 4 "easy," and 5 "very easy"). The questions were related to the following: level of difficulty to access classes; level of clarity of information received during classes; level of capacity to continue practicing exercises independently after finishing the exercise program; and level of how likely one would recommend the program to a friend.

Results: For the ongoing efficacy trial, we collected responses from 40 participants. The participants reported that it was "very easy" and "easy" to access and participate in the virtual exercise session (63% and 37%, respectively). When asked if the information received from the exercise training was clear and easy to understand during virtual exercise sessions, 93% reported "very easy," and the remainder reported "easy." Regarding continuing the exercise independently with the content learned in the program, 87% of the participants reported "very easy" or "easy" (31% and 56%, respectively), and 13% reported "neutral." Lastly, 80% of participants reported "very easy" to recommend the BE-FIT program to a friend, 18% reported "easy," and 2% reported "neutral."

Conclusions: A virtually delivered supervised program seems to be an excellent alternative to in-person supervised exercise programs to provide easy access and clear information during the classes with potential influence on the future practice of exercises.

Conflicts of Interest: None declared.

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physical exercise; cancer survivorship; virtually delivered

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Abstract

Adapting an Advance Care Planning Intervention Delivered via Telehealth for Older Patients With Acute Myeloid Leukemia and Myelodysplastic Syndromes

Chandrika Sanapala¹, MS

Division of Hematology/Oncology, University of Rochester Medical Center, Rochester, NY, United States

Corresponding Author:

Chandrika Sanapala, MS

Division of Hematology/Oncology

University of Rochester Medical Center

601 Elmwood Avenue

Rochester, NY, 14642

United States

Phone: 1 585 275 4391

Email: chandrika_sanapala@urmc.rochester.edu

Abstract

Background: Older patients with acute myeloid leukemia (AML) and myelodysplastic syndromes (MDS) experience high-intensity care (eg, chemotherapy, hospitalization, and life-sustaining treatments) during the end of life. Early advance care planning (ACP) may promote end-of-life care that is more consistent with patients' values and goals. As the COVID-19 pandemic has resulted in a rapid shift to telehealth, the use of such methods may improve access to ACP among this vulnerable population.

Objective: In this qualitative study, we aimed to adapt an evidence-based ACP intervention, the Serious Illness Care Program (SICP), to be delivered via telehealth for older adults with AML and MDS.

Methods: We conducted semistructured interviews with 14 oncology clinicians and 10 palliative care clinicians (physicians, advanced practitioners, and nurses), as well as 15 patients and 4 caregivers. Oncology and palliative care clinicians were recruited if they had cared for at least one patient with AML or MDS in the past year. Eligible patients were aged ≥ 60 years and had a diagnosis of AML or MDS, and their caregivers, if available, were recruited. Interviews were transcribed and qualitatively coded by 2 independent coders using MAXQDA (VERBI GmbH). We used directed content analyses focused on the content and delivery (telehealth vs in-person ACP) of the SICP.

Results: The mean ages of clinicians, patients, and caregivers were 48, 71, and 66 years, respectively. Health literacy, which was measured using the 6-item Cancer Health Literacy Test, was high in both patients (score: mean 6; range 0-6) and caregivers (score: mean 6). The majority of participants liked the intent and content of the SICP, with suggestions mainly on wording changes. One patient stated, "I wish I'd had a little of this back in the beginning, it would've eased my way through..." Oncologists expressed positive feedback for the SICP language "planting the seeds" of the ACP conversation, emphasizing that "it doesn't mean that it's going to happen." Oncology and palliative care clinicians were comfortable with conducting ACP discussions via telehealth. Providers felt that the use of telehealth in ACP conversations would allow them to "deliver care with less burden." Most patients and caregivers however were comfortable with conducting ACP conversations via telehealth "after the first couple of appointments [being] in-person" to first establish care. Lastly, providers felt that including a geriatric assessment summary prior to ACP conversations "helps to ground and anchor the discussion," as it provides a "sense of baseline functionality...[and] quality of life."

Conclusions: Overall, the SICP was well received by clinicians, patients, and caregivers. This stakeholder feedback will help us to better understand current barriers to ACP conversations and gauge whether telehealth may be utilized to help improve access to ACP. This feedback will be used to further refine the SICP intervention for a future single-arm pilot study.

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KEYWORDS

advance care planning; telehealth; acute myeloid leukemia; myelodysplastic syndromes

Multimedia Appendix 1

UConn quotes table.

[[PNG File , 68 KB - iproc_v9i1e39417_app1.png](#)]

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Abstract

Increasing Peer Support for Opioid Use Disorder Recovery During COVID-19 Through Digital Health: Protocol for a National Randomized Controlled Trial

Megan Ranney^{1,2,3*}, MD, MPH; Brandon D L Marshall^{4*}, PhD; Kirsten Langdon^{5,6*}, PhD; Sarah Wiehe⁷, MD, MPH; Matthew Aalsma⁷, PhD; Brendan Jacka⁴, PhD; Alyssa Peachey⁴, MHA; Francesca Beaudoin^{1,4}, MD, PhD

¹Department of Emergency Medicine, Warren Alpert School Medical School of Brown University, Providence, RI, United States

²Department of Health Services, Policy, and Practice, Brown University School of Public Health, Providence, RI, United States

³Brown-Lifespan Center for Digital Health, Providence, RI, United States

⁴Department of Epidemiology, Brown University School of Public Health, Providence, RI, United States

⁵Department of Psychiatry, Rhode Island Hospital, Providence, RI, United States

⁶Department of Psychiatry and Human Behavior, Warren Alpert School Medical School of Brown University, Providence, RI, United States

⁷Department of Pediatrics, Indiana University School of Medicine, Indianapolis, IN, United States

*these authors contributed equally

Corresponding Author:

Megan Ranney, MD, MPH

Department of Emergency Medicine

Warren Alpert School Medical School of Brown University

222 Richmond St

Providence, RI, 02903

United States

Phone: 1 401 863 3330

Email: megan_ranney@brown.edu

Abstract

Background: Increasing numbers of opioid overdoses have been observed during the COVID-19 pandemic, likely reflecting the pandemic's multiple effects on this already vulnerable population. People in recovery from opioid use disorder (OUD) have reported disproportionate psychosocial distress and isolation, as well as significant disruptions in access to treatment, including peer support, during the COVID-19 pandemic. Peer support is a key component of many evidence-based OUD recovery programs; it improves recovery capital, treatment engagement, and perceived social support and reduces psychosocial distress, particularly when used in conjunction with other evidence-based treatments, such as medication for OUD.

Objective: This study aims to evaluate a novel mobile peer support app platform among a national sample of individuals in recovery from OUD as an adjunct to usual care during the COVID-19 pandemic.

Methods: Individuals residing in the United States who are aged ≥ 18 years; own a smartphone; and self-report being in recovery for an OUD, being in treatment for an OUD (ie, in the past 30 days received prescribed methadone, naltrexone, or buprenorphine), or currently receiving some form of assisted recovery support (n=1300) will be recruited through online, targeted social media advertisements. Eligible participants will be randomly assigned (1:1) to a mobile peer recovery support intervention utilizing a novel smartphone-based app or to a control. Participants will complete 1 baseline survey and then a follow-up survey 1, 3, and 6 months after randomization. The primary aim of recovery capital will be determined by the change in recovery capital between study groups over the 6-month study period. We will also examine treatment engagement by using administrative data from a subset of individuals (n=650) residing in Rhode Island and Indiana.

Results: As of June 2022, we enrolled 43 participants.

Conclusions: If this mobile app demonstrates efficacy among a large national sample of patients, it has the potential to augment existing treatment programs, improve recovery capital, and reduce the disproportionate impacts of COVID-19 on this vulnerable population.

Conflicts of Interest: None declared.

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opioid use disorder; mobile application; peer recovery

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Abstract

Telehealth Perceptions Among US Immigrant Patients: Cross-sectional Study Within an Academic Internal Medicine Practice

Richa Gupta^{1*}, BSc; Susan Levine^{2*}, MPH, MD; Kenda Alkwatli², MD; Clara Weinstock²; Alla Almoushref², MD; Saira Cherian², DO; Dominique Feterman Jiminez², MD; Greishka Nicole Cordero Baez¹, BSc; Angela Hart², DO

¹School of Medicine, University of Connecticut, Farmington, CT, United States

²UConn Health, University of Connecticut, Farmington, CT, United States

*these authors contributed equally

Corresponding Author:

Susan Levine, MPH, MD

UConn Health

University of Connecticut

263 Farmington Avenue

Farmington, CT

United States

Phone: 1 8606792000

Email: slevine@uchc.edu

Abstract

Background: The use of telemedicine has increased dramatically through the COVID-19 pandemic. While data are available about patient satisfaction with health care through telemedicine, little is known about the immigrant patient experience.

