

Introduction to the Special Issue: Cancer Prevention and Survivorship Research

In 2023, 1,958,310 new cancer cases are projected to occur in the United States [1]. Cancer is the second leading cause of death in the U.S. with 609,820 cancer deaths projected to occur in 2023 [1]. These numbers are even more staggering worldwide, with 18 million new cancer cases annually and leading in cause of death, accounting for nearly 10 million deaths in 2020 [2]. Some of these cancers were preventable or could have been detected earlier through a multitude of health behaviors [3]. There are also over 18 million cancer survivors in the U.S. and 32 million worldwide [4, 5]. The number of survivors is projected to increase by 24.4% to 22.5 million by 2032 in the U.S [6]. with the majority of survivors (67%) being age 65 years or older [7]. Given this increase in the numbers of survivors, it is imperative for research to focus on enhancing the quality and length of survival to prevent, minimize or manage adverse effects of cancer and its treatment.

Behavioral medicine research in psycho-oncology and cancer prevention and control has advanced the field significantly, first beginning with descriptive research to understand the relevant aspects of prevention, symptom management, survivorship, and more recently with behavioral interventions, many of which capitalize on technology and distance delivered technologies. Cancer prevention and control has benefited substantially from behavioral medicine research over the last several decades [8] Thus, we are pleased to present this compilation of nine articles that were all accepted for publication in the *Annals of Behavioral Medicine*. within a short period, which attests to the need for behavioral medicine in cancer control and survivorship.

This special issue includes papers that address pressing issues within the field of behavioral medicine and psycho-oncology across the globe. These studies range from adopting and maintaining healthy behaviors for cancer prevention, psychosocial determinants of adaptation, and psychosocial/behavioral medicine interventions. The articles focus on healthy adults, cancer survivors and couples coping with cancer.

Encouraging Health Behaviors: Mammography and Physical Activity

In 2009, the U.S. Preventive Services Task force updated their mammogram recommendations to increase the age of routine breast cancer screening starting at age 50. Guan and colleagues [9] conducted a randomized controlled communication experiment with women aged 40-49. Consistent with

several behavior change theories, the findings indicate that compared to those who received mammography benefits/risks-only messaging, women demonstrated greater willingness to delay screening mammogram until age 50 when they received messages on the benefits and risks of screening combined with messages indicating their low genetic risk of breast cancer, based on family history and alternative behaviors to reduce breast cancer risk. This has implications not only for preventive behaviors, but for health communication.

At the forefront of behavioral medicine research in cancer survivorship is the beneficial role of exercise to minimize symptoms and improve quality of life. Sheeran et al [10]. present a systematic review that finds only one-quarter (24%) of interventions focused on physical activity among cancer survivors measured both adoption *and* maintenance of behavior change. Of those interventions, only 22% were effective in promoting both adoption and maintenance of physical activity. These findings underscore the need for more clinical trials that assess the maintenance of physical activity and for new research programs focused on evaluating the efficacy of maintenance techniques.

Studies of psychological adjustment: Fear of recurrence, identity and dyadic coping

Several articles in this special issue focus on psychosocial functioning and adaptation among adult cancer survivors. Using longitudinal data, Vanderhaegen and colleagues [11] examined the relation of identity formation (identity synthesis and identity confusion) to depressive symptoms, life satisfaction, and physical functioning) among adolescent and young adult (AYA) survivors of childhood cancers. Identity synthesis - having a coherent and stable sense of identity - and life satisfaction positively predicted each other over time. Identity confusion was related to lower life satisfaction over time, and being in better physical health and lower identity confusion predicted each other over time. Posttraumatic stress symptoms predicted lower identity synthesis and greater identity confusion over time. This study gives evidence to the importance of identity as a central adaptive task for AYA childhood cancer survivors.

Denyse and colleagues [12] conducted qualitative, small group research with 37 black women with breast cancer to understand the relevance and usefulness of the Strong Black Woman (or Black Superwoman) identity. The women spoke about others' expectations of them, including acting strong,

continuing to care for others, not needing support, and not voicing their emotions – many while engaging in their own emotional suppression. At the same time, some women were able to redefine their strength to include expressing emotions and accepting help. This study highlights both negative and positive ways that the Strong Black Women schema, whether externally imposed, or externally imposed and then internalized, had primarily negative influences on their cancer experiences.

