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## A Web-based Lifestyle Intervention for Cancer Survivors: Feasibility and Acceptability of SurvivorSHINE

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### Abstract

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Authors' contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Wendy Demark-Wahnefried, Victoria Williams, and Suzanne Perumean-Chaney. The first draft of the manuscript was written by Victoria Williams and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Declarations

Conflicts of interest/Competing interests

There are no conflicts to report.

Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. The study was approved by the UAB Institutional Review Board (IRB-140428003).

Consent for publication

Not applicable

Availability of data and material

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Code availability

Not applicable

**Purpose:** Assess the feasibility, acceptability, and preliminary efficacy of a healthy lifestyle website, SurvivorSHINE ([www.survivorshine.org](http://www.survivorshine.org)), for cancer survivors using a mixed-methods approach.

**Methods:** Formative research included a comprehensive literature review and four focus groups on website preferences with diagnosis-diverse cancer survivors (N = 17). Their feedback informed a web adaptation of a telephone counseling and mailed-print lifestyle intervention previously found effective for cancer survivors. The resulting web-based intervention was examined in a 3-week, single-arm trial among 41 cancer survivors. Assessments of physical activity, diet, body weight, and knowledge related to exercise and diet guidelines for cancer survivors occurred at baseline and three weeks later, along with exit interviews.

**Results:** Themes from focus groups indicated cancer survivors' desire for easy-to-use, interactive web-based platforms to access credible diet and exercise information. The study sample was recruited within 12 months, and study retention was high (85.4%). Participants showed significant pre-to-post test improvements in diet and exercise knowledge ( $t = 5.31, p < .0001$ ) and physical activity ( $t = 2.40, p = .02$ ). Improvements in body weight and some dietary components (red meat, alcohol) were observed, but did not reach statistical significance.

**Conclusion:** Results support the feasibility and acceptability of SurvivorSHINE. The significant increases in healthy lifestyle knowledge and physical activity found in the current study are promising, but a larger, randomized-controlled trial is needed to determine efficacy.

## Keywords

cancer survivor; diet; exercise; web-based; weight management

## Introduction

There are an estimated 16.9 million cancer survivors in the U.S., and that number is rapidly increasing due to advances in early detection and treatment[1]. Cancer survivors face unique challenges to their quality and quantity of life, including increased risk for developing secondary cancers, cancer recurrence, functional decline, and other co-morbidities [2]. Thus, the American Cancer Society (ACS) recommends that cancer survivors perform the following preventive health behaviors (a) reach and maintain a healthy weight; (b) engage in regular physical activity; and (c) achieve a dietary pattern high in vegetables, fruits, and whole grains as well as limit refined foods, added sugars, and red and processed meats[2]. Past research has shown that cancer survivors adhering to ACS guidelines can improve their overall health, quality of life, and treatment outcomes [2, 3]. Yet, roughly 30% of cancer survivors are obese[4], 35% are physically inactive[5], and 80% do not meet the 5-A-Day recommendation for consumption of vegetables and fruits [6].

Cancer survivors face many barriers to adhering to these healthy lifestyle recommendations. For example, even after completion of cancer-treatments which may cause acute changes in taste (i.e., dysgeusia), difficulty in swallowing (i.e., dysphagia), nausea, mouth sores, and severe anemia and leucopenia, many survivors are still left with long-term treatment-related sequelae which include neuropathy and chronic fatigue, that can reduce levels of physical activity[2]. Moreover, site specific cancer surgery and radiation therapy, such as treatments

for breast or ovarian cancer can cause lymphedema, whereas similar procedures performed for prostate or colorectal cancer, can cause urgency and/or leakage – all of which serve as barriers to physical activity[7]. Likewise, these treatments for some cancers can cause intolerances for specific foods, particularly some fruits and vegetables[2]. Thus, cancer survivors may need specific guidance to overcome these barriers. It also must be borne in mind, that because lack of exercise, obesity, and poor dietary patterns are associated with elevated cancer risk,[8] that many survivors have longstanding suboptimal behaviors that now must be unlearned. Unfortunately, because cancer is such a time-intensive and costly disease which requires expensive treatment, multiple medical appointments and extended follow-up, cancer survivors must learn new behaviors at a time that they are not only under physical and emotional stress, but also under time and financial constraints[9]. interventions are clearly needed to address the specific healthy lifestyle challenges of this growing population.

Healthy lifestyle interventions for cancer survivors have been successfully delivered using broad reach methods, such as via telephone and mail, to improve cancer-related symptoms and better functional health outcomes[10]. For example, older, overweight and obese cancer survivors enrolled in the Reach-Out to ENhancE Wellness (RENEW) program via telephone counseling and mailed print materials showed improvements in diet quality, physical activity, physical functioning, body mass index (BMI) and quality of life [11]. However, the per person estimated cost of such programs is roughly \$500, thus limiting reach [10].

Web-based healthy lifestyle interventions have been shown to improve diet, physical activity, and weight in the general population [12] and may offer distinct advantages for cancer survivors[13]. These programs can be accessed on any Internet-enabled device 24/7 by a large numbers of survivors with little incremental costs past initial development [14–16]. There has been an increase in survivors using the Internet to seek health information, and concerns raised regarding the paucity of credible Internet sources for healthy lifestyle information specifically for cancer survivors [10]. Furthermore, studies to date in this area have focused on mostly single behaviors (diet or exercise), and have been limited to breast and prostate cancer survivors [17]. However, health risks such as physical inactivity and poor diet often cluster [18] and individuals with other cancer types remain underserved.

Given the rising need for multiple behavior change interventions for individuals with various cancer diagnoses and a dearth of research on using interactive web-based technology for health promotion in this population [17], the purpose of this study was to: 1) identify cancer survivors' needs/preferences for a web-delivered lifestyle intervention; 2) adapt an existing efficacy-proven lifestyle (diet and exercise) intervention (RENEW) into SurvivorSHINE for web delivery among diagnosis-diverse cancer survivors; and 3) examine the acceptability, feasibility, and preliminary efficacy of SurvivorSHINE.

## Methods

This study used a mixed-methods research design. First, focus groups comprised of 17 cancer survivors were conducted to ascertain the cancer-specific website features, information, and aesthetics considered appealing and helpful for promoting healthy lifestyles

in this population. Feedback from this formative research was used to develop a web-based lifestyle intervention for cancer survivors, <https://survivorshine.org>. Then, a single-arm trial was conducted among 41 cancer survivors to evaluate the acceptability, feasibility, and preliminary efficacy of the web-based lifestyle intervention. The methods and results sections for the qualitative work are presented together below, followed by the methods and results sections for the pilot study.

## Focus Groups

**Design.**—Four 90-minute focus groups were conducted to learn what cancer survivors need and want from a web-based lifestyle intervention. The groups were stratified by race and gender and conducted with Non-Hispanic White female survivors (N = 5), Non-Hispanic White males (N = 4), Non-Hispanic Black females (N = 4), and Non-Hispanic Black males (N = 4).

**Recruitment.**—Focus group research was approved by the University of Alabama at Birmingham (UAB) Institutional Review Board (IRB-140428003) and conducted through UAB. Participants were recruited from the UAB cancer registry, local survivor support groups, community organizations, advertisements on a local news channel television segment and word-of-mouth, and signed written consent was obtained.

