

SHORT COMMUNICATION: IMPLEMENTING PERSONALIZED INTERVENTIONS FOR CANCER SURVIVORS: THE INTERVENTIONISTS' PERSPECTIVES AND TRAINING NEEDS

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Abstract

Cancer survivors often suffer from multiple symptoms including fatigue, pain, and emotional distress as a consequence of the diagnosis and treatment. These patients require comprehensive support systems to address these ongoing symptoms and enhance their overall quality of life. A research team is developing and testing the effect of a 12-week Combined Technology Enhanced Home Exercise Program and Acupressure (TEHEplus) program on symptoms and well-being (clinicaltrials.gov: NCT03576274). These personalized interventions for cancer survivors offer tailored non-pharmacological approaches, enhancing individualized care and positively impacting cancer survivors' overall well-being. During the program testing phase, the interventionists were responsible for providing an education session and delivering weekly personalized recommendations to participants. Emphasizing the crucial role of interventionists, this paper underscores the role and positive impact of tailored non-pharmacological approaches on survivors' lives in.

The TEHEplus program for cancer survivors uses mobile technologies (physical activity tracker and smartphone application) to deliver weekly-personalized recommendations. The paper shared the challenges faced by these interventionists (e.g., providing personalized intervention, technical challenges in using mobile technologies and online training) and the needs for comprehensive and ongoing trainings. Overall, interventionists bridge the gap between research and real-world implementation, shaping the future of personalized care.

Keywords: Interventionist, Personalized Intervention, Cancer Survivors

Cancer continues to be a public health issue and advancements in treatment options and early detection have significantly improved. In 2021, the cancer statistics reported showed a decrease in mortality rate of 31%. (Siegel et al., 2021). While the survivor rate increased, many survivors continue to suffer from multiple post-cancer symptoms and challenges in their journey to recovery. Studies have assessed and documented symptoms such as fatigue, pain, and sleep disturbance, as well as their impact on the quality of life. (Fardell et al., 2023; Feng et al., 2023; Tan et al., 2022) mean age 58 years and 1.5 years post diagnosis, with mixed diagnoses including breast 40.5%. Assistant Professor Dr. Nada Lukkahatai have conducted a study since 2021 to exploring a 12-week combined Technology Enhanced Home Exercise and Acupressure (TEHEplus) program for cancer survivors using mobile technologies (physical activity tracker and smartphone application) to deliver weekly tailored exercise and acupressure recommendation, and monitor physical activity, daily symptom, and weekly goal achievement (clinicaltrial.gov: NCT03576274). The program was developed and tested among cancer survivors in Maryland, USA.

To ensure the desired health outcomes, interventionists are pivotal to the success of most personalized behavioral interventions. They directly engaged with the participants and continuously provided professional guidance that empowered participants to take control of their health and well-being (Krukowski et al., 2019). In the TEHEplus program, the

interventionists' responsibilities include 1) providing education sessions to the assigned participants to introduce the mobile technologies and interventions (exercise and acupressure); 2) creating a weekly performance report from the daily symptoms survey and steps; 3) providing a weekly recommendation for personalized physical activity goal and acupoints; and 4) providing technical supports and encouragement to participants. This short communication paper explores the critical role played by interventionists in the TEHEplus program, offering insights into their perspectives and contributions to the success of such initiatives.

TEHEplus Program Overview

The TEHEplus study is a two-phase pilot study. Phase 1 is a program development phase to test the combination of a technology-enhanced home exercise and acupressure using mobile technologies. In phase 1, a team of an exercise physiologist, an acupressure expert, an oncologist, and cancer patients provide input for the program development. Phase 2 is the feasibility and pilot testing phase. The interventionists were trained and only involved in this phase.

The interventionists were recruited through were recruited through the university graduate student's employment. The requirements for hiring are 1) graduate-level students in health-related fields (e.g., nursing, public health, medicine, etc.) and 2) experience in health-related research, clinical trials, and/or exercise coaching preferred.