Objective: We investigated whether immigrant patients would prefer in-person visits and have higher ratings for interpersonal communication during in-person rather than telemedicine visits. We hoped to identify the reasons behind immigrant visit preferences and consider these reasons to guide suggestions for more equitable use of and access to visit options.

Methods: Overall, 270 patients including 122 immigrants and 148 nonimmigrants were seen by 4 internal medicine providers in either an in-person (n=132) or telemedicine (n=138) university practice setting. Immigrants were defined as having been born outside of the United States. Patients were queried between February and April 2021 using an adaptation of a previously validated patient satisfaction survey containing standard questions developed by the Consumer Assessment of Healthcare Providers and Systems Program. Patients seen via in-person visits completed a paper copy of the survey. The same survey was administered by a follow-up phone call for telemedicine visits. Patients surveyed spoke English, Spanish, or Arabic and were surveyed in their preferred language. For televisits, the same survey was read to the patient by a certified translator. The survey comprised 9 questions on a 5-point Likert scale assessing satisfaction under the categories of access to care, interpersonal interaction, quality of care, and next visit preference. An additional write-in question assessed reasons for subsequent visit type preferences. Survey question responses were compared with paired *t* tests.

Results: Across both immigrant and nonimmigrant patient populations, satisfaction with perceived quality of care was universally high regardless of visit type (televisits: $P=.80$ and $P=.60$; in-person: $P=.76$ and $P=.37$). During televisits, immigrants were more likely than nonimmigrants to feel that providers spent sufficient time with them ($P<.001$). Different perceptions were noted among nonimmigrant patients. Nonimmigrants tended to perceive more provider time during in-person visits ($P=.006$). When asked to comment on reasons behind subsequent visit preference, nonimmigrant patients prioritized convenience, whereas immigrants noted the telemedicine advantage of not having to navigate other office logistics.

Conclusions: While satisfaction was quite high for both telemedicine and in-person visits across immigrant and nonimmigrant populations, significant differences in patient priorities were identified. Immigrants found televisits desirable because they felt they spent more time with their providers and were able to avoid additional office logistics that are often challenging barriers for non-English speakers. This suggests opportunities to use information technology to provide cultural and language-appropriate information throughout the in-person and telemedicine visit experience of immigrants, such as assistance with call-in scheduling, appointment reminders, and portal access. A focus on diminishing these barriers will help reduce health care inequities among immigrant patients.

Conflicts of Interest: None declared.

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telemedicine; immigrant patients; patient satisfaction

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Abstract

Experiences of Using a Telepresence Robot During the COVID-19 Pandemic

Lahila Fanta Diaby^{1,2,3*}, MSc; Birthe Dinesen^{1*}, MSc, PhD

¹Laboratory for Welfare Technology – Digital Health & Rehabilitation, Sport Sciences – Performance and Technology, Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

²Tekno-Antropologi & Participation, Department of Planning, Aalborg University, Aalborg, Denmark

³Department of Radiography, University College of Northern Jutland, Aalborg, Denmark

*all authors contributed equally

Corresponding Author:

Lahila Fanta Diaby, MSc

Laboratory for Welfare Technology – Digital Health & Rehabilitation, Sport Sciences – Performance and Technology

Department of Health Science and Technology

Aalborg University

Niels Jernes vej 12, A5-203

Aalborg, 9220

Denmark

Phone: 45 72691034

Email: lahila.diaby@outlook.com

Abstract

Background: School absenteeism due to mental disorders and physical disabilities is an international problem. When children are absent from primary school, they do not receive the fundamental educational foundation they are entitled to. This affects their further opportunities to receive higher education later in their life. Studies show that telepresence robots can include absent students in the teachings and social life at school.

Objective: The purpose of this project was therefore to investigate the opportunities and limitations of using an OriHime telepresence robot to teach absent primary school students during the COVID-19 pandemic.

Methods: This project was a case study from a primary school in Denmark. The study included primary school students (n=3), teachers (n=5), parents (n=2), a school principal, a pedagogue, a school absentee consultant, and a psychologist. The 14 participants were interviewed based on interview guides. In all, 20 hours of observation of OriHime have been made in the classroom conducting in the pilot test. Afterward, OriHime was tested by an absent primary school student for a 2-month period during the COVID-19 pandemic.

Results: The absent students found that OriHime was useful and a good alternative for them to be able to attend class. Teachers and pupils found that OriHime was useful in a class setting but not when conducting outdoor activities. The parents found that OriHime could include the absent students in the teachings and social life in class.

Conclusions: The absent students experienced that OriHime could function as an educational and social tool during COVID-19 and that it was possible to participate in the indoor teachings while being physically absent. The absent students, teachers, and parents found OriHime useful with opportunities but stated some limitations. Based on the results, a guideline for the implementation of OriHime in Danish primary schools was produced.

Conflicts of Interest: None declared.

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Abstract

Clinical Outcomes After Viewing Video Education on Danger Signs and Symptoms of Worsening Heart Failure and Self-care Actions

Nancy Albert^{1*}, PhD; Carol Babcock^{2*}, MFT; Anna Maria Gray-Leyko³, MS; James Bena¹, MS; Shannon Morrison¹, MS; Dorothy Saylor², RN; Michelle Levay^{1*}, MSN

¹Cleveland Clinic, Cleveland, OH, United States

²Atrium Health, Macon, GA, United States

³Wellspring Health, York Hospital, York, PA, United States

*these authors contributed equally

Corresponding Author:

Nancy Albert, PhD

Cleveland Clinic

9500 Euclid Avenue

Mail code J3-4

Cleveland, OH, 44195

United States

Phone: 1 2164447028

Fax: 1 2164451776

Email: albertn@ccf.org

Abstract

Background: Patients with heart failure (HF) must understand subtle escalation in fatigue, dyspnea, and edema before they are triggered to control worsening status.

Objective: The aim of this paper is to examine if video education of HF danger signs or symptoms recognition and control, developed using symbolic modeling (social cognitive theory), leads to between-group differences in functional status, symptoms, and self-efficacy for managing symptoms at 30-days, all-cause, and HF-related hospitalization, emergency department visits, and death at 30, 90, and 180 days.

Methods: Using a 2-group, randomized controlled, multicenter, single-blind design, patients received video education (VE) plus usual care (UC) or UC alone before hospital discharge. VE patients also had access to content post discharge. Thirty-day functional status, fatigue, dyspnea, and self-efficacy for managing symptoms were assessed using valid, reliable tools. In the analysis, multivariable models were created to compare changes in patient-reported outcomes from baseline to 30-days post discharge and morbidity or mortality outcomes up to 180 days.

Results: Of 369 VE and 377 UC patients enrolled from 7 sites, mean age was 68.0 (SD 12.4) years, and 206 (55.9%) were male. At 30 days, there were no between-group differences in the change in functional status, fatigue, dyspnea, and self-efficacy from baseline. In multivariable analyses, between-group outcomes did not differ at 30 or 90 days. At 180 days, HF-related events and HF-related hospitalization were higher in the video group—odds ratios (95% CI): 1.42 (1.04, 1.94), $P=.03$; and 1.44 (1.05, 1.97), $P=.03$, respectively. In time-to-event adjusted analyses, video patients had earlier HF-related hospitalization, compared to UC patients—hazard ratio (95% CI) 1.32 (1.02, 1.72), $P=.04$.

Conclusions: Video education on recognition and control of danger signs or symptoms paradoxically increased HF-related events and hospitalization and decreased time to first HF-related hospitalization. Increased recognition of subtle HF signs or symptoms via video education is valuable but must be connected to patient or family self-care actions that reduce HF signs or symptoms.

Trial Registration: ClinicalTrials.gov NCT03657459; <https://clinicaltrials.gov/ct2/show/NCT03657459>

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heart failure; video education; danger signs

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Abstract

Telenursing and Telemonitoring During and Beyond the COVID-19 Pandemic

Tomoko Kamei¹, PhD

St Luke's International University, Tokyo, Japan

Corresponding Author:

Tomoko Kamei, PhD

St Luke's International University

10-1 Akashi-cho

Chuo-ku

Tokyo, 1040044

Japan

Phone: 81 3 5550 2283

Email: kamei@slcn.ac.jp

Abstract

Background: The presenter will be discussing home monitoring-based telenursing for people with chronic conditions. This technology has been implemented in home-care individuals with chronic obstructive pulmonary disease, type 2 diabetes, congestive heart failure, lung cancer, and amyotrophic lateral sclerosis, who are treated at home, including during the COVID-19 pandemic. The pandemic, which began in late 2019, has limited our everyday activities and opportunities to connect with people. Older adults with chronic conditions are most especially affected. While telenursing practice is not so familiar in the Japanese context, the Japan Academy of Home Care (2021) first defined telenursing as “information and communication technologies involving telecommunication provided by nurses.” Furthermore, we are providing seminars for the nurses and expanding their capacity on how to provide efficient telenursing support for people receiving home care.