**Eligibility.**—Eligibility criteria included: 1) adult Non-Hispanic White (NHW) or Non-Hispanic Black (NHB) survivors diagnosed with a cancer having >80% 5-year survival (i.e., cancers of the breast, prostate, or thyroid); 2) residence within a 20-mile radius of the University of Alabama at Birmingham (UAB); 3) self-reported Internet access and regular use; and 4) ability to speak and read English. Exclusionary criteria were: 1) severe auditory, vision or speech deficits; and 2) members of racial/ethnic groups not classified as NHW or NHB

**Protocol.**—Focus group sessions were scheduled for 90 minutes with an experienced moderator and conducted in groups stratified by race and gender. Participants were asked the following questions (a) What websites do you visit regularly? What is it about that website that keeps drawing you back? (b) What motivates you or what could motivate you to initially login to a website? (c) What would motivate you to come back to a website time and time again? (d) What prompts would you need to draw you back to the website (e.g., email, regular mail, and text)? and (e) How often would you want to get reminder messages? And what sort of message (e.g., email or text) would you recommend? All focus groups were tape-recorded and transcribed verbatim.

**Qualitative analysis.**—Focus group transcripts were thematically analyzed by the research team using NVivo 12 software (Burlington, MA). Initial codes were developed by VW. Then, transcripts were independently reviewed (VW and RJ) and coded. Coders discussed any discrepancies and reached a consensus on appropriate coding.

**Themes.**—A prominent emergent theme was the need to access cancer--specific lifestyle information on one single website. Participants emphasized that it was difficult to locate

credible healthy lifestyle information specific to cancer survivorship as a result of the bulk of online resources focusing on primary cancer prevention. Participants expressed the preference for information being expansive but also tailored based on cancer type, age group, and gender. For example, a male colon cancer survivor wanted to receive healthy lifestyle information and testimonials specifically for male colon cancer survivors. Moreover, many participants found survivor testimonies to be encouraging and empowering. Other themes related to cancer survivors' desire for an easy-to-use, interactive, web-based platform that provided credible physical activity, diet, and weight management information.

Accessibility was deemed the most important feature of a healthy lifestyle website for cancer survivors among focus group participants. Participants reported frustration visiting websites where it was difficult to locate information, and they were unlikely to return to such sites. There was a strong preference for websites that have easy-to-locate information; for example, one participant said, "The more information you give me upfront is better. So, I don't have to do as much research on it." Moreover, they suggested using tabs to categorize information, allowing users to search for content, and provide links for additional information as necessary. Large, easy-to-read fonts such as Times New Roman and captivating graphics including videos and pictures, were also endorsed. Participants expressed disappointment in websites with dense text. Instead, they preferred websites that deliver information in more visual formats, with short videos ( 5 minutes) and pictures. Website pop-ups can be troublesome; however, participants only wanted pop-ups if it expanded on information already in view. Survivors requested interactive widgets that allow them to input information and receive personalized feedback on diet quality or physical activity.

Another prominent theme was the desire for healthy lifestyle information from a credible, reliable, and valid source. Participants recalled visiting trusted healthy lifestyle websites to answer their health questions, like local hospitals and research institutions, and the ACS. When visiting new sites for health information, participants were more likely to trust the new source if the site endorsed what they deemed reputable, or information aligned with a credible site. Participants reported using the Internet to find cutting-edge cancer research with a strong preference for sites communicating information in a manner that was easy to comprehend and that provided access to the original sources of information — for example, detailing the importance of cancer survivors having the recommended amount of fiber in their diet and including references for related journal articles (see Table 1).

### Intervention Description

The RENEW Intervention was adapted to a web-based platform, SurvivorSHINE ([www.survivorshine.org](http://www.survivorshine.org)), taking into account results of this formative research and a comprehensive literature review [17]. RENEW was a theory-based (Social Cognitive Theory) intervention that used computer-tailored print materials and telephone counseling [11, 19].

## Feasibility Study

**Design.**—To assess the feasibility, acceptability, and preliminary efficacy of the resulting intervention (SurvivorSHINE), a 3-week single-arm feasibility study was performed among survivors of many types of cancer residing in the Birmingham, AL metropolitan area. The study was conducted from August 2017 to August 2018. The protocol was approved by the UAB Institutional Review Board (IRB-140428003) and signed informed consent was obtained from all participants.

**Recruitment and eligibility.**—The eligibility criteria and recruitment strategies for pilot trial participants were identical to those previously described for focus groups.

**Protocol.**—In week 1, participants completed written surveys and wore accelerometers. Participants returned accelerometers and reviewed the website in week 2. Participants were mailed accelerometers at the end of week 2 to wear for an additional seven days. At 3 weeks, participants returned accelerometers and completed surveys in-person again, along with exit interviews.

**SurvivorSHINE intervention.**—The efficacy-tested RENEW intervention for breast, prostate, and colorectal survivors served as the foundation for the SurvivorSHINE web-based platform for diagnosis-diverse cancer survivors [11, 19]. The personalized healthy lifestyle website promotes adherence to the previously mentioned ACS Diet and Physical Activity Guidelines [2] for cancer survivors and is grounded by Social Cognitive Theory (SCT). SCT describes the multiple, reciprocal influences on health behaviors, including individual experiences, beliefs, and environmental factors[20].

Key constructs of SCT guided the development of SurvivorSHINE intervention strategies. For example, self-efficacy (confidence in one's ability to perform desired health behavior) was promoted through online tools for incremental goal-setting, sample meal plans and step-by-step pictures and directions for leg strengthening exercises (role modeling). To encourage self-regulation, participants were provided tailored guidance on self-monitoring of diet quality, exercise, and body weight.

The SurvivorSHINE website included six main sections: “My Profile,” “Home Page,” “Healthy Weight,” “Healthy Eating,” “Exercise,” and “News You Can Use.” “My Profile” allowed users to input gender, birth year, height, weight, cancer coping style [21], cancer diagnoses and treatment(s), physical activity (i.e., minutes of moderate to vigorous activity and days of resistance exercise) and diet (i.e., intake of calories, servings of fruits, vegetables, whole grains, and alcoholic drinks consumed) to receive tailored lifestyle information and personalized feedback. Users are encouraged to regularly update their profile every 30 days to ensure evolving personalized feedback and content is received.

The “Home Page” provides direct links for “Healthy Weight,” “Healthy Eating,” and “Exercise” sections of the website and highlighted recent cancer survivorship news stories in the “News You Can Use” section. The “Healthy Weight” section provides individualized feedback on body weight status based on the information (i.e., height and weight) from the user profile. The system generated a healthy weight goal as well as tips and information to



reach that weight goal (goal = BMI <25 with a realistic goal set at 10% weight loss over one year). Weight maintenance tips were provided for those at a healthy weight. The Healthy Weight section also provided a BMI calculator, calorie calculator, and sample meal plans.

The “Healthy Eating” section provided personalized feedback based on information gathered from the ASA24[22], which was embedded in the user profile. Healthy eating goals, based on the ACS 2012 guidelines [2], were generated for vegetable and fruit ( 5 servings/day), saturated fat (< 10% total calories), whole grains ( 50% of grain consumption), added sugar ( 6 tsp/day for women, 9 tsp/day for men), red and processed meat (<18 ounces/week), and alcohol consumption (goal = 1 drink/day for women, 2 drinks/day for men), plus serving size, portion control, and fast food information.

The “Exercise” section provides personalized recommendations based on physical activity information entered in the user profile and recommends incrementally increasing duration, repetitions and intensity to reach the guidelines ( 150 mins/week endurance exercise; 2–3x/week strength training). This section highlighted exercise types (i.e., endurance, strength, and flexibility) and benefits, leg strengthening exercises, and a calorie-burning guide.

Lastly, “News You Can Use” offered easy-to-read summaries of recent cancer-related healthy lifestyle research (e.g., “Physical activity extends the lives of cancer survivors”) with links to original journal articles.

## Measurements

Demographic information was assessed at baseline (e.g., age, gender, race/ethnicity, education, marital status, employment, and income). Feasibility and acceptability were assessed by recruitment, retention, and exit interview data on program satisfaction. Moreover, participant safety was assessed by adverse events. Participants were monitored through weekly check-ins via telephone from a member of the research staff. Participants were also asked about their user experience during the exit interviews, including what they liked/disliked about the website, as well as if they would like to continue using the website.

Survivor-specific healthy lifestyle knowledge, physical activity, diet quality, and weight were measured at baseline and 3 weeks. The knowledge survey included ten questions on ACS recommendations for physical activity, diet, and weight (e.g., “How many minutes of endurance exercise should you do a week?” “What is a benefit of maintaining a healthy weight?” “What is the maximum amount of meat that you should consume per week?”).

The Godin Leisure-Time Exercise Questionnaire (GLTEQ) was used to assesses mild, moderate, and vigorous physical activity[23] and has shown internal consistency, acceptable reliability, and similar validity with more objective measures of physical activity levels[24–26] used with cancer survivors in several past studies.

Participants were also instructed to wear an accelerometer (ActiGraphGT3X+, Pensacola, Florida) for seven days at baseline and follow-up. The ActiGraph measures movement and activity intensity and has been validated and with total energy expenditure[27] and heart rate telemetry[28] among cancer survivors.[29] Accelerometer data was analyzed using ActiLife software (version 6.1), with the minimum threshold for moderate-intensity set at

1952 counts/minute[30]. Moreover, minimum valid wear time was set at four days of at least 600 minutes of wear.

To evaluate dietary intake, two-day (one weekday and one weekend day) dietary recalls were conducted at baseline and follow-up using the Automated Self-Administered 24-Hour (ASA24) Dietary Assessment.[22] The ASA24 is a web-based assessment tool that generates a nutrient analysis of the beverages and foods consumed during a 24-hour timeframe. Variables of interest included: total kcals, saturated fat, total fat, vegetables and fruits, whole grains, added sugar, red and processed meat, and alcohol. Weight was measured using the Health O Meter Floor Scale (model: 894KLTEA, Purvis, MS). Height was self-reported at baseline.

### **Feasibility Study Analyses**

All statistical analyses were conducted using SPSS 25 (SPSS Inc., Chicago, IL). Descriptive statistics were calculated to describe demographic characteristics. Paired t-tests were used to examine changes in knowledge, diet, physical activity, and weight using a two-tailed test with  $\alpha < 0.05$ . Exit interviews were transcribed verbatim and thematically analyzed.

## **Results**

### **Feasibility.**

Recruitment and retention rates were high. Over a 1-year recruitment period (August 2017 to August 2018), 106 individuals were assessed for eligibility. Sixty-two people were excluded for not being cancer survivors (n=19), not residing within 20 miles of Birmingham, AL or willing to commute (n=2) or not being NHB or NHW (n=2). Of the 83 potential participants that met eligibility criteria, 44 participants were interested in enrolling in the study. Of the 44 participants enrolled, 41 completed baseline assessments, and 35 completed follow-up assessments. Thus, the retention rate for the current study was 85.4% (35/41). There were no significant differences between groups in baseline characteristics. No adverse events were reported.

### **Participant characteristics.**

The sample was mostly non-Hispanic White, married, and college-educated, with annual household incomes of at least \$50,000. The average age was 61.8 years (see Table 2).

### **Acceptability.**

Exit interview data from 35 participants supported the acceptability of the SurvivorSHINE intervention. Overall, participant feedback about the website was positive: “easy to navigate;” “provides information specific to cancer survivors;” “[website] looks great on my tablet and phone;” and “I am not a computer guru...but it flowed very smoothly for me. I found it to be very good information.” Participants reported enjoying the learning experience on the website: “I learned a lot and it held my interest;” and “the colorfulness of the website grabs your attention, and the pictures are appropriate to the topic.”



Forty-four percent (N = 15) of participants expressed interest in continuing website use after the trial and sharing the resource with other cancer survivors: “Yeah I think it’s a really good website...I was telling my cousin last night and they were looking at it too and they say oh this is cool.” Participants also provided feedback to improve survivors’ user experience, including: “more motivational videos,” “updating the website regularly,” “provide access to health experts to answer health lifestyle-related questions,” and “allow survivors to communicate with each other on the website” (see figure 1).

### **Secondary measures.**

Healthy lifestyle knowledge scores improved significantly from baseline (M=53.4%) to follow up (M=69.1%,  $t = 5.31$ ,  $p < .0001$ ). Self-reported moderate-to-vigorous physical activity (MVPA) also increased significantly from 40.9 minutes/week (SD = 46.2) at baseline to 52.7 minutes/week (SD = 50.7) at follow-up ( $t = 2.40$ ,  $p = 0.02$ ). While accelerometer data indicated no physical activity changes (M=7.4 minutes/week at baseline, SD = 11.9; M=9.5 minutes/week, SD = 15.1 at follow up), valid accelerometer data was only available for 9 participants at both time points (see Table 3). Weight declined from baseline (M = 82.1) to follow up (M = 81.8,  $t = 1.06$ ,  $p=0.30$ ), but these changes were not statistically significant. No significant differences were detected in dietary intake, though trends in reduced red meat ( $p=0.05$ ) and alcohol consumption ( $p=0.06$ ) were observed.

## **Discussion**

### **Principal Findings.**

Results from this pilot study support the feasibility and acceptability of web-delivered lifestyle interventions for diagnosis-diverse cancer survivors. Recruitment was conducted with ease, and retention was high (85.4% at 3 weeks, slightly lower than the 91% retention rate found at 12 weeks in a web-delivered lifestyle intervention study for prostate cancer survivors) [31]. The primary reason for drop-out was that participants were unwilling to return for follow up assessment or reported being too busy. The intervention was well-received, with several exit interview participants expressing interest in using the website after program completion and sharing the site with other cancer survivors. Survivors also provided helpful suggestions to improve this program, such as adding an online social forum for communication and interaction with other cancer survivors. This valuable feedback was used to inform refinements to the website, as intervention development is an iterative process and several recent studies have successfully incorporated digital discussion boards [32, 33] and Facebook components [34] into their lifestyle interventions, with promising results (e.g., increased MVPA) [32–34].

### **Comparisons with Previous Studies.**

Modest short-term increases in healthy lifestyle knowledge and physical activity (+11.78 minutes/week) also were found in the current study. RENEW (the telephone and mailed-print intervention prototype for SurvivorSHINE) reported increases of 36.3 minutes/week of MVPA in their intervention arm at 12-months [19]. Similar (or larger) MVPA increases were found in prior web-delivered lifestyle interventions for cancer survivors at 12 weeks [31, 35–40]. For example, Trinh reported an increase of 44.1 minutes/week while Valle et al.

found increases of 67.9 minutes/ week [41], and Rabin et al. increased physical activity by 102.5 minutes/week [42]. However, it is important to note that those interventions were all substantially longer than the three-week pilot testing period for SurvivorSHINE.

While there were no statistically significant changes in diet, improvements were noted in added sugar, vegetables, whole grains, alcohol and red and processed meat consumption, with changes in some of these domains, i.e., red meat and alcohol, almost reaching statistical significance. Findings from RENEW indicated significantly improved diet quality (reduced saturated fat intake and increased consumption of vegetables and fruits) among cancer survivors at 12 months [19]. Furthermore, both Paxton et al.[43] (N = 71) and Lee et al.[39] (N = 59) reported significantly improved diet in web-based lifestyle interventions with cancer survivors over 12 weeks, including increased fiber, vegetable, and fruit intake. As previously indicated, this feasibility trial was far briefer in duration and may not have allowed the time needed to plan healthier menus and procure healthier foods.

The reduction in weight over one week (0.3kg) in the current study was not statistically significant, but nonetheless impressive given the brief time period. Among web-delivered lifestyle interventions, there are mixed results related to changes in weight. Lynch et al. reported weight loss among cancer survivors (4.8kg) during a 12-month intervention[44] similar to RENEW (1.14kg)[19], whereas Frensham et al. reported no change in survivors' weight over 12 weeks in their program[36]. Thus, the data obtained from this pilot study are promising in comparison to other interventions.

### **Strengths and Limitations.**

Strengths of the current study include recruiting a diverse sample with representation from men, minorities, and six different cancer types. Moreover, SurvivorSHINE addressed multiple health behaviors, unlike most prior web-based interventions among cancer survivors which focus solely on physical activity [17]. Limitations include a small, well-educated, affluent sample; lack of control group; brief intervention duration; missing valid accelerometer data; and reliance upon self-reported measures. As for future directions, larger randomized-controlled studies will be needed to determine the efficacy of such web-based interventions for cancer survivors.

### **Clinical implications.**

The current study suggests that web-delivered platforms like SurvivorSHINE may benefit cancer survivors. Using interactive web-based technology to promote healthy lifestyle habits has great potential for improving regular physical activity, diet, and weight management among this population. This intervention could also be scalable to reach cancer survivors who reside long distances away from major medical centers, are traditionally hard to reach, or are underserved.

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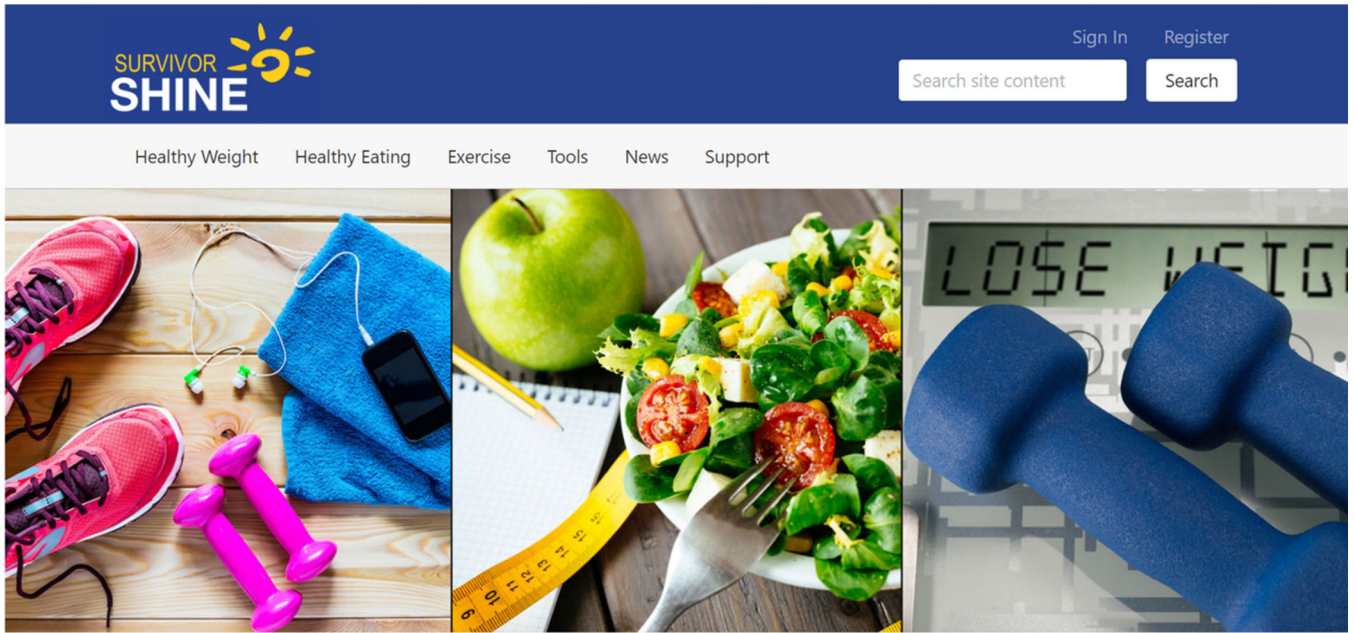
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# Welcome to SurvivorSHINE!

**Figure 1.**  
SurvivorSHINE Homepage

**Table 1.**

Themes from focus groups and resulting intervention development

<b>Web-delivered lifestyle intervention needs/wants</b>	<b>Strategies to address suggestions</b>
Share survivorship experiences	Provided healthy lifestyle testimonies from cancer survivors
Diet, physical activity, and weight management information specifically for cancer survivors on one website	Provided tailored healthy lifestyle information based on user data
Easy-to-use	Used large fonts, search function on the website, information separated into tabs
Interactive	Provided widgets on the website that delivered personalized feedback on lifestyle behavior
Credible, reliable, and valid source of recent information	SurvivorSHINE was developed a by team of UAB experts with support by the American Cancer Society

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**Table 2:**

## Sample Characteristics (N = 41)

Variable	Mean $\pm$ SD or n(%)
Age (years)	61.8 $\pm$ 12.1
Gender	
Female	24 (58.5%)
Race/ethnicity	
Non-Hispanic Black	16 (39%)
Non-Hispanic White	25 (61%)
Cancer Type <sup>†</sup>	
Breast	20 (48.8%)
Prostate	13 (31.7%)
Skin	2 (4.9%)
Myeloma	2 (4.9%)
Thyroid	2 (4.9%)
Head & Neck	2 (4.9%)
Marital Status	
Married or Civil Union	25 (61%)
Widowed	7 (17.1%)
Divorced	4 (9.8%)
Single, never married	5 (12.2%)
Education	
High school degree or equivalent (e.g., GED)	4 (9.8%)
Some college but no degree	6 (14.6%)
Associate degree	9 (22%)
Bachelor's degree	11 (26.8%)
Graduate degree	11 (26.8%)
Income	
\$49,999	15 (36.6%)
\$50,000 to \$124,999	13 (31.7%)
\$125,000	9 (22%)
Refused	4 (9.8%)
Employment	
Employed, full-time	11 (26.8%)
Employed, part-time	4 (9.8%)
Disabled, unable to work	6 (14.6%)
Retired	20 (48.8%)

<sup>†</sup>Participants may select more than one cancer type

**Table 3:**

## Changes in Lifestyle Behavior

Variable	Baseline Mean N= 41	Follow-up Mean N= 35	Mean Change N=35	Change
Physical Activity (self-reported min/week)	40.9	52.7	11.8	t = 2.40, p = 0.02
Physical Activity (accelerometer: min/week)	7.4	9.5	2.1	t = 1.00, p = 0.35
Knowledge (out of 100%)	53.4%	69.1%	15.7%	t = 5.31, p <.0001
Weight (kg)	82.1	81.8	-0.3	t = 1.06, p = 0.30
Diet (daily averages)				
Total kcals	1420	1283	-137	t = 1.04, p = 0.31
Saturated fat (percent of kcals)	11.3	11.7	0.4	t = 0.29, p = 0.77
Added sugar (grams)	8.9	6.1	-2.8	t = 1.69, p = 0.11
Vegetables (servings)	1.2	1.4	0.2	t = 0.70, p = 0.49
Fruit (servings)	0.7	0.6	0.1	t = 0.63, p = 0.54
Whole grains (servings)	0.04	0.60	0.56	t = 0.95, p = 0.35
Red and processed meat (ounces)	1.7	0.5	-1.2	t = 2.06, p = 0.05
Alcohol (number of drinks)	0.3	0.1	-0.2	t = 2.03, p = 0.06