Multifaceted Role of Interventionists in Personalized Intervention Program

Interventionists function as the key player in the execution of personalized exercise and acupressure programs. Their critical responsibilities include training and preparation, personalization, ongoing support, data interpretation, and knowledge dissemination.

TEHEplus is a randomized clinical trial that concentrates on personalized exercise and acupressure interventions for alleviating symptoms in cancer survivors. The interventionists in the TEHEplus program conduct virtual training to prepare participants to engage in exercising and applying the pressure on recommended acupoints and familiarize participants with the use of mobile technologies including physical activity tracker and smartphone applications. One of the hallmark features of this program is its personalization. The interventionists use data interpretation skill to tailor the exercise and acupoints recommendations based on participants' baseline physical conditions, personal preferences, and survey responses regarding daily activities and symptoms. This individualized approach integrates the uniqueness of each participant's needs and aspirations, thereby maximizing the potential for favorable outcomes. Throughout the 12 weeks program, interventionists remain in constant communication with participants, and send weekly recommendations for activity goals and acupressure points through online smartphone applications. Participants will then conduct and follow the weekly recommendations to either exercise or applying

ear acupressure (or both) by themselves. This ongoing engagement is vital, as it allows interventions to adapt to participants' evolving needs and progress and ensures that interventions remain effective throughout the program.

Training to become Interventionists in Personalized Intervention Program

Before becoming TEHEplus interventionist: To effectively carry out the responsibilities, newly hired interventionists receive comprehensive training for various essential skills from senior interventionists or the principal investigator. This training is conducted through various formats, including online certification modules, instructor-led lessons, and in-person hands-on training and practice. It covers a wide range of knowledge, including the underlying principles, safety considerations, potential benefits and risks associated with each intervention, and deep understanding of the specific interventions being used. Furthermore, interventionists in this program are trained to interpret and manage participant data, and navigate and assist participants in the use of mobile technologies employed in the TEHEplus program, including the physical activity tracker and TEHEplus application. After completing their training, interventionists will be assigned a participant and a supervisor, usually a senior interventionist. The supervisor will closely monitor the new interventionists for at least 4 weeks. All weekly recommendations by interventionists were recorded. The principal investigator regularly reviewed the interventionists' recommendations and

provided individual feedback for improvement as a part of ongoing training.

Ongoing trainings: As part of the training, trainee TEHEplus interventionists are required to attend weekly meetings to discuss the art of effective communication, as well as the interpretation and management of participant data, with an emphasis on conveying complex health-related data and information in a clear and compassionate manner. Interventionists and team discuss appropriate compassionate and empathetic approaches tailored to cancer survivors experiencing health challenges or requiring emotional and physical support.

The TEHEplus Personalized Intervention Program offers a Unique Experience

Nursing and public health students played a crucial role as interventionists in TEHEplus program focused on developing and evaluating a personalized exercise and acupressure program for cancer survivors. In addition to the learning from research experience, the student interventionists are able to use our clinical experience, communication skills, and patient-centered care approach to build meaningful connections with survivors and tailor interventions to individual needs. The program leverages interventionists' skills in health education, behavior change strategies, and ethical considerations to ensure effective support and guidance for the participants. Training on cultural competency and interdisciplinary collaboration fosters sensitivity to diverse backgrounds and effective teamwork with

other healthcare professionals. Background in epidemiology and research aids the understanding and use of the information generated in this data-driven intervention. In TEHEplus program, interventionists are able to adapt to evolving healthcare technologies, which helps improve provider skills in the dynamic field of personalized health care.

The TEHEplus personalized intervention program delivers a rewarding experience to work directly with cancer survivors, helping them regain their health and improve their quality of life. The sense of accomplishment that comes from guiding survivors through their recovery journey, tailoring interventions to their specific needs, and witnessing their progress is immeasurable. The TEHEplus program participants learn that taking a role in fostering hope, resilience and empowerment delivers a profound difference in the lives of cancer survivors. Moreover, the opportunity to contribute to advancements in cancer survivorship care and to work in a field that is continuously evolving and improving offers a dynamic, satisfactory and intellectually stimulating environment for student interventionists in health care field.

Challenges and Opportunities

The role of an interventionist is not without its challenges and opportunities. Interventionists in the TEHEplus program encounter several challenges they strive to support individuals achieve their health and well-being goals. One significant challenge lies in the complexity of care personalization itself.

Tailoring interventions to the unique needs and preferences of each participant can be demanding and time-consuming, as it requires a deep understanding of the individual's health history, lifestyle, and cultural background. Secondly, maintaining participant engagement and motivation throughout the program poses a consistent challenge, mitigated by the continuous adaptation of intervention approach to ensure participant remains committed to health goals. Additionally, addressing the emotional and psychological aspects of a participant's health journey such as stress, anxiety, or emotional resistance, requires a high level of empathy and counseling skills.

Furthermore, technical challenges related to the use of digital health tools and platforms, including connectivity issues, troubleshooting problems and constant changes of technologies hinder the efforts. The personalized feature of the TEHEplus program relies heavily on the daily data from both physical activity tracker and TEHEplus app. The recommendations are adjusted weekly based on the average steps and daily symptoms survey responses. Maintaining consistent user engagement (involving response to survey and wearing tracker every day) is challenging. Many participants forget, or lose interest or motivation over time, leading to incomplete or inconsistent data, which limits the interventionist's ability to provide robust and timely recommendations. To date, approximately 10% of participants (n=96) did not respond to the daily symptoms survey for more than 7 days in any specific

week. Although we have complete daily step data from the physical activity tracker, at least 1 participant requires a follow-up phone call each week to remind a person to sync the data with the smartphone application.

Finally, the virtual training for the intervention especially acupressure portion is challenging. Although online acupressure training offers the benefit of accessibility, allowing individuals from diverse geographic locations to access high-quality instruction conveniently, acupressure relies on a precise acupoints and the correct techniques for stimulating them effectively. In a digital environment, conveying these nuances via a video call on a small screen is time consuming and can lead to participants' confusion and unwillingness to comply to the recommendation. Emerging technologies such as augmented reality that combines real world and computer-generated content to deliver interactive experience could potentially address this limitation in the future.

Recommendation for program improvement

Overcoming these challenges requires 1) the development of comprehensive, interactive, and well-structured training for interventionists, with periodical refresher and update courses, 2) communication module to guide interventionist's practice, 3) a structured online training program for acupressure that utilize visual aids, detailed instructions, and opportunities for real-time practice and feedback (Robbins-Welty et al., 2018) rigorous yet pragmatic strategies for training interventionists and

maintaining intervention fidelity are needed. \nOBJECTIVES: (1, and 4) the training quality evaluation and the results should be comprehensively planned.

This short communication provided a unique perspective of interventionists in one of many available personalized intervention programs. We highlight the challenges, opportunities, and training needs for interventionists in one personalized intervention program. However, this paper is limited by the depth of information and comprehensive exploration of the interventionists' training. Due to the pilot/feasibility nature of the study, the training quality evaluation and validation were not included. Therefore, additional rigorous and comprehensive research and testing of the program are needed.

Conclusion

The role of interventionists in personalized interventions like the TEHEplus program includes providing education and training to participants,

weekly personalized recommendations, monitoring physical performance progress, and ongoing support. It represents a pivotal link between research and real-world implementation. Although this paper has several limitations due to the pilot/feasibility nature of the parent study, it offers unique viewpoints of the interventionists. The multifaceted role, coupled with extensive training and a commitment to ongoing learning and adaptation, positions them as vital contributors to improving health outcomes and the quality of life for cancer survivors. While challenges are substantial and mitigated as described above, the reward of making a tangible difference in the lives of survivors and contributing to the evolving landscape of cancer survivorship care is immeasurable. As healthcare evolves in the digital age, interventionists play an increasingly significant role in delivering personalized care, bridging the gap between traditional healthcare practices and the ever-expanding realm of mobile health technologies.

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