Objective: This study aims to present effective telenursing practice examples, as well as the challenges surrounding the use of technology in care for older adults with chronic conditions during and beyond the COVID-19 pandemic.

Methods: A fully longitudinal mixed methods design was used to evaluate the physical and emotional fluctuations of people from qualitative and quantitative strands, and we integrated the results and meta-inferences.

Results: The patients showed a continuous change over time in terms of their physical and psychological status. Living with symptoms, the patients were constantly reminded of the reality of their disease and the activity limitations the pandemic brought. At times, they were able to find hope for the future by actively controlling and managing their disease, maintaining their health and physical function, and realizing that they could live a normal life. On the other hand, they experienced a loss of activity, a decline in physical function, and anxiety about the future, brought about by the pandemic. Thus, people who receive telenursing are on a dynamic disease trajectory that vacillates between hope and despair, and telenursing can help them.

Conclusions: Performing telemonitoring and telerehabilitation of older adults throughout the pandemic, as well as adapting to their physical and emotional fluctuations, will improve their quality of life.

Conflicts of Interest: None declared.

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Abstract

Exoskeletons in the Digital Era: A Way to Improve the Level of Physical Activity Among Older Citizens

Pascal Madeleine¹, MSc, PhD, DSC; Daniel J R Christensen²; Jesper Franch¹, MSc, PhD; Lone Svendsen², MSc; Ernst A Hansen¹, MSc, PhD, DSC; Hanne Hostrup², MSc; Cristina-Ioana Pircscoveanu¹, MSc

¹Sport Sciences - Performance and Technology, Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

²Aalborg Municipality, Aalborg, Denmark

Corresponding Author:

Pascal Madeleine, MSc, PhD, DSC

Sport Sciences - Performance and Technology

Department of Health Science and Technology

Aalborg University

Fredrik Bajers vej 7

Aalborg, 9220

Denmark

Phone: 45 99408833

Fax: 45 98154008

Email: pm@hst.aau.dk

Abstract

Background: The COVID-19 pandemic has had a negative impact on the level of physical activity among older citizens.

Objective: The aim of this short paper is to set focus on the potential benefits of assistive walking devices for older citizens.

Methods: In this feasibility study, 24 older citizens aged >65 years participated in the study. The participants answered to the following questionnaires after fulfilling a consent form: Tilburg Frailty Indicator, International Physical Activity Questionnaire, and Quality of Life. Then, physiological and biomechanical assessments were made in a laboratory setting with and without wearing an exoskeleton (aLQ, IMASEN Electrical Industrial Co). The aLQ is a passive-assistive lower-limb walking exoskeleton activated by a cam spring system designed to improve gait. After the tests, the participants were asked to answer the following questions: "Do you feel the exoskeleton is helping you to walk?" and "What is your opinion on the device?"

Results: The participants were community-dwelling older individuals, aged 72.6 (SD 4.5) years, and were characterized by an overall high level of physical activity of 3069 (SD 2847) metabolic equivalent-minutes per week. Their Tilburg Frailty Indicator indicated an overall frailty score of 3.5 (SD 2.5). The participants reported a Quality of Life score of 6.7 (SD 1.6) and an overall health score of 76.4 (SD 17.1). Moreover, of the 24 participants, 7 (29%) reported that carrying the tested exoskeleton did not induce any noticeable changes, and 3 (10%) reported that they walked better with the device than without.

Conclusions: These findings are of importance in our current digital era where the COVID-19 pandemic forced municipalities and hospitals to cancel or postpone the training and rehabilitation of older citizens, resulting in a degradation of the level of physical activity and health in general. The use of assistive walking devices can be a way to improve or maintain their level of physical activity. Future studies using a prospective design should confirm that.

Conflicts of Interest: None declared.

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Abstract

Challenges and Opportunities of the Use and Adoption of Telemedicine for Diabetes Care and Management During the COVID-19 Pandemic and Beyond

Rabab Altabtabaei¹, BSc, MSc; Dari Alhuwail^{1,2}, BSc, MSc, PhD

¹Information Science Department, Kuwait University, Sabah AlSalem University City, Kuwait

²Health Informatics Unit, Dasman Diabetes Institute, Dasman, Kuwait

Corresponding Author:

Dari Alhuwail, BSc, MSc, PhD

Information Science Department

Kuwait University

College of Life Sciences

PO Box 5969

Sabah AlSalem University City, 13060

Kuwait

Phone: 965 24633214

Email: dari.alhuwail@ku.edu.kw

Abstract

Background: More than half of the world's population deals with noncommunicable diseases causing premature death. Leveraging digital solutions like telemedicine, health care providers (HCPs) can provide medical care remotely. Yet, there is little known about the contextual challenges and opportunities of leveraging telemedicine solutions in varying socioeconomic and cultural contexts, including Kuwait.

Objective: The aims of this paper were as follows: (1) uncover the challenges and opportunities of adopting and using telemedicine for diabetes care and management from the viewpoints of HCPs and patients with diabetes; (2) explore nonfunctional requirements for telemedicine applications for diabetes care and management; and (3) offer recommendations to improve the adoption of telemedicine in Kuwait's health care system for diabetes care and management.

Methods: Through semistructured interviews, this study employed a qualitative and exploratory design to uncover rich context-specific findings. Participants were recruited via social media platforms. The analysis followed a thematic analysis approach and used the framework method. Researchers used the "diffusion of innovation" model as a lens to guide the analysis and interpretation of the results.

Results: A total of 20 interviews were conducted—10 (50%) HCPs and 10 (50%) patients with diabetes. The participants were familiar with and interested in adopting telemedicine. Challenges included a lack of telemedicine infrastructure and how to increase patients' technology awareness. Patients with diabetes mentioned that telemedicine would save time and effort. The participants suggested developing a secure, user-friendly telemedicine solution. They stated the importance of telemedicine during the pandemic, as many diabetes cases can be followed up online, which reduces virus spread and increases patients' safety.

Conclusions: The findings from this study can give a better understanding of what HCPs and patients with diabetes need to accept the adoption of telemedicine in resource-rich countries like Kuwait. The COVID-19 pandemic impacted the ways HCPs deliver medical care to patients and encouraged both HCPs and patients to explore the digital platform for continuous care and management of diabetes.

Conflicts of Interest: None declared.

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Abstract

Implementation Challenges for Danish Hospitals in Digital Transformation

Kristian Kidholm¹, PhD

Center for Innovative Medical Technology, Odense University Hospital, University of Southern Denmark, Odense C, Denmark

Corresponding Author:

Kristian Kidholm, PhD

Center for Innovative Medical Technology

Odense University Hospital

University of Southern Denmark

Sdr Boulevard 29

Odense C, 5000

Denmark

Phone: 45 30586477

Email: kristian.kidholm@rsyd.dk

Abstract

Background: Increased digitalization of hospitals is a goal for national and regional health strategies. Since 2019, it has been an explicit goal to increase the use of virtual consultation with hospital patients. Two years after the start of the pandemic, virtual consultation for hospital patients has increased. At Odense University Hospital (OUH), we have seen a 30% and 337% increase in the annual number of telephone and video consultations with patients, respectively. However, the annual number of video consultations is still below 1% of the total number of outpatient visits.

Objective: This presentation describes challenges that may explain the slow implementation of telemedicine at OUH and how these challenges are handled in practice.

Methods: The description is based on 12 meetings with hospital managers and staff at OUH. Analysis of the content of the meetings has been condensed into the major themes specified in the results.

Results: Three main challenges have been found: (1) uncertainty regarding the quality of telemedicine interventions, (2) uncertainty regarding the technical and communicative skills needed to do video consultation, and (3) misunderstandings regarding the economic consequences of telemedicine. To address the uncertainty among our staff toward the clinical quality of telemedicine, a database including randomized trials of telemedicine interventions described in the PubMed database from 2010-2022 was produced. The database shows that more than 96% of interventions results in similar or improved clinical outcomes for selected patient groups. To ensure the skills needed by the hospital staff to do video consultation, we have offered courses in the technical and communicative aspects of video consultation to interested departments. Finally, some members of our staff believe that reducing the number of physical visits may reduce the hospital budget, which is contrary to the actual financial agreements with capitation payment. To address this misunderstanding, information about the true economic consequences of implementing telemedicine has been provided.

Conclusions: Successful implementation of telemedicine requires more than solid evidence; it also requires initiatives focusing on the challenges among the hospital staff.

Conflicts of Interest: None declared.

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Abstract

Promoting Healthy Aging in a Digital World

Heather M Young¹, PhD, RN; Thomas S Nesbitt², MD, MPH

¹Betty Irene Moore School of Nursing, University of California Davis, Sacramento, CA, United States

²School of Medicine, University of California Davis, Sacramento, CA, United States

Corresponding Author:

Heather M Young, PhD, RN

Betty Irene Moore School of Nursing

University of California Davis

Betty Irene Moore Hall

2570-48th St

Sacramento, CA, 95817

United States

Phone: 1 541 261 0395

Email: hmyoung@ucdavis.edu

Abstract

Background: The aging of the population is a global phenomenon, with growing numbers of persons over the age of 65 years, greater diversity of aging societies, and fewer younger people available to provide care and support for older adults. At the same time, enabling technology offers new solutions for aging well, including self-management of chronic conditions, communication with family and the health care team, passive monitoring, and enriching the home and community environments.

Objective: This keynote address highlights the demand characteristics for healthy aging and identifies potential solutions and challenges with enabling technology.

Methods: This presentation is based on literature review and engagement with diverse scientific collaborators.

Results: Major societal trends include the following: the growth of the older population with associated increases in the prevalence of chronic conditions and functional and cognitive disability; increased demand for both health and social services; increased demands on family caregivers at a time when there are fewer caregivers available; explosion of health information and desire to self-manage chronic conditions while remaining at home; widespread workforce shortages; and escalating costs of care. The COVID-19 pandemic exposed the urgency of these demands and exacerbated health needs and workforce shortages while accelerating systematic change to address emergent challenges. New solutions are required to promote health, well-being, and health equity that entail both care model redesign and deployment of enabling technology. Optimal care for the future will place the older adult at the center; assure that information is available to all for good decision-making; and deploy human resources in the most effective way possible, providing the right person at the right time for the right task.

Conclusions: Technology has the potential to collect and make meaningful use of everyday data to inform plans for care; engage and optimize communication among the older adult, family, and care team; and enhance function and well-being. Actualizing this future requires appropriate policy, training, and leadership.

Conflicts of Interest: None declared.

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technology; mobile health; mHealth; sensors; older adults; healthy aging

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Abstract

Reliable Internet of Things for Health Care Technologies

Kalpit Dilip Ballal¹; Lars Dittmann²; Sarah Ruepp²; Birthe Dinesen³

¹Department of Electronics and Photonics Engineering, Technical University of Denmark, Kgs Lyngby, Denmark

²Technical University of Denmark, Kgs Lyngby, Denmark

³Laboratory for Welfare Technology – Digital Health & Rehabilitation, Sport Sciences - Performance and Technology, Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

Corresponding Author:

Kalpit Dilip Ballal
Department of Electronics and Photonics Engineering
Technical University of Denmark
Ørstedes Plads
Bygning 343
Kgs Lyngby, 2800
Denmark
Phone: 45 4525 6352
Email: kdiba@dtu.dk

Abstract

Background: Several at-home monitoring devices are being introduced in the market, which can help individuals, fitness enthusiasts, etc, monitor their health anytime they want. This allows individuals to monitor and collect their health data, reflect upon it, and take necessary action. Such technologies can help enhance the user's quality of life by motivating and empowering them to improve their health actively. Unfortunately, there are still several challenges to making this transition from in-hospital monitoring to home monitoring smoother. Some of these challenges may include technology readiness and acceptance by patients and their family members, lack of proper privacy measures, security, and lack of reliable internet and communication technology infrastructure.

Objective: The objective of this study is to use wireless communication networks to remotely transfer data from various body sensors measuring different vital parameters. Wireless sensors (electrocardiogram monitors, sleep sensors, etc) and Internet of Things devices can allow real-time and relatively cheap at-home health monitoring to provide critical health updates over the internet.

Methods: The study will be conducted by means of designing multiple experiments in which data from different sensors will be collected, packaged, and sent to a remote server using the internet. Along with the patient data, different network performance parameters such as delay, information loss, etc, will be calculated to understand and evaluate network performance.

Results: The results from the experiment will focus on evaluating network performance parameters such as latency, delay, packet drop, etc, in various indoor as well as outdoor environments.

Conclusions: We hope the results obtained from these experiment can be used for making various technological design choices and serve as a good starting point while building Internet of Things health care technologies.

Conflicts of Interest: None declared.

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Abstract

Out of Adversity Comes Opportunity: Smart-Colpo National Program for the Elimination of Carcinoma Cervix in a Post-COVID-19 World

Anjali R¹, MBBS, MS, DNB; Naveen R Gowda¹, MBBS, DPM, MD; Vikas H¹, MD; Meghana Prabhu², DNB, DM; Jai Bhagwan Sharma¹, MD, DNB, PhD; Khyati Vakharia³, MBBS; Atul Kumar⁴, MD; Akhila M V⁵, MS; Shilpa Gatta⁶, DGO, DNB; Madhuri Sareddy⁷, MS; Sowmya K P⁸, MD; Divya T K⁹, MD; Devashish Desai¹, MD; Bharath Gopinath¹, MD; Somanath Viswanath¹⁰, BE; Ananth Kini¹¹, MD, DNB

¹All India Institute of Medical Sciences, New Delhi, India

²Institute of Liver and Biliary Sciences, New Delhi, India

³Vardhaman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

⁴Employees' State Insurance Corporation, New Delhi, India

⁵Gunasheela Fertility Center, Bengaluru, India

⁶SLG Hospitals, Hyderabad, India

⁷Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, India

⁸Siddhartha Institute of Medical Sciences and Research Institute, Bengaluru, India

⁹Sapthagiri Institute of Medical Sciences and Research Institute, Bengaluru, India

¹⁰ATOS India, Bengaluru, India

¹¹Military Hospital Kamptee, Armed Forces Medical Services, Kamptee, India

Corresponding Author:

Naveen R Gowda, MBBS, DPM, MD

All India Institute of Medical Sciences

Ansari nagar

New Delhi, 110029

India

Phone: 91 9663502239

Email: drnaveen.nimhans@gmail.com

Abstract

Background: Carcinoma cervix is one of the leading causes of death among women worldwide. The World Health Organization has put forth the 90-70-90 global strategy for the elimination of cervical cancer as a public health problem. It calls for 70% women to be screened at least once in their lifetime. However, this rate is as low as 1.9% for India and even lower for many other countries, making the target insurmountable, especially in resource-constrained settings. The COVID-19 pandemic made this even more challenging.

Objective: This study aimed to identify bottlenecks and high leverage points and propose a technology-driven, national-level program for improving the screening of carcinoma cervix.

Methods: Detailed process mapping was done to identify potential bottlenecks. A counterfactual approach was used to identify high leverage points for impact using "What if" scenarios. These findings were used to build program theory-based logic models to propose a national-level program for carcinoma cervix prevention.

Results: Availability, accessibility, affordability, skewed distribution of infrastructure, cost implications, and limited specialist workforce were identified as bottlenecks. The COVID-19 pandemic put a strain on existing resources and worsened the situation. The existing network of primary health care workers, changes in health-seeking behavior due to COVID-19 with the increasing role of tele-health, conducive political milieu with initiatives such as Digital India Mission, and a booming start-up ecosystem were identified as high leverage points through the counterfactual approach. Using these findings, a national program was designed with program theory-based logic modeling.

Conclusions: The journey from <2% of women screened at least once in their lifetime all the way to 70% would need a drastic increase in funding and resource allocation, which is unlikely considering the current conditions. COVID-19 has not only been

an adversity but also opened new thinking and opportunities. Artificial intelligence–driven, cost-effective, easy-to-use, and widely acceptable solutions such as “Smart-Colpo” can be a game changer to achieve the World Health Organization targets.

Conflicts of Interest: None declared.

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Abstract

Testing the Social Robot LOVOT's Interaction With Adults With Autism and Mental Impairment: Preliminary Findings

Lajla Holtebo Gregersen¹, MSc; Sofie Dalskov Leisted², BA, MSc; Frederik Samuelson², BA, MSc; Birthe Dinesen², MSc, PhD

¹Team Strategy and Development, Jobs and Welfare, Aalborg Municipality, Aalborg, Denmark

²Laboratory for Welfare Technology – Digital Health & Rehabilitation, Sport Sciences – Performance and Technology, Department of Health Science and Technology, Aalborg University, Aalborg, Denmark

Corresponding Author:

Lajla Holtebo Gregersen, MSc
Team Strategy and Development, Jobs and Welfare
Aalborg Municipality
Søndergade
Aalborg, 9000
Denmark
Phone: 45 99827420
Email: lgre-jv@aalborg.dk

Abstract

Background: Persons with autism and mental impairment face communicative, social, and behavioral challenges, and there is a need to establish effective interventions to improve the quality of daily life. Social robots working with children with autism have successfully improved their communication and social behavior and reduced stereotypic behavior. However, there is only limited evidence regarding the effectiveness of social robots.

Objective: This study aimed to investigate the interactions, effects on well-being, experiences from health care professionals, and ethical aspects of deploying the LOVOT social robot as a tool for adults with autism and mental impairment.

Methods: Two social robots have been deployed in 3 residences. A total of 12 adults with autism and mental impairment were recruited. Individual planned sessions on interaction with the social robots are being carried out twice a week for 20-30 minutes over a period of 6 months. Participant observations are carried out every second week during the 6 months on themes such as well-being, interaction with the robot, the level of arousal, eye contact, and communication. Observations have been documented through standardized observation protocols and by video recording. Experiences from health care professionals and ethical aspects have been explored using semistructured interviews.

Results: Preliminary results indicate that LOVOT has improved the well-being of participants. Although the participants' interest in LOVOT varies, the health care professionals report that some participants find great satisfaction interacting with LOVOT, describing LOVOT as a friend, and that LOVOT can provide comfort in stressed situations. Two LOVOTs were damaged by the participants during the study, indicating the importance of robust material in interventions with adults with autism and mental impairment.

Conclusions: Preliminary findings indicate that social robots can increase well-being among persons with autism and mental impairment. Future care of persons with autism and mental impairment might benefit from the use of social robots as part of their care and quality of life.

Conflicts of Interest: None declared.

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Abstract

Telehealth Challenges for California Rural Hospitals in Reaching Latino Populations During COVID-19

Noemi Mauricio^{1*}, RN, BSc; Glen Newhart^{1*}, MBA, CFRE; Steven Herber^{1*}, MD; Veronica Ahumada-Newhart^{2*}, PhD

¹Saint Helena Hospital, Loma Linda University, Saint Helena, CA, United States

²University of California Davis, School of Medicine, Center for Health and Technology, Sacramento, CA, United States

* all authors contributed equally

Corresponding Author:

Veronica Ahumada-Newhart, PhD
University of California Davis, School of Medicine
Center for Health and Technology
4610 X Street
Suite 2347
Sacramento, CA, 95817
United States
Phone: 1 916 734 2351
Email: vahumada@ucdavis.edu

Abstract

Background: Rural and remote communities were especially vulnerable to the COVID-19 pandemic due to the availability and capacity of rural health services. Research has found that key issues surrounded (1) the lack of staff, (2) the need for coordinated health services, and (3) operational and facility issues. Similarly, research also confirms that irrespective of hospital capacity issues existing during crisis, compared to urban communities, rural communities typically face poorer access to health services. Telehealth programs have long held promise for addressing health disparities perpetuated by inadequate health care access. In response to the current COVID-19 pandemic, Adventist Health Saint Helena Hospital, a rural hospital in northern California, urgently worked to expand telehealth services. However, as Adventist Health Saint Helena Hospital is the longest-serving rural hospital in the state of California, administrators were also able to draw on experiences from the pandemic of 1918/1919. Understanding their historically rural and heavily Latino populations, their telehealth approach was coupled with cultural approaches for prioritizing socially responsive and equitable access to health services.

Objective: This study aimed to present one rural community's holistic sociotechnical response to COVID-19 in redesigning their health care delivery approach. Redesign efforts included the expansion of digital health services coupled with county-wide collaborations for nondigital mobile health centers, testing, and vaccination clinics to meet the needs of those with limited digital access and language barriers.

Methods: We present data on telehealth services for maintaining critical care services and a framework on the feasibility of private-public partnerships to address COVID-19 challenges.

Results: In this paper, we provide a critical review of how a rural hospital adapted its health care approach to incorporate telehealth services and distance services to meet the needs of a diverse population.

Conclusions: This paper contributes empirical data on how rural communities can use telehealth technologies and community partnerships for a holistic community approach to meet health needs during a natural disaster.

Conflicts of Interest: None declared.

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telehealth challenges; California rural hospitals; Latino populations; COVID-19

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Abstract

Video Counseling and a Safety Planning App to Support Pregnant Women Exposed to Intimate Partner Violence in Denmark and Spain During COVID-19

Karen Andreasen^{1,2}, MSc; Ditte S Linde^{1,2}, PhD; Antonella Ludmilla Zapata-Calvente³, PhD; Stella Martín-de-las-Heras^{4,5}, BDS, MD, PhD; Jesús López Megías^{3,6}, PhD; Vibeke Rasch^{1,2}, MD, PhD

¹Department of Gynecology and Obstetrics, Odense University Hospital, Odense, Denmark

²Department of Clinical Research, University of Southern Denmark, Odense, Denmark

³Brain and Behavior Research Center (CIMCYC), University of Granada, Granada, Spain

⁴Department of Forensic Medicine, University of Málaga, Málaga, Spain

⁵Instituto de Investigación Biomédica de Málaga (IBIMA), Universidad de Málaga, Málaga, Spain

⁶Departamento de Psicología Experimental, Facultad de Psicología, University of Granada, Granada, Spain

Corresponding Author:

Karen Andreasen, MSc

Department of Gynecology and Obstetrics

Odense University Hospital

Sdr. Boulevard 20

Odense, 5000

Denmark

Phone: 45 20962973

Email: ostrupvej@gmail.com

Abstract

Background: Isolation was a consequence of the COVID-19 lockdowns, which led to increased incidence of intimate partner violence (IPV). During antenatal care, it is possible to screen pregnant women for IPV; this offers a unique opportunity for early intervention. During the pandemic, we designed and implemented a digital IPV intervention tailored to pregnant women in Denmark and Spain.

Objective: This study aimed to identify pregnant women exposed to IPV through digital screening and offer video counseling as well as a safety planning app to those who screened positive.

Methods: Pregnant women attending antenatal care were screened for IPV through a digital questionnaire. Women who screened positive were offered 6 video consultations with an IPV counselor and provided with access to a dedicated safety planning app. In-depth interviews inspired by the Model for Assessment of Telemedicine Applications were conducted with counselors and participants. The intervention was cocreated with women who have been exposed to IPV, nongovernmental organizations, and health care providers.

Results: Despite the COVID-19 shutdowns, more than 15,000 pregnant women have been screened for IPV since January 2021. Qualitative interviews with women who completed the intervention as well as IPV counselors show broad acceptance of the video counseling, particularly the ability to participate from a safe environment and talk to a stranger about sensitive and stigmatizing issues. Preliminary findings show that both women and counselors find the video counseling highly supportive, empowering, and aligned with the needs for safety. The majority indicate improved well-being after the intervention, and neither counselors nor participants see video counseling as a barrier toward talking about sensitive topics such as IPV. The safety app was not perceived as effective.

Conclusions: The preliminary results show that video counseling conducted during the COVID-19 pandemic supports pregnant women exposed to IPV and is highly feasible and accepted in both Denmark and Spain.

Conflicts of Interest: None declared.

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intimate partner violence; IPV; pregnancy; eHealth; intervention

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Abstract

Video Consultations in Primary Care Outside Office Hours

Mette Amalie Nebsbjerg¹, MD; Katrine Bjørnshave Bomholt¹, MD; Claus Høstrup Vetsergaard¹; Morten Bondo Christensen^{1,2}, MD; Linda Huibers¹, MD

¹Research Unit for General Practice, Aarhus University, Aarhus, Denmark

²Department of Public Health, Aarhus University, Aarhus, Denmark

Corresponding Author:

Mette Amalie Nebsbjerg, MD

Research Unit for General Practice

Aarhus University

Bartholins Allé 2

Aarhus, 8000

Denmark

Phone: 45 24647244

Email: man@ph.au.dk

Abstract

Background: Out-of-hours primary care (OOH-PC) is facing increasing demands and workload with many negative consequences, including longer waiting time and increased risk of treatment delay and safety incidents. During the COVID-19 pandemic, video consultation (VC) was introduced as an alternative to face-to-face contact. We hypothesize that VC contributes to sustainable OOH-PC by changing patient flows, decreasing workload, and reducing waiting time.

Objective: This study aims to evaluate the use of video in telephone triage in OOH-PC by studying user rate, the effect on contact patterns, and patient characteristics related to receiving a VC.

Methods: We conducted a register-based study of VC use in OOH-PC, including all Danish residents contacting OOH-PC in the regions of Central Denmark, Southern Denmark, Northern Denmark, and Zealand. The study population will be followed from birth, immigration, or March 1, 2020 (whichever came last), until death, emigration, or December 31, 2021 (whichever comes first). We will use national registers, linking data with the unique personal identification number. We plan to conduct descriptive analyses, calculating the proportion of VC of all teletriage consultations per month during the study period. We plan to use regression models to measure the association between VC and triage outcome and the association between VC and patient characteristics, calculating risk ratios and 95% CIs. Both crude and mutual adjusted risk ratios for patient characteristics will be presented.

Results: Data analyses started in May 2022.

Conclusions: A preliminary conclusion will be presented at the conference.

Conflicts of Interest: None declared.

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out-of-hours primary care; telephone triage; video consultation

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Abstract

TELEMED: Database on Evidence-Based Telemedicine in a Hospital Setting

Ida Wagner Svendsen¹, MPH; Kristian Kidholm¹, PhD

Center for Innovative Medical Technology, Odense University Hospital, Odense, Denmark

Corresponding Author:

Kristian Kidholm, PhD

Center for Innovative Medical Technology

Odense University Hospital

Sdr Boulevard 29

Odense, 5000

Denmark

Phone: 45 30586477

Email: kristian.kidholm@rsyd.dk

Abstract

Background: The use of telemedicine services has increased worldwide during recent years as a result of national strategies for the digitalization of health care and the COVID-19 pandemic. However, health care professionals often express uncertainty regarding the evidence and effectiveness of telemedicine interventions. Therefore, the Centre for Innovative Medical Technology at Odense University Hospital introduced the TELEMED database, an evidence-based telemedicine database.

Objective: This study aimed to ensure that hospital managers, health care professionals, and other stakeholders gain access to information about scientific studies of telemedicine interventions and their effectiveness.

Methods: The database constitutes a structured literature search in PubMed for randomized controlled trials or controlled trials on the effect of telemedicine for somatic diseases treated at hospitals. The search was conducted by staff members in the Health Technology Assessment unit at the Centre for Innovative Medical Technology. First, identified studies were sorted by screening titles and abstracts and, subsequently, by reading full-text versions. The data extracted from the studies included the setting, intervention, patient group, type of telemedicine, clinical effect, patient perception, and implementation challenges. Finally, the value of each study was assessed with respect to effectiveness.

Results: A total of 518 articles were included for data extraction and assessment. The database provides results from 22 different specialties and can be searched using the following criteria: medical specialty, country, technology, clinical effect, patient experience, and economic effect. The database serves as a platform for the dialogue with clinical departments who wish to implement telemedicine services and has a large potential for supporting the digital transformation during COVID-19 as evidence-based information on patient groups, relevant technologies, and their effect is easily accessible.

Conclusions: The TELEMED database provides an easily accessible overview of existing evidence-based telemedicine services. The database is freely available and is expected to be continuously improved and broadened over time.

Conflicts of Interest: None declared.

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Abstract

Improving Telehealth Equity in Response to COVID-19 in California: ACTIVATE and Lighthouse

David Lindeman¹, PhD

Center for Information Technology Research in the Interest of Society and the Banatao Institute, University of California, Berkeley, Berkeley, CA, United States

Corresponding Author:

David Lindeman, PhD

Center for Information Technology Research in the Interest of Society and the Banatao Institute

University of California, Berkeley

2594 Hearst Ave

Berkeley, CA, 94720

United States

Phone: 1 510 666 3677

Email: dlindeman@citris-uc.org

Abstract

Background: In response to the significant stressors on health care delivery created by COVID-19, CITRIS Health and partner organizations developed 2 telehealth solutions through a rapid co-design process: Lighthouse and ACTIVATE. These programs were developed to support providers serving underserved and vulnerable populations who lack the tools and resources to support patients with chronic illness or who are isolated. These challenges were exacerbated by the COVID-19 pandemic, which increased the need for resources to support vulnerable patients who could not come into a clinic in person or were isolated and lacked access to services. ACTIVATE and Lighthouse apply 2 different telehealth strategies to reach vulnerable populations.

Objective: This paper presents lessons learned from the design, development, and implementation of 2 innovative telehealth programs developed to improve health care delivery, access to care, digital literacy, and patient outcomes: ACTIVATE and Lighthouse.

Methods: ACTIVATE is a comprehensive digital health pathway for community health centers that care for those who are medically underserved. ACTIVATE is an innovative, evidence-based, and sustainable telehealth program, designed to benefit vulnerable populations in rural and agricultural communities in the California Central Valley who experience significant health disparities. Lighthouse focuses on connecting older adults in congregate affordable housing, which are settings where residents are particularly vulnerable to isolation, the lack of health care resources, and limited to no access to the internet. Lighthouse provides digital literacy training as well as access to broadband internet with the goal of increasing communication, engagement, and access to health care.

Results: This presentation will discuss successful design and implementation strategies as well as organizational and policy barriers to program operations.

Conclusions: In addition to reviewing program and implementation outcomes, strategies for replication and sustainability will be discussed. Although developed in response to COVID-19, the ultimate success of Lighthouse and ACTIVATE is dependent upon its successful scaling beyond the pandemic.

Conflicts of Interest: None declared.

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telehealth; aging; underserved populations

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Abstract

A Survey of Internet Performance During COVID-19

Lars Dittmann¹, BSc, MSc, PhD

Department of Electrical and Photonics Engineering, Technical University of Denmark, Kongens Lyngby, Denmark

Corresponding Author:

Lars Dittmann, BSc, MSc, PhD

Department of Electrical and Photonics Engineering

Technical University of Denmark

Oersteds Plads, 343, 222

Kongens Lyngby, DK-2800

Denmark

Phone: 45 45253851

Email: ld@com.dtu.dk

Abstract

Background: Since the beginning of 2020, many societal systems have been used to extend the health care system, which were not planned for, and as such, there is concern for its collapse. Clearly, the collapse of the health care system, primarily hospitals, has been a key concern, and many initiatives, including lockdown and curfew, were taken to avoid such a collapse. The internet was the key platform used to enable people to work from home, provide remote teaching, conduct meetings on the web, etc. However, when it comes to data communication and processing, the risk of collapse is not the only risk, and maybe not even the biggest one. Many systems were not properly adapted for used in such a hurry, which did not allow time (and concern) for a proper risk and privacy assessment.

Objective: This paper presents internet performance statistics and analyzes how this knowledge can be used in future designs of internet-based telemedical solutions.

Methods: Statistics regarding traffic increases and security attacks on the internet during 2020 and 2021 were analyzed.

Results: The internet did not collapse during the COVID pandemic—as many people had predicted. However, the massive use of the internet, in new innovative ways, created a number of new opportunities for cybersecurity breach. Especially, the use videoconferences enabled made-in-middle attacks, phishing, and other classical breaches in new ways due to insufficient authentication and content encryption.

Conclusions: Even though a large amount of experience has been gathered with respect to scaling eHealth systems, a minimum amount of improvement with respect to privacy and security has been identified.

Conflicts of Interest: None declared.

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Abstract

Key Enablers to Boost Digital Health Solutions in Latin America

Regina Morán-Reséndiz^{1*}, MSc[†]; Catalina Ruiz-Arias^{2*}, MSc[†]

¹Facultad de Ingeniería, Universidad Panamericana, Ciudad de México, Mexico

²Universidad Ean, Bogota, Colombia

[†]Movement Health 2030

* all authors contributed equally

Corresponding Author:

Regina Morán-Reséndiz, MSc

Facultad de Ingeniería

Universidad Panamericana

Augusto Rodin 498

Ciudad de México, 0390

Mexico

Phone: 52 4424653135

Email: contacto@reginamorán.com.mx

Abstract

Background: COVID-19 has exposed the fragility of global health systems. However, the pandemic is perceived to have boosted the use of technology and accelerated digital health solutions (DHS). In Latin America, DHS can increase accessibility and provide more efficient health services. Various key players have relevant roles for innovation within the health care systems. For this study, we focused on health-tech start-ups (*developers*) and health care providers (*implementers*) who can cocreate and develop new health care solutions.

Objective: This research aimed to explore the aspects that boost innovation in the health care ecosystem in Latin America, based on the 5 key aspects of the Innovation Readiness Levels: market, technology, organization, partnerships, and risk.

Methods: For this research, a qualitative study was conducted using the 5 key aspects of the Innovation Readiness Levels. Two types of organizations were selected: health-tech start-ups (*developers*) and health care providers (*implementers*). A total of 12 professionals from Latin America were interviewed. For each interview, quotes related to the 5 aspects were selected and subclustered to find relationships.

Results: Based on the discovered relationships, 7 aspects to boost DHS in Latin America were identified: agility to respond, facilitating collaboration, building and sharing knowledge, creating user-centered solutions, economic resources and sustainability, ease of technological development and adoption, and reaching beyond hospitals. The first 4 aspects could apply to other regions outside Latin America. The last 3 are related to regional challenges in Latin America. Obstacles and calls to action were identified for each aspect.

Conclusions: To boost DHS in Latin America, it is necessary to have a complete overview of the patient's journey and consider all the users involved to understand their needs and identify opportunities to develop new solutions. This will contribute to the improvement of health solutions and patient outreach. Future research is suggested to develop a better understanding of these aspects in the Latin American countries that were not included in this research and to validate whether these are the only key aspects needed.

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Abstract

Effectiveness of Telegenetic Counseling for Patients and Families With Suspected Hereditary Cancer: Systematic Review

Yuriko Shibuya^{1*}, RN, MSN; Tomoyo Harada^{1*}, RN, MSN; Mikiko Aoki^{1*}, RN, PhD; Erika Ota^{1,2*}, RNM, PhD; Tomoko Kamei^{1*}, RN, PHN, PhD

¹Graduate School of Nursing Science, St. Luke's International University, Tokyo, Japan

²Tokyo Foundation for Policy Research, Minato, Tokyo, Japan

* all authors contributed equally

Corresponding Author:

Yuriko Shibuya, RN, MSN
Graduate School of Nursing Science
St. Luke's International University
10-1 Akashi-chou, Chuo-ku, Tokyo
Tokyo
Japan
Phone: 81 03 3543 6391
Email: 21dn011@slcn.ac.jp

Abstract

Background: Telegenetic counseling has attracted attention as a preventive measure against the recent COVID-19 pandemic. This systematic review compared telegenetic counseling using videoconferencing versus face-to-face counseling for hereditary cancer.

Objective: This study aimed to evaluate the effectiveness of telegenetic counseling using videoconferencing versus face-to-face counseling for people with suspected hereditary cancer.

Methods: A comprehensive literature search was carried out in December 2021 using the databases of the Japan Medical Abstracts Society, PubMed, CINAHL, PsycInfo, EMBASE, and the Cochrane Library. The eligibility criteria were studies in which randomized controlled trials (RCTs) or cluster RCTs were conducted among patients with suspected hereditary cancer and their families, comparing telegenetic counseling using videoconferencing with face-to-face genetic counseling. The Cochrane risk-of-bias tool was used to assess the risk of bias of each RCT study. This study was reported according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines.

Results: Two studies comprising a total of 191 participants were included and used for meta-analysis. Participants were individuals who lived in rural areas or in areas without genetic counselors and were suspected to have breast, colon, ovarian, multiple, or genetic cancer. All outcomes were assessed in only 1 study and their effects could not be discussed explicitly. In one study, there were no significant differences in satisfaction, psychological distress, or a number of genetic tests between face-to-face genetic counseling and telegenetic counseling. The cost per patient for genetic counseling was \$106.19 for the telegenetics group and \$244.33 for the in-person group. The risk of bias was high in both studies, with a high risk of performance bias, detection bias, and attrition bias.

Conclusions: The results of the two RCTs were described qualitatively. However, the evidence is limited because of the small number of RCT studies on telegenetic counseling and the high risk of bias. Further accumulation of studies is needed in the future.

Conflicts of Interest: None declared.

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KEYWORDS

telegenetics; genetic counseling; hereditary cancer: systematic review

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Abstract

Implementation of Tele dermatology for Veterans in the United States

Dennis Oh^{1,2}, MD, PhD

¹Dermatology Research Unit, San Francisco VA Health Care System, San Francisco, CA, United States

²Department of Dermatology, University of California, San Francisco, CA, United States

Corresponding Author:

Dennis Oh, MD, PhD

Dermatology Research Unit

San Francisco VA Health Care System

4150 Clement Street

San Francisco, CA,

United States

Phone: 1 415 750 2091

Email: Dennis.Oh@va.gov

Abstract

The US Department of Veterans Affairs (VA) has adopted tele dermatology, predominantly asynchronous, as an important strategy for improving access to expert skin care for its 9 million enrolled veteran patients. Despite the measurable success of its tele dermatology program, one-fifth of all points of care have yet to implement tele dermatology. The application of implementation science approaches offers the opportunity to systematically understand the VA's tele dermatology experience to yield insights into and lessons for implementing tele dermatology widely as well as locally. Implementation frameworks and theories include the use of the Organizational Readiness for Change instrument as a prognosticator for implementation success, as well as the Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework to assess the longitudinal implementation of a tele dermatology initiative for rural veterans. Development and implementation of novel technological innovations that introduce new tele dermatology workflows into mature tele dermatology environments were analyzed during the COVID-19 pandemic.

Conflicts of Interest: None declared.

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tele dermatology; implementation science; veteran

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Abstract

The Effectiveness of Blended Learning for Dermatology Undergraduate Medical Students

Cristiana Silva¹, PhD; Cidia Vasconcellos², PhD; Murilo Barreto Souza¹, PhD; Juliana Dumet Fernandes¹, PhD; Vitoria Regina de Almeida Pedreira Rego¹, PhD

¹Federal University of Bahia, Salvador, Brazil

²São Paulo University, São Paulo, Brazil

Corresponding Author:

Cristiana Silva, PhD

Federal University of Bahia

Av Milton Santos, s/nº - Ondina, Salvador - BA

Salvador, 40170-110

Brazil

Phone: 55 71988647377

Email: silveira.cristiana@gmail.com

Abstract

Background: Novel internet-based applications and associated technologies have influenced all aspects of our society, ranging from areas of commerce and business to entertainment and health care. Education is no exception. In this context, this study was designed to evaluate the impact of a dermatology e-learning program on the academic performance of medical students.

Objective: We aimed to develop a dermatology blended learning course for undergraduate medical students and compare the knowledge gained by students who took this course to those who attended traditional classes.

Methods: This prospective study evaluated the performance of fourth-semester medical students from the Federal University of Bahia, Brazil. A total of 129 students were selected and divided into 2 groups. The first group (n=57) attended traditional classes and used printed material (books and handouts). The second group (n=72) took our e-learning course and used an e-book as a supplement in a hybrid setting comprising online plus traditional learning. Each course was evaluated with multiple-choice, paper-based tests that were administered at the beginning and end of the course.

Results: Although the precourse tests did not show any difference between the traditional and hybrid groups (mean 2.74, SD 1.25 vs mean 3.2, SD 1.22), students attending the hybrid course had better final term grades (mean 8.18, SD 1.26) than those who attended traditional classes (mean 7.11, SD 1.04). This difference was statistically significant ($P<.05$).

Conclusions: The results suggest that the performance of undergraduate students who took a course supplemented with e-learning material was superior to those who attended a traditional course alone.

Conflicts of Interest: None declared.

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KEYWORDS

dermatology; medical education; undergraduate medical education; distance education; e-learning; blended learning; hybrid course

Multimedia Appendix 1

Pre- and posttest scores of students who attended the traditional and hybrid courses.

[[PNG File , 100 KB - iproc_v9i1e49651_app1.png](#)]

Multimedia Appendix 2

Boxplot illustrating students' scores for tests administered at the beginning and end of the traditional and hybrid courses.

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Abstract

Surgical Excision Margins in Primary Care and Plastic Surgery for Keratinocytic Cancers Diagnosed via Teledermatology: Retrospective Observational Cross-Sectional Study

José-Pablo Tirado-Pérez¹; Amanda Oakley²

¹Department of Dermatology, Virgen Macarena University Hospital, Sevilla, Spain

²Department of Dermatology, Te Whatu Ora Waikato, Hamilton, New Zealand

Corresponding Author:

José-Pablo Tirado-Pérez

Department of Dermatology

Virgen Macarena University Hospital

Av. Dr. Fedriani, 3

Sevilla, 41009

Spain

Phone: 34 622920900

Email: jtp0510@gmail.com

Abstract

Background: The incidence of keratinocytic cancers is increasing. In New Zealand, surgical treatment of skin cancers is often undertaken in primary care. In the Waikato district, general practitioners (GPs) are encouraged to confirm diagnoses via teledermatology. Histological examination should confirm clear surgical margins to reduce tumor recurrence. International guidelines recommend a lateral margin of ≥ 3 mm for basal cell carcinomas (BCCs) and ≥ 4 mm for squamous cell carcinomas (SCCs).

Objective: This study aimed to determine lateral and deep margins in keratinocytic cancer excisions performed by GPs (in a private setting) and plastic surgeons (in a private or public setting) after a teledermatologist had confirmed that excision was necessary. Demographic, clinical, and histological features were recorded.

Methods: A retrospective observational cross-sectional study was conducted. The sample in the electronic dermatology referral database included keratinocyte cancers recommended for excision from March to May 2022.

Results: Histological reports revealed that excision was complete in 186 of 201 confirmed cases of keratinocyte cancer. The lateral margins of resection were considered in 10 tumors and deep margins in 8 tumors. All incomplete excisions were carried out by GPs, 11 of which were on the head and neck. There were 133 BCCs, 100 of which were excised by a GP, 3 by a private plastic surgeon, and 30 by a public hospital surgeon. In total, 52 BCCs were present on the head and neck (25 excised by GPs, 25 by hospital plastic surgeons, and 2 by private plastic surgeons) and 81 were present on other sites (75 excised by GPs, 5 by hospital plastic surgeons, and 1 by a private plastic surgeon). Lateral margins were considered in 9 cases (of which 5 cases involved head and neck tumors). The minimum distance from the tumor to the lateral margin was < 3 mm in 80 tumors: 64 were excised by a GP, 2 by private plastic surgeons, and 14 by hospital plastic surgeons. This distance was ≥ 3 mm in 44 tumors (27 excised by GPs, 1 by a private plastic surgeon, and 16 by hospital plastic surgeons). These data show significant adherence to surgical margin recommendations among plastic surgeons compared to that among GPs (odds ratio 2.873, CI 1.274-6.477; $P = .009$). There were 68 SCCs: 57 were excised by a GP, 2 by a private plastic surgeon, and 9 by a public hospital surgeon. In total, 21 SCCs were on the head and neck (14 excised by GPs, 6 by hospital plastic surgeons, and 1 by a private plastic surgeon) and 47 were on other sites (43 excised by GPs, 3 by hospital plastic surgeons, and 1 by a private plastic surgeon). Lateral margins were considered in 1 head and neck SCC case and were not reported in others. The minimum distance from the tumor to the lateral margin was < 4 mm in 35 cases: 31 were excised by a GP, 1 by a private plastic surgeon, and 3 by a hospital plastic surgeon. This distance was ≥ 4 mm in 31 cases (24 excised by GPs, 1 by a private plastic surgeon, and 6 by hospital plastic surgeons). These data do not show significant difference in adherence to surgical margin recommendations between GPs and plastic surgeons ($P > .05$).

Conclusions: Complete resection reduces the risk of recurrence of keratinocytic tumors. GPs in our study were less likely than specialist surgeons to respect surgical margin recommendations established in international guidelines for managing keratinocytic cancer.

Conflicts of Interest: None declared.

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KEYWORDS

skin cancer; tumour recurrence; tumor; basal cell carcinoma; squamous cell carcinoma

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Abstract

Tele dermatology in India During the Peri-COVID-19 Outbreak Period: Advantages, Shortcomings, and Challenges

Anmol Sodhi¹, MBBSMD

Grant Government Medical College, Mumbai, India

Corresponding Author:

Anmol Sodhi, MBBSMD

Grant Government Medical College

J J Marg

Nagpada

Mumbai, 400074

India

Phone: 91 7018027254

Email: anm.dmj@gmail.com

Abstract

Background: Telemedicine is defined as the use of electronic information and communication technologies for health care professionals to provide care to patients. Although available since the pre-COVID-19 era, a huge surge in tele dermatology consultations occurred during the COVID-19 outbreak. As access to health care became limited and difficult due to repeated lockdowns, tele dermatology helped us provide health care to our patients. Moreover, as dermatology is a visual field, it was even more suitable for teleconsultations.

Objective: The objectives of this study were to investigate the advantages, shortcomings, and challenges of tele dermatology in India during the peri-COVID-19 outbreak period.

Methods: This was a single-center, retrospective, observational study conducted at a tertiary care hospital in India. Tele dermatology consultation data from April 1, 2020, till September 2021 (18 months) were included. All modes, including real-time (RT) video, asynchronous store and forward (SAF), and hybrid, were used to conduct tele dermatology consultations. Statistical analyses were performed using SPSS software (IBM Corp).

Results: During these 18 months, a total of 4280 patients took tele dermatology consultations at our center. The mean age of the patients was 34.19 years, with most of them (36.4%) in the age group of 31-40 years. The patient population comprised a mix of urban (55%) and rural (45%) individuals. Overall, 70% of consultations were conducted in the SAF mode; hybrid mode, 16%; and RT video consultations, 14%. Diagnosis was established in 89.1% of the cases, and the most common diagnosis was superficial fungal infection (28%), followed by eczema (16%) and acne (8.6%). Hospital visits were required in the remaining 10.9% of cases for the following reasons: lack of clear pictures and technical errors (5.57%). Additional diagnostic tests were required in 1.3% of cases, physical examination in 1.05% of cases, and 0.39% of patients had life-threatening conditions requiring hospitalization. The advantages of tele dermatology include decreased need for hospital visits among 89.1% of patients, which played a very important role in decreasing overcrowding. Also, this helped us provide expert health care to the rural population of India. Owing to shortcomings including the lack of good-quality pictures (4.2%; more so in SAF teleconsultations) and technical errors (1.37%), tele dermatology cannot be used to manage life-threatening conditions (0.39%), and, in particular, RT video consultations are more time-consuming (14%). Challenges faced by dermatologists during tele dermatology consultations were mainly operational, such as the lack of good internet access leading to interrupted consultations (1.37%), poor quality of pictures (4.2%), and difficulty in extracting history in cases of SAF consultations.

Conclusions: Tele dermatology serves as a triage platform and helps reduce hospital visits. It helps to cater to the rural population, which otherwise has limited access to health care. Some technical challenges are the dependence of tele dermatology on pictures and information sent by the patient for establishing the diagnosis. Also, sometimes patients faced difficulty in conveying problems clearly to the doctors. Because of the ease and advantages, several dermatologists have continued to use tele dermatology along with the physical consultations in the post-COVID-19 era. With a few advancements, tele dermatology will certainly remain a successful and useful model for consultations, more so for catering to the population with the lack of access to specialist services.

Conflicts of Interest: None declared.

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tele dermatology; COVID-19; India; health care; outbreak

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Abstract

Image Quality Assessment Using a Convolutional Neural Network for Clinical Skin Images

Hyeon Ki Jeong¹; Ricardo Henao¹; Christine Park¹; Simon Jiang¹; Matilda Nicholas¹; Suephy Chen¹; Meenal Kheterpal¹

School of Medicine, Duke University, Durham, NC, United States

Corresponding Author:

Meenal Kheterpal

School of Medicine, Duke University

Durham, NC

United States

Phone: 1 919 684 3432

Email: meenal.kheterpal@duke.edu

Abstract

Background: The quality of the images received for teledermatology evaluation is often suboptimal, with up to 50% of patients providing images that are poorly lit, off-center, or blurry. To ensure a similar level of care to in-person consultations, high-quality images are essential.

Objective: The aim of this study is to develop an image quality analysis tool to assess patient- and primary care physician (PCP)-derived images using a deep learning model leveraging multiple instance learning and ordinal regression for model predictions.

Methods: The data set used for this study was acquired from patient-derived images submitted to the Department of Dermatology, Duke University, between August 21, 2018, and December 31, 2019, and PCP-derived images between March 1, 2021, and June 30, 2022. Seven dermatology faculty members with a designation of professor, associate professor, and assistant professor evaluated 400 images each, and 2 dermatology residents evaluated 400 images, assuring that each image had 4 different quality labels. We used a pretrained model VGG16 architecture, further fine-tuned by updating weights based on the input data. The images were taken with cell phones (patients) or cameras (PCPs) in RGB scale, with the resolution being 76 pixels per inch for both height and width, and the average pixel size of the image being 2840×2793 (SD 986×983; 1471 inch², SD 707 inch²). The optimal threshold was determined using the Youden index, which represents the best trade-off between sensitivity and specificity and balance the number of true positives and true negatives in the classification results. Once the model predicts the rank, the ordinal labels are transformed to binary labels by using a majority vote as the goal is to distinguish between 2 distinct categories (good vs bad quality) and not predict quality as a continuous variable.

Results: Based on the Youden index, we achieved a positive predicted value of 0.906, implying that the model will predict 90% of the good-quality images as such, while 10% of the poor-quality images are predicted as being of good quality to enhance clinical utility, with an area under the receiver operating characteristic curve (AUC) for the test set at 0.885 (95% CI 0.838-0.933) and sensitivity, specificity, and negative predictive value (NPV) of 0.829, 0.784, and 0.645, respectively. Further evaluation on independent validation consisting of 300 images from patients and 150 images from PCPs revealed AUCs of 0.864 (95% CI 0.818-0.909) and 0.902 (95% CI 0.85-0.95), respectively. The sensitivity, specificity, positive predicted value, and NPV for the 300 images were 0.827, 0.800, 0.959, and 0.450, respectively.

Conclusions: This study shows a practical approach to improve image quality for clinical decision-making. While patients and PCPs may have to capture additional images (due to lower NPV), this is offset by the reduced workload and improved efficiency of clinical teams due to the receipt of higher-quality images. Additional images can also be useful if all images (good or poor) are transmitted to medical records. Future studies need to focus on real-time clinical validation of our results.

Conflicts of Interest: None declared.

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KEYWORDS

teledermatology; image quality assessment; deep learning; convolutional neural network; artificial intelligence; AI

Multimedia Appendix 1

Overview of the Image Quality Assessment (IQA) network architecture. The input images are partitioned into smaller region and are processed through the neural network architecture. The resulting outputs are aggregated, and a threshold criterion is applied to determine whether the image is accepted (good quality) or rejected (bad quality).

[PNG File , 200 KB - [iprocv9i1e49534_app1.png](#)]

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