

# Health-related Quality of Life in Elderly Asian American and Non-Hispanic White Cancer Survivors

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**Objectives:** The purpose of this study was to assess predictors of health-related quality of life (HRQoL) in elderly Asian American and non-Hispanic White cancer survivors.

**Methods:** We conducted cross-sectional secondary data analyses using the combined datasets from the Surveillance, Epidemiology, and End Results program and the Medicare Health Outcomes Survey.

**Results:** Elderly Asian American cancer survivors reported a lower mental HRQoL but a comparable physical HRQoL relative to elderly non-Hispanic White cancer survivors. Stress factors, such as comorbidities, difficulties with activities of daily living, and a history of depressive symptoms, along with coping resources like self-rated health and the ability to take the survey in English, were significantly associated with mental and physical HRQoL. Among elderly Asian American cancer survivors, a significantly lower mental HRQoL was observed among those taking the survey in the Chinese language.

**Conclusions:** The findings suggest that race exerts a differential impact on HRQoL. Interventions should be designed to address the distinct cultural, linguistic, and systemic needs of elderly Asian American cancer survivors. Such an approach could assist in reducing cancer-related health disparities.

**Key words:** Neoplasms, Aged, Quality of life, Asian American, Language

## INTRODUCTION

The rapid aging of the population, along with advancements in cancer detection and treatment, has contributed to an unprecedented increase in the number of elderly cancer survivors. Of the 17 million cancer survivors in the United States, approx-

imately two-thirds are aged 65 years and older [1]. While this growing population of elderly cancer survivors is a testament to the remarkable progress made in cancer treatment and survival, recent studies have revealed that these individuals face enormous declines in both physical and psychological functioning, with issues ranging from organ failure and neuropathy to depression [2-4]. To gain a deeper understanding of the impact of cancer on patients' physical and mental well-being, health-related quality of life (HRQoL) has become a crucial outcome measure in cancer survivorship care. HRQoL offers a subjective evaluation of the extent to which a cancer survivor can function meaningfully while managing the impairments that come with a cancer diagnosis [5-7].

In the United States, cancer is the leading cause of death among Asian Americans (AAs), accounting for approximately 27% of deaths of AAs in 2016 [8]. The high mortality rate from

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cancer among AAs implies that these individuals are often diagnosed at more advanced stages of the disease and with higher tumor grades than their non-Hispanic White (NHW) counterparts, leading to less favorable survivorship experiences [9]. For instance, older AA cancer survivors have reported experiencing high levels of pain, insomnia, and depression, along with difficulties in managing treatment-related side effects such as menopausal symptoms and memory impairment [10,11]. Adding to these challenges, older AA cancer survivors are also less likely than NHW survivors to access palliative and hospice care services designed to improve cancer symptom management [12]. Despite these indications, insufficient research is available on the HRQoL of elderly AA cancer survivors.

The present study was designed to bridge the existing knowledge gap by applying Lazarus and Folkman [13]'s stress and coping theory to explore factors associated with the physical and mental HRQoL of elderly AA and NHW cancer survivors. To enhance our understanding of the HRQoL among elderly AAs, we included cancers that are frequently observed in this population, specifically nasopharyngeal, stomach, colorectal, liver, and cervical cancers. The stress and coping theory suggests that when individuals face a stressful life event, such as cancer, their capacity to preserve their health and well-being is contingent upon their existing coping resources and antecedent factors, which include socio-demographic and clinical factors. Elderly cancer survivors are already grappling with the challenges of aging, such as physical decline and loss of social support due to the death of loved ones; thus, they may have limited resources available to cope with cancer. Compounding these challenges, elderly AA cancer survivors often must deal with difficulties such as English language barriers, cultural dissonance, and obstacles in accessing medical care [14,15]. According to the stress and coping theory, the additional life stressors that elderly AA survivors encounter may exceed their existing coping resources, leading to a decline in HRQoL. Thus, we hypothesize that race has a differential impact on the physical and mental HRQoL of older NHW and AA cancer survivors.

## METHODS

### Sample

The data analyzed in this study were sourced from the merged datasets of the Surveillance, Epidemiology, and End Results

(SEER) program and the Medicare Health Outcomes Survey (MHOS). The SEER initiative gathers data from 18 cancer registries in catchment areas, representing approximately 28% of the United States population [16], while the MHOS is a nationwide longitudinal survey of patients enrolled in Medicare Advantage Organizations [17]. The analytic sample for this study was restricted to individuals in the SEER-MHOS dataset aged 65 years and older who identified as NHW or AA and had been diagnosed with nasopharyngeal, stomach, colorectal, liver, or cervical cancers. These selection criteria yielded a total of 10 488 individuals available for data analysis.

### Measures

#### *Dependent variables*

Mental and physical HRQoL were evaluated using the mental and physical component summary scores of the Medical Outcomes Study Short Form-36 and Veterans Rand-12 surveys [18,19]. The scores range from 0 to 100, with higher scores indicating a better HRQoL. A 2-point change in score has been established as clinically significant; further details regarding the bridging, validity, and clinical utility of the scores on these instruments have been discussed elsewhere [19-21]. The mental HRQoL assessment included items measuring vitality, social functioning, role limitations due to emotional problems, and perceptions of mental health. The physical HRQoL evaluation comprised items relating to physical functioning, role limitations due to physical problems, bodily pain, and general health perceptions.

#### *Independent variables*

In accordance with the stress and coping theory, we measured 4 sets of independent variables: demographics, clinical characteristics, stress factors, and coping resources. The demographic factors included age, race (either NHW or AA), marital status (either unmarried or married), sex (either male or female), income, and education. Age, income, and education were measured as continuous variables. The clinical characteristics included the time since diagnosis and the stage of cancer, both measured as continuous variables. The stress factors included the number of comorbidities, difficulty with activities of daily living (ADLs), and a recent history of depressive symptoms (either no or yes). The coping resources included the participants' self-rated health (ranging from poor to excellent) and the language of the survey (either English or Chinese).

## Data Analysis

Descriptive statistics were calculated for all variables. To evaluate differences between the NHW and AA groups in observed and expected frequencies for categorical variables, chi-square tests were employed. For continuous variables, *t*-tests were utilized to determine differences in means between the groups.

To examine the relative contributions of variables in the stress and coping model that have been proposed to influence mental and physical HRQoL, hierarchical regression analyses were utilized. The variables were grouped and entered into the model in sets, following the structure of the stress and coping framework. Demographic factors were entered first, followed by clinical characteristics, then stress variables, and finally coping factors.

A test was conducted to examine significant interactive effects, which confirmed potential differences across racial groups. Consequently, the data were subjected to further analysis using parallel regression analyses, segregated by racial group. The assumptions of normality, as tested by the Kolmogorov-Smirnov test, and homogeneity, as tested with the variance inflation factor, were evaluated and deemed acceptable. The adjusted  $R^2$  measure was used to assess model fit for all models. A probability level of  $p < 0.05$  was considered to indicate statistical significance. All data were analyzed using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA).

## Ethics Statement

The study received approval from the Columbia University Institutional Review Board (IRB-AAAP0860).

## RESULTS

### Characteristics of the Study Sample

As shown in Table 1, older AA survivors constituted 12.8% of the study sample. The mean age of all participants was 76.5 years, with AAs being slightly, yet significantly, older than NHWs. Significantly larger proportions of AAs were married and male compared to NHWs. NHW survivors had significantly higher levels of education than AA survivors. However, no significant disparity was observed in income between the 2 groups. In terms of clinical characteristics, no significant differences were found in the time since diagnosis or the tumor stage between NHW and AA survivors. On average, participants were 109.4 months post-diagnosis and had a tumor stage of 1.3. Regarding stress factors, relative to AAs, NHWs had significantly more comorbidities and a higher proportion of survivors

**Table 1.** Characteristics of the study sample

Characteristics	Non-Hispanic White survivors (n=9141)	Asian American survivors (n=1347)	Total (n=10 488)
Demographics			
Asian American	-	-	1347 (12.8)
Age (y)	76.39 ± 8.31	76.93 ± 7.96	76.46 ± 8.26*
Married	4796 (52.6)	783 (58.1)	5579 (53.0)***
Female	5073 (55.5)	703 (52.2)	5776 (55.0)*
Income	4.25 ± 1.83	4.24 ± 1.98	4.24 ± 1.85
Education	3.30 ± 1.30	2.92 ± 1.49	3.25 ± 1.33***
Clinical characteristics			
Months since diagnosis	109.61 ± 98.48	107.84 ± 96.02	109.38 ± 98.16
Tumor stage	1.24 ± 0.76	1.28 ± 0.72	1.25 ± 0.75
Stress factors			
Comorbidities	2.48 ± 1.83	2.21 ± 1.71	2.45 ± 1.82***
Difficulty with ADLs	1.28 ± 2.11	1.36 ± 2.53	1.29 ± 2.16
History of depressive symptoms	2186 (24.5)	284 (21.8)	2470 (24.1)*
Coping resources			
Self-rated health	3.11 ± 1.08	2.83 ± 1.01	3.07 ± 1.08***
English survey language	8390 (99.9)	1116 (87.3)	9506 (98.0)***
Outcome variables			
Mental HRQoL score	50.60 ± 11.29	49.01 ± 11.35	50.39 ± 11.31***
Physical HRQoL score	37.75 ± 12.33	38.13 ± 11.31	37.80 ± 12.20

Values are presented as mean ± standard deviation or number (%). ADLs, activities of daily living; HRQoL, health-related quality of life. \* $p < 0.05$ , \*\*\* $p < 0.001$ .

who had experienced depressive symptoms in the past year. No significant differences were evident between the 2 groups concerning difficulties with ADLs. The average score was 1.29 with regard to difficulty performing ADLs. In the context of coping resources, NHWs reported significantly better self-rated health and were more likely to have completed the survey in English than AAs (99.9 vs. 87.3%,  $p < 0.001$ ).

In the analysis of mean HRQoL scores, *t*-tests indicated that older AA survivors had significantly lower mental HRQoL compared to older NHW survivors (49.0 vs. 50.6). However, no significant differences were found between the groups in terms of physical HRQoL.

## Multiple Linear Regression

### Mental HRQoL

The results of the main effects model for mental HRQoL are reflected in Table 2. On average, the mental HRQoL scores of

AAs were 1.2 points lower than those of NHWs, after adjusting for all other variables ( $p < 0.001$ ). From a socio-demographic perspective, the final regression model revealed that with each increase in income level, participants' mental HRQoL scores rose by an average of 0.49 points ( $p < 0.001$ ). In relation to clinical characteristics, only cancer stage was identified as a predictor of mental HRQoL. Each increase in cancer stage corresponded to an average increase of 0.38 points in survivors' mental HRQoL scores. With respect to stress factors, a higher level of difficulty with ADLs and the presence of depressive symptoms were determined to be significant predictors of mental HRQoL. On average, each additional level of ADL difficulty corresponded to a decrease of 0.85 points in participants' mental HRQoL scores ( $p < 0.001$ ). Survivors who reported experiencing depressive symptoms in the prior year had a mean mental score 12.3 points lower than those who did not report such symptoms ( $p < 0.001$ ). Both coping factors were identified as significant predictors of mental HRQoL. For each 1-level increase in self-rated health, participants' mental HRQoL scores increased by an average of 2.3 points ( $p < 0.001$ ). Participants

who completed the survey in English scored an average of 3.1 points higher on mental HRQoL than those who completed it in Chinese ( $p < 0.01$ ).

The parallel regression analysis for mental HRQoL is reflected in Table 3. For both groups, income, difficulty with ADLs, the presence of depressive symptoms, and self-rated health were identified as significant predictors of mental HRQoL. However, cancer stage did not significantly predict mental HRQoL for older AA survivors, although it was a significant predictor for older NHW survivors ( $\beta = 0.397, p < 0.05$ ). Similarly, the number of comorbidities did not show a significant association with mental HRQoL for AA survivors, but it was a significant predictor for NHW survivors ( $\beta = 0.158, p < 0.05$ ). Moreover, the language of the survey did not significantly influence the mental HRQoL of older NHW survivors, but it was a significant predictor for older AA survivors. Older AA survivors who completed the survey in English had an average score 3.0 points higher than those who took the survey in Chinese, after adjusting for the effects of all other variables ( $p < 0.01$ ).

**Table 2.** Results of multiple linear regression of mental HRQoL

Variables	Estimate $\pm$ SE
<b>Demographics</b>	
Asian American	-1.204 $\pm$ 0.327***
Age	0.015 $\pm$ 0.014
Female	0.438 $\pm$ 0.237
Married	-0.232 $\pm$ 0.245
Education	0.162 $\pm$ 0.088
Income	0.485 $\pm$ 0.068***
<b>Clinical characteristics</b>	
Months since diagnosis	-0.001 $\pm$ 0.001
Cancer stage	0.337 $\pm$ 0.155*
<b>Stress factors</b>	
Comorbidities	0.109 $\pm$ 0.065
Difficulty with ADLs	-0.848 $\pm$ 0.061***
Depressive symptoms	-12.290 $\pm$ 0.274***
<b>Coping resources</b>	
Self-rated health	2.263 $\pm$ 0.125***
English survey language	3.074 $\pm$ 1.044**
Intercept	40.198 $\pm$ 1.539***
Adjusted R <sup>2</sup>	0.455
F-test	394.81***

HRQoL, health-related quality of life; SE, standard error; ADLs, activities of daily living.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 3.** Results of multiple linear regