



# A qualitative study of stress experiences, health behaviors, and intervention preferences in young adult cancer survivors

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## Abstract

**Purpose** To inform behavioral intervention development, this study examined experiences and unmet needs related to stress, diet, and physical activity in young adult (YA) cancer survivors.

**Methods** Twenty-three semi-structured interviews were conducted with a purposive sample of YA cancer survivors ( $n = 12$  aged 18–29 years;  $n = 11$  aged 30–39 years; 57% racial or ethnic minority) between May and July 2022 via Zoom. Data were analyzed using a coding reliability approach to thematic analysis.

**Results** Stressor-related themes included health and health care, economic stability, social and community context, and balancing responsibilities. Transition to independent adulthood was discussed among younger participants (18–29 years). Coping-related themes included letting go, keeping anchored in faith, and distraction. Older participants (30–39 years) reported more diverse coping strategies. Routine and consistency and the impact of stress were themes aligning with health behaviors. Control was a cross-cutting theme regarding stressors, coping, and health behaviors. Themes related to intervention preferences included individualized approach, expert-based content, peer support, integrative self-care, and manageability. Younger participants preferred multiple intervention formats (e.g., website, tracking logs).

**Conclusions** Findings highlighted unmet needs regarding social and environmental stressors in YA cancer survivors and a preference for individualized, expert-based content and peer support in stress management-enhanced behavioral interventions. Such interventions may be tailored for specific age groups to account for differences in stress experiences and intervention preferences.

**Keywords** Stress · Health behaviors · Survivorship · Young adult · Qualitative

Young adult (YA) cancer survivors have an increased risk of developing obesity-related chronic diseases, such as cardiovascular disease [1] and diabetes [2], compared to people without a history of cancer. Weight management is necessary to improve prognosis in YA cancer survivors, as

obesity is associated with cancer recurrence and mortality for several types of cancer [3–6]. Despite American Cancer Society recommendations for weekly physical activity (PA) levels and healthy eating patterns for cancer survivors [7], YA survivors have low levels of PA [8–10] and poor adherence to dietary guidelines (e.g., inadequate intake of fruit, vegetables, and micronutrients and excessive intake of sodium, saturated fat, and added sugar) [9, 11–13]. Lifestyle interventions show promise for changing dietary and PA behaviors, but relatively few have been tested in YA cancer survivors [14–16].

Moreover, YA cancer survivors experience a variety of age-dependent stressors, including strained relationships, loss of employment, challenges with independent living, family issues, and financial concerns [17]. YA cancer survivors have an increased risk of anxiety, post-traumatic stress symptoms, cancer-related worry [18], and mood disturbances than other cancer survivors [19]. Previous research

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has identified psychological barriers (e.g., lack of motivation, negative thoughts, and feelings) and social support as important factors to address in lifestyle interventions for YA cancer survivors [20, 21].

Stressors impacting this population may also vary due to social determinants of health (SDOH) or environmental conditions that affect health and well-being, including healthcare access and quality, economic stability, neighborhood and built environment, education access and quality, and social and community context [22]. Previous research has indicated that SDOH, including barriers to healthcare access, economic stability, and educational attainment, partially explained the reduced likelihood to engage among physical activity among Black cancer survivors compared to White cancer survivors [23]. One's neighborhood and built environment can play a role in lifestyle behavior habits as well; access to fresh produce has been reported as a concern among YA cancer survivors in particular [24]. The present study explores the role of SDOH in the stress experience as a precursor to such health behaviors among YA cancer survivors.

The integrated theoretical framework for this study involved social determinants of health, Lazarus and Folkman's Transactional Model of Stress and Coping [25], and Barrington et al.'s hypothesized conceptual model of the biobehavioral association of perceived stress with obesity [26] (Fig. 1). Social determinants of health were included to address social and environmental stressors that may impact perceived stress and health behaviors. The Transactional Model of Stress and Coping assumes that an individual's stress response is a consequence of transactions between the individual and their environment and that stress is experienced as an appraisal of the situation and available demands and resources. These constructs are embedded in Barrington and colleagues' model, which posits that perceived stress is associated with health behaviors and long-term obesity-related outcomes. This study focused on theoretical constructs corresponding to stressors, perceived stress and coping, and health behaviors.