Fear of cancer recurrence (FCR) has been related in past studies to quality of life, psychosocial adjustment, emotional distress, and a number of physical symptoms. Two articles in this special issue tap new aspects of FCR. In existing literature, FCR may be one of the most common unmet needs reported by patients and survivors [13]. Second, FCR may not be a singular construct. With a fairly large sample of adult survivors in Singapore. Liu et al [14], found three latent profiles of FCR, differentiated by severity; moreover, these profiles varied by coping, depressive and anxiety symptoms, and quality of life. This study highlights the multidimensional nature of FCR and has potential to improve FCR-directed interventions.

The last psychosocial study in this special issue goes beyond examining the individual and focused on couples coping with cancer. Using an experimental paradigm (couples' conversations), Weber and colleagues [15] found that couples who demonstrated higher emotional arousal within their communication about cancer reported better individual *and* relational adjustment. If the partner without cancer reported lower emotional arousal, compared to the patient, this predicted worse individual adjustment over time. Elevated emotional arousal within cancer-related conversations may be adaptive for adjustment and this study suggests ways for interventions to help guide emotional engagement to enhance resilience in couples who are coping with cancer.

Behavioral Medicine Interventions in Psycho-oncology

Lastly, there is a burgeoning body of research focused on behavioral medicine interventions in psycho-oncology. This special issue contains articles examining the outcomes of interventions and those focused on preventive health behaviors and those focused on mental health (adjustment) outcomes.

Three papers focus on preventive health behaviors, including mammography [9], and physical activity [9, 15]. In addition to two articles described above [9, 10], Solk and colleagues [16] conducted a physical activity intervention focused on breast cancer survivors using the multiphase optimization strategy (MOST). Participation in this intervention was associated with improved patient-reported outcomes including anxiety, depression, fatigue, physical functioning, and sleep.

Psychosocial Interventions

The lion's share of studies in psycho-oncology focus on the psychosocial factors that may improve adjustment, and this special issue contains two such interventions. Studying young adult testicular cancer survivors, Hoyt and colleagues [17] examined goal-focused emotional regulation therapy (GET)

compared with supportive listening. Participants in GET reported a stronger therapeutic alliance and greater reductions in depression and anxiety symptoms compared with the supportive listening condition, both immediately after the intervention three-months later.

Another intervention conducted by Van Helmond and colleagues [18], compared an online, self-help cognitive-behavioral (CBT) intervention for female adult breast cancer survivors to usual care, with the goal of ameliorating psychosocial distress and fear of cancer recurrence. The authors did not find any long-term effects of the online training, suggesting that self-help might not be enough to see improvement for survivors without additional professional therapeutic support. This manuscript is noteworthy also because it shows that the absence of effects is important for the growth of the field.

Future Directions

The contributions in this special issue advance our understanding in psycho-oncology across the cancer continuum in a variety of areas including health behaviors, psychosocial outcomes, and psychosocial and behavioral interventions across the life span. The manuscripts were not submitted in response to a specific call but, instead, reflect the breadth of psychosocial oncology research. We note, however, that the articles published in this special issue primarily focus on adult cancer survivors, include many who were diagnosed with breast cancer, focus on the individual-level, and are largely descriptive in nature. This suggests a pressing need to include underrepresented populations in psycho-oncology research, which may mean moving toward community-based recruitment outside of tertiary cancer centers. Other areas that need attention from behavioral medicine scientists include palliative care, symptom management, and family communication, and we would welcome manuscripts in these areas in the future.

We were very pleased to be able include in this issue publications from the US, Western Europe and Asia. Although health care systems vary greatly, behavioral medicine issues are extremely relevant to all cancer patients and their families. We also were pleased to see a variety of qualitative and quantitative research methods, including several randomized clinical intervention trials, and urge behavioral medicine researchers to use a variety of methods to answer their questions, and not let the method lead the question. There is even one paper that did not find the expected effects – also important for moving the field forward.

Most of the studies in this issue focused on individual behaviors and adjustment, highlighting the need for more family-focused or couple-focused research, as well as patient-provider research and provider-oriented research. The dearth of larger randomized clinical behavioral medicine interventions in psycho-oncology is an area that researchers should continue to focus research efforts in order to advance the field. We look forward to publishing those up and coming primary outcome trials.

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