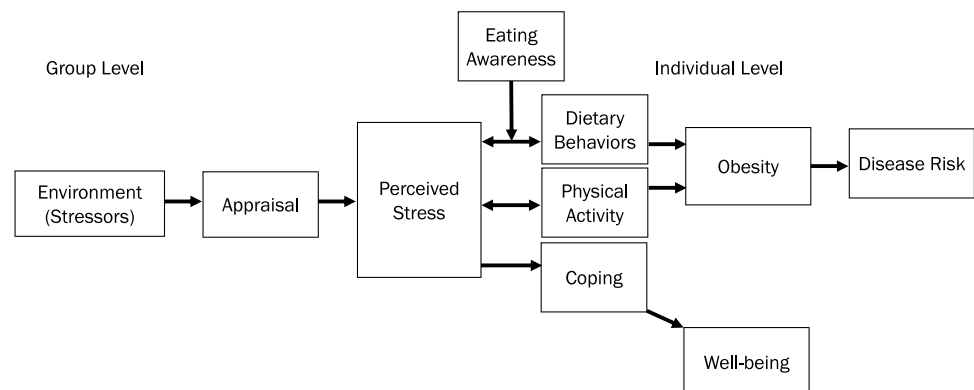
As psychosocial stress can alter diet [27, 28] and PA [29] behaviors and increase the risk of unhealthy weight gain [30, 31], research is needed to investigate further social and environmental stressors through a SDOH lens to tailor comprehensive lifestyle interventions for YA cancer survivors. Our previous research indicated that perceived stress, anxiety, and depression were associated with increased added sugar intake and perceived stress and depression were associated with reduced vegetable intake in YA cancer survivors ( $n = 225$ ) [32]. The purpose of this follow-up study was to better understand experiences and unmet needs related to stress, diet, and PA in YA cancer survivors to inform behavioral intervention development, including SDOH-related stressors (e.g., social and community context, healthcare access, and quality), coping strategies, attitudes toward diet and PA, and needs and preferences regarding a lifestyle + stress management intervention in YA cancer survivors.

## Methods

### Study design and participants

Semi-structured interviews were conducted with 23 YA cancer survivors in May–July 2022. Eligible participants were diagnosed with cancer, between 18 and 39 years old, and able to read and speak English. Participants were screened for severe cognitive impairments, defined as having a head injury in the past year to ensure that participants were able to provide valid responses without adding undue additional participant burden and to minimize other barriers that may arise by including an additional screening questionnaire. A purposive sample of  $\geq 10$  participants aged 18–29 years and  $\geq 10$  participants aged 30–39 years was recruited from a larger sample of YA cancer survivors who had completed a survey on perceived stress, diet, and PA [32] and reported interest in participating in an interview. As racial/ethnic minorities bear a disproportionate burden of obesity [33]

**Fig. 1** Initial theoretical framework for the study



and cancer [34], racial/ethnic minority participants were oversampled. Data on demographic characteristics were collected via a questionnaire.

## Data collection

Participants completed a 15–40-min interview with a trained qualitative interviewer using a semi-structured interview guide. The interview guide was developed based on the research questions. An abbreviated version of the interview guide is depicted in Table 1. Twenty-one interviews were conducted via Zoom, and two interviews were conducted via telephone. Field notes were taken immediately after each interview. Interviews were audio-recorded and transcribed. Informed consent was obtained from all participants according to Institutional Review Board (IRB) specifications.

## Data analysis

A codebook was developed based on the research questions and an initial reading of the transcripts. Key interview questions were used as the basis for initial codes, and additional

codes emerged through reading, coding, and discussion. Data were uploaded to NVivo Release 1.0 (Burlington, MA) and coded using a coding reliability approach to thematic analysis [35]. The analysis applied a combination of an inductive and deductive approach, using our theoretical framework as a lens. Based on the framework, stressor-related responses were analyzed for themes corresponding to SDOH (e.g., economic stability, healthcare access and quality). A second coder coded five (22%) of the transcripts, and interrater reliability was determined by Cohen's kappa (kappa=0.8) [36]. Discrepancies were resolved through discussion. Segmented data was extracted to matrices in Microsoft Excel. Thematic analysis was applied to the extracted data and handwritten field notes to identify common themes until no new themes were identified.

## Results

Most participants were cisgender women (70%), white (60%), heterosexual (87%), and non-Hispanic (78%), had at least a college degree (82%), and were identified with a

**Table 1** Abbreviated interview guide

### Stress

1. What does stress mean to you?
2. What areas of your life are most stressful?
  - a. Tell me more about how that (e.g., strained relationships, loss of employment, challenges with independent living, family issues, financial concerns) has impacted your life
3. How do you cope with stress?
  - a. Tell me more about how you cope with stress
4. What areas of your life are least stressful?
5. What do you think is important to have in a program to reduce stress?
  - a. What would you like to learn about stress management?
  - b. How would you like to learn about stress management (e.g., app, website, Zoom, in-person)?

### Healthy eating

1. What does healthy eating mean to you?
  - a. How important is healthy eating to you?
  - b. How does healthy eating fit in your life?
  - c. How does unhealthy eating fit into your life?
2. How does stress play a role in your eating habits?
3. What do you think is important to have in a program about healthy eating?
  - a. What would you like to learn about healthy eating?
  - b. How would you like to learn about healthy eating (e.g., app, website, Zoom, in-person)?

### Physical activity

1. What does physical activity mean to you?
  - a. How important is physical activity to you?
  - b. How does physical activity fit into your life?
  - c. How does sedentary behavior (e.g., watching TV, using the computer) fit into your life?
2. How does stress play a role in your physical activity habits?
3. What do you think is important to have in a program about healthy eating?
  - a. What would you like to learn about healthy eating?
  - b. How would you like to learn about healthy eating (e.g., app, website, Zoom, in-person)?

### Other

1. How does a stress play a role in your other health habits (e.g., sleep, health care, smoking, drinking, sexual behaviors)?
2. Is there anything else you think I should know?

racial and/or ethnic minority group (57%). The mean age was 29 years. On average, participants were 6 years post-diagnosis and four years post-treatment. Additional sociodemographic characteristics are summarized in Table 2.

Results of the thematic analysis are presented by themes that emerged in the data related to the research questions on stressors, coping, health behaviors, and intervention needs and preferences, as well as one overarching theme: control. The theoretical framework was revised based on stressor-related themes (Fig. 2).

## Stressors

Stressor-related themes included SDOH, including health and health care, economic stability, and social and community context, as well as one overarching theme: balancing responsibilities. Health and healthcare stressors were discussed regarding cancer and survivorship, uncertainty and fear of cancer recurrence, and healthcare access. One participant described:

A lot of it is just kind of being young and having all these health issues kind of sucks. Especially knowing that it's my condition that's probably only going to get worse, right?...Also, health care. Switching to new insurance, and having to deal with all that bullshit, get my medication... A lot of stress there. – 25-year-old man

Regarding economic stability, participants discussed stress related to financial difficulties, including the stress of maintaining adequate finances for housing, transportation, work, and health care. For example:

You think about after post-transplant, trying to get a job, get stable, and do all this stuff... I've taken over by dad's house. I've never lived on my own. And now, I'm taking on bills, and mortgage, and still having to deal with my own health. So, it's a lot. – 33-year-old woman

Social and community context was discussed regarding stressors related to various relationships, including those at work, school, family, friends, and sociocultural communities. Participants described stressors related to dating as a cancer survivor, as well as distress from feeling alone in their experience, as illustrated by the following quote:

There's a lot of stress. I mean, even with dating too, I'm a cancer survivor. I have side effects and all kinds of stuff and it makes me wonder can someone put up with it, especially since I did a bone marrow transplant. And so, the whole fertility thing, people will not date you because you can't have kids with them. – 33-year-old woman

**Table 2** Sociodemographic characteristics for young adult cancer survivors ( $n=23$ )

Characteristic	$n$ (%)
Age (years)	Mean $\pm$ SD: 29 $\pm$ 6
18–29 years	12 (52%)
30–39 years	11 (48%)
Gender identity	
Cisgender man	6 (26%)
Cisgender woman	16 (70%)
Transgender man	1 (4%)
Sexual orientation	
Heterosexual	20 (87%)
Homosexual	1 (4%)
Bisexual	1 (4%)
Demisexual	1 (4%)
Race	
Black or African American	5 (22%)
White	14 (61%)
Asian American	2 (9%)
Multi-racial	1 (4%)
Missing	1 (4%)
Ethnicity	
Hispanic or Latino	5 (22%)
Not Hispanic or Latino	18 (78%)
Highest level of education completed	
High school diploma	1 (4%)
Some college	3 (13%)
College degree	12 (52%)
Some graduate school	3 (13%)
Graduate degree	4 (17%)
Household income	
Less than \$20,000	3 (13%)
\$20,000 to \$34,999	1 (4%)
\$35,000 to \$49,999	6 (26%)
\$50,000 to \$74,999	6 (26%)
\$75,000 to \$99,999	5 (22%)
Cancer type	
Breast	2 (9%)
Thyroid	3 (13%)
Leukemia	3 (13%)
Lymphoma	6 (26%)
Sarcoma	2 (9%)
Colorectal	2 (9%)
Other <sup>a</sup>	5 (22%)
Time since cancer diagnosis (years)	Mean $\pm$ SD: 6 $\pm$ 5
Cancer stage when diagnosed	
0	4 (17%)
I	5 (22%)
II	6 (26%)
III	3 (13%)
IV	5 (22%)

**Table 2** (continued)

Characteristic	n (%)
Type of cancer therapy received <sup>b</sup>	
Radiation	7 (30%)
Immunotherapy	5 (22%)
Hormonal	1 (4%)
Surgery	14 (61%)
Bone marrow transplant	3 (13%)
Time since cancer treatment (years)	Mean ± SD: 4 ± 4
Comorbidities	
Crohn's disease	3 (13%)
Hypertension	1 (4%)
Obesity	1 (4%)
None reported	19 (83%)

<sup>a</sup>Bladder, brain, liver, testicular, non-specified (n=1 each). <sup>b</sup>Some participants received more than one therapy type  
SD standard deviation

When discussing life domains that were least stressful, most participants mentioned their community, including family, pets, friends, and sociocultural communities. On the other hand, balancing responsibilities from work, family, and social environment was discussed as a stressor. One participant said:

Just all the time management and having so many tasks and getting more and more tasks every single day or each week, and then learning how to cope with that and everything. And then, with relationships just balancing all my relationships and spending time with everybody, and having quality time to spend with each person individually too... – 25-year-old woman

**Coping**

Themes that aligned with coping included letting go, faith, and distraction. Letting go was a salient theme regarding

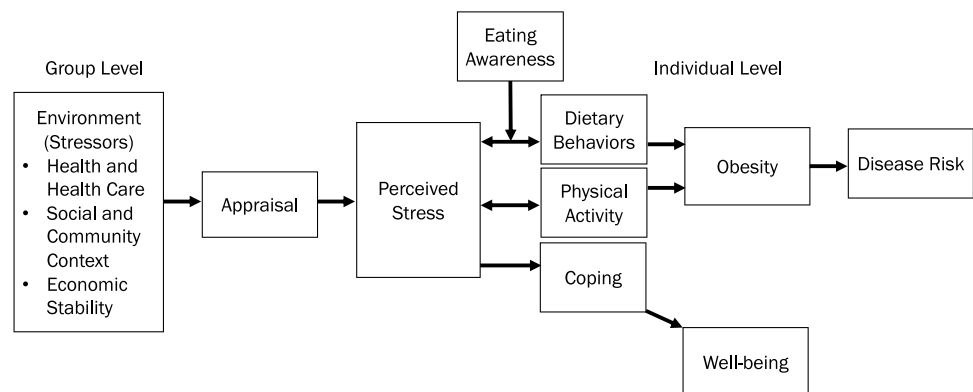
participants' coping strategies, such as PA, meditation, and journaling. For example, participants discussed that coping strategies such as PA, which was the most frequently reported coping strategy, allowed them to feel more clear-headed and relaxed:

A big one is exercise, so that's why I'm squeezing it in today no matter what because it's absolutely essential to my well-being. So, I got into exercise, actually more for the emotional and psychological aspect. So, any physical thing that came is just an extra bonus but that wasn't why I got into it. Like I really was just stressed, anxious and I found that a good workout gave me such a sense of well-being that I felt so much more clear-headed after a good workout. – 33-year-old man  
Well, so that I can process all my emotions and the busy day at work, I like to run after work. Night, also because it's not as hot out. But then, that helps with just getting my adrenaline going and being able to relax and destress and decompress from every day. – 25-year-old woman

Keeping anchored in faith and coping with stress through distraction were also salient themes regarding participants' coping strategies, as illustrated below:

I also like to watch sermons on YouTube, just to help me just to put stuff in perspective, give me a different outlook to look at. And, I do words of affirmation. So, I wrote a whole list, and I usually say it in the mornings. Sometimes, I can't get to it, so I try to do it night, but at least say that list once a day. And then, I read the Bible, and I also read the scripture of the day. I keep anchored in my faith because it's really all I've got. – 33-year-old woman  
I guess just distractions, I guess. For me, it's just – one thing I did help a lot, I have like a group of – so, obviously everybody in my real life, you know, friends, family, people I work with, all kind of knew, and that always kind of put a damper on things. They'd ask

**Fig. 2** Revised theoretical framework for the study



about it. So, like, you know, “[profanity], I don’t want think about it. Don’t ask me about it.” But I had a group of online buddies I play games with. They didn’t know about what’s going on. So, I had a group of people I could just spend a couple hours with, that won’t ask me about anything. It’s kind of a good way to take my mind off it. – 25-year-old man

## Health behaviors

Routine and consistency and the impact of stress were salient themes regarding health behaviors. Participants recognized the importance of consistency in achieving health behavior goals and coping with stress. For example:

With the food, and the physical, emotional, mental, through those, especially like I said, that meditation, and all of that, staying consistent, that’s critical. ‘Cause otherwise you could think that you’re handling the food, and you’re handling this, but if you’re not consistent, then you’re gonna be disappointed that it’s not working, but that’s why it’s not working. – 37-year-old woman

I guess just the mindset that sticking to a routine is really good. Just getting in your mind that every day or on this day of the week you go do this for this amount of time. And also, just any little bit helps. You can go to gym, only spend five to 10 minutes there. It’s better than staying home. Having that kind of mindset where as long as you commit and try to do it then that’s fine. You don’t have to go all the way. – 25-year-old man

Many described stress as a barrier to healthy eating and PA, but some also mentioned that stress can encourage healthy lifestyle behaviors. One participant explained:

[Stress] can hinder me from actually sticking to the routine. It can actually make me lose sight of my goal. It might make me just too overwhelmed to actually think about anything else. And then, sometimes it might be a good excuse to just, “Let me put the stress aside. Let me go work out. Let me get this out of my system. Let me just walk it out or sweat it out some way or form and come back with a more clear conscience and mind and feel a little bit better and good about myself because I actually did go out and stick to my routine of getting physical activity in.” – 33-year-old woman

## Control

Control was a cross-cutting theme discussed regarding stressors, coping, and health behaviors. Participants discussed lack of control regarding their health, the COVID-19

pandemic, and racial and disability discrimination. Whereas disability discrimination was discussed among participants of diverse age, gender, and race/ethnicity groups, racial discrimination was described by Black or African American participants. As one participant described:

I just see different things that’s going on with school shootings, with just me being a Black male raising Black boys, Black people in general, man, just getting shot and killed. I can’t control that type of stuff and I’m just waiting and hoping that my son knows what to do if I’m not around or whatever the occasion may be. So, it’s just things that I can’t sometimes control... And it’s like I have to have conversations with him, unfortunately, about certain things that why he’s being treated, or kids saying racial slurs, and how to handle those things. And so, stuff like that ‘cause when my kids feel pain it kinda affects me, but I can’t really control it. Some of those things are out of my control. – 39-year-old man

Whereas lack of control was discussed regarding health as a stressor, health behavior routines were described as ways to maintain control over one’s health. For example:

For me, I’m just really picky, like, what I eat, what I put into my body, making an effort to go exercise and go to the gym or even go for a walk outside, kind of just using both nutrition and physical exercise as a way that I can control what’s going on around me because I have these outside stressors. So, yeah, I would say with nutrition specifically, it kind of just gives me control over things. – 26-year-old woman

No, I was never super unhealthy, but I guess I wasn’t caring – as mindful as say now, I guess. Yeah, I didn’t used to have – I would kind of eat anything. But since cancer diagnosis and then after things progressed to stage four, I realized I need to, I guess, I don’t know. Again, shift and see what I can control. Everything seems out of my control, so let me do what I can. – 35-year-old woman

## Intervention needs and preferences

Themes related to intervention needs and preferences included individualized approach, expert-based content, peer support, integrative self-care, and manageability. Individualized approach was the most salient theme regarding intervention content and format. Participants described how an intervention should be personalized for individuals’ strengths and that generalized interventions may contribute to stress. For example:

Coping strategies that are tailored to a specific person because I know a lot of the times, stress programs are

just – a lot of programs in general are just like, “Here’s what you should do,” but a lot of people are different. And so, if you just say, “Here’s what you should do,” I think sometimes that can cause stress itself because you’re like, well, it’s not working. Why is it not working? What’s wrong with me?” – 21-year-old woman

To adequately tailor content for YA cancer survivors, participants discussed a need for trusted experts, such as dietitians, counselors, or healthcare professionals, to be involved in intervention development or implementation. One participant said:

I feel like having a trainer or nutritionist or a counselor or something, kind of as a guide or a moderator for group things is helpful because there were often times in those groups – everyone has a different priority and philosophy about their own health and treatment. And so, the people that are the most outspoken sometimes end up dominating those spaces, which then it’s not super helpful. – 33-year-old man

Participants also discussed the importance of peer support and a preference for a group format with interaction and accountability from fellow survivors. For example:

I think it is nice to have some accountability and if you have other people you know you’re not gonna let down because you have to meet them at this time and kind of, that will maybe help spark a little routine. If you do that a week or two, then you’re like, okay, I can integrate this into my life and maybe that would be helpful. – 35-year-old woman

Participants in our study did not want separate components but rather expressed a preference for integrating diet, PA, and stress management into a comprehensive intervention, as illustrated below:

I like the idea of tackling all the different aspects of self-care. I heard through my other cancer organizations that there’s physical self-care, and mental self-care, and emotional, and social, and work self-care, and spiritual. All these different aspects of self-care. I’d really like to have a balance between all the different aspects of self-care. – 23-year-old woman

In addition to tailoring intervention content, participants discussed that a manageable intervention would help encourage healthy habits. One participant said:

Everybody has busy lives and families, something that is like if a mom is super stressed out she can go in the bathroom and do it. Something manageable. Just something, I think quick would probably be the best like to get, to find that de-stressor quick. – 38-year-old woman

## Differences by age group

There were differences by age group regarding stress experiences, coping strategies, and intervention preferences. A cross-cutting theme related to stressors across domains for younger participants was the transition to independent adulthood. Participants described transitions related to work, school, and living independently. For example:

I would have to say, probably household-wise. I just made a pretty big move, and that was really stressful. I just got hired for one job, but I am in the midst of getting another job right now and moving to a place that I’ve never been. That was really stressful, trying to find out what I wanna do, I guess. And then going back to college, has all been pretty stressful for me. – 23-year-old woman

On the other hand, older participants reported more diverse coping strategies than younger participants, e.g., therapy, getting enough sleep, relaxation, and music. For example:

Right now, one of the things that’s working for me is actually going to therapy. I was having a really hard time finding therapy for a while, but the facilities that I do go to, they do offer therapy, and different classes, and different resources for me to look into. – 33-year-old woman

Lastly, younger participants preferred multiple formats, including Zoom or in-person group meetings, a website, and tracking logs, as illustrated by the following quote:

Maybe a spreadsheet of a day-by-day or a log to track what kind of food you’re eating. For me, personally, I bought a food journal or whatever, and I track what I eat, I compare how I’m feeling when I’m eating, I guess. And if there’s a correlation or how my body feels after I eat something, kinda listening to myself, I guess, but just on pen and paper. – 22-year-old woman

## Discussion

This study explored YA cancer survivors’ perceived needs related to stress, coping, and health behaviors, as well as needs and preferences for a lifestyle and stress management intervention. The present study adds to the literature by highlighting social determinants of health, including health and health care, economic stability, and social and community context as salient themes when participants were asked what is most stressful. In addition to stress related to the cancer experience, YA cancer survivors face unique financial

hardships due to medical costs, health insurance when they may not be economically stable, and age-related treatments, such as fertility preservation.[37] Adult cancer survivors are more likely to have medical financial hardships than adults without a cancer history.[38] YA cancer survivors have reported concerns related to social well-being,[39] as well as complex social support experiences that may hinder or assist coping with the cancer experience.[40]

Lack of control was an overarching theme mentioned by participants as a stressor regarding their health, discrimination, and the COVID-19 pandemic; however, only participants who identified as Black or African American alluded to experiences regarding racial discrimination. Although a racially/ethnically diverse sample was recruited, sampling was inadequate to conduct comparative analyses by race or ethnicity (e.g.,  $n=5$  identified as Black or African American). As stress experiences may differ by racial/ethnic group,[41] future research should recruit enough participants from each racial/ethnic minority group to reach saturation within each group.

Themes aligning with coping strategies included letting go, faith, and distraction. Prior research has indicated that YA survivors of childhood cancer cope by avoiding discussing the cancer experience and focusing on positive memories, which aligns with our findings that participants cope with various strategies to “let go” or distract from stressors.[42] Our findings also suggested that faith may be important to include in future interventions (e.g., acknowledging faith and/or spirituality as a potential coping strategy). Previous research has reported a positive association between spirituality and family support and adaptive coping in YA cancer survivors.[43] However, as our findings highlighted a need for individualized content, interventions may discuss a variety of coping strategies for participants to choose from.

Participants also discussed the role of routine/consistency and stress in dietary and PA behaviors. Seeking a sense of control through health behavior routines, especially nutritional habits, was addressed in contrast to lack of control, which was reported as a stressor. Participants mentioned that cooking and several types of PA relieved their stress. Such behaviors may be incorporated into future lifestyle and/or stress management interventions for this population. However, future research should also be aware of the delicate balance between healthy and unhealthy diets and PA routines; there is emerging research on disordered eating, including orthorexia and food addiction,[44, 45] in cancer survivors — particularly young women. Behavioral interventions may screen for eating disorders and focus on balanced health habits rather than encouraging an unhealthy preoccupation with these activities to adequately address health behavior needs for this population.

Our findings suggested additional preferences for tailoring interventions, including individualized,

expert-based content with an integrative format. Participants indicated a preference for an intervention that included diet, PA, and stress management as complementary aspects of self-care. Future interventions may incorporate a theoretical lens that addresses dimensions of wellness (e.g., physical, intellectual, emotional, social, spiritual, vocational, financial, and environmental)[46] or otherwise embodies the World Health Organization’s definition of health as “complete physical, mental and social well-being.” [47]

Results also highlighted a need to tailor behavioral interventions for YA cancer survivors by age. Younger participants (aged 18–29 years) in our study discussed the transition to independent adulthood as a stressor and preferred multiple intervention formats (e.g., Zoom, website, tracking logs). Older participants (aged 30–39 years) are often further along in their career and family life and may have less time to devote to an intervention, so a more streamlined intervention may be more appropriate for this age group.

Limitations of this study include the potential for selection bias and social desirability bias, as well as the lack of generalizability. Data were only collected from those interested in and able to participate. This study recruited a purposive sample regarding age and aimed for diverse representation of racial/ethnic groups (57% of participants identified with a racial and/or ethnic minority group). Additionally, an equal number of men and women were contacted to participate in an interview, but men were less likely to respond and attend. Due to our sampling methodology, comparative analyses could not be conducted by racial/ethnic group or gender. Further research is needed to better understand how social and environmental stressors differ by racial/ethnic group and gender among YA cancer survivors. Future studies may employ purposive sampling by race, ethnicity, sexual orientation, and/or gender to better understand the stress experience in racial/ethnic minority and sexual and gender minority YA cancer survivors.

## Conclusion

Results highlighted unmet needs regarding social and environmental stressors and preferences for tailored, interactive components in stress management-enhanced behavioral interventions in YA cancer survivors. For this population, behavioral interventions may be tailored for specific age groups (e.g., 18–29 years vs. 30–39 years) to account for differences in stress experiences and intervention preferences. Future research may further explore how specific intervention formats, activities, and materials can be tailored for YA cancer survivors.



**Author contribution** AWB, MS, and TLC contributed to the study conception and design. Material preparation and data collection were performed by AWB. Data analysis was performed by AWB and RS. The first draft of the manuscript was written by AWB with support from RS. All authors read and approved the final manuscript.

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**Data availability** The datasets analyzed during the current study are available from the corresponding author on reasonable request.

**Code availability** Not applicable.

## Declarations

**Ethics approval** The study was performed in line with the principles of the Declaration of Helsinki. Ethical approval was granted by the Institutional Review Board.

**Consent to participate** Informed consent was obtained from all participants included in the study according to procedures approved by the Institutional Review Board.

**Consent for publication** Not applicable

**Conflict of interest** The authors declare no competing interests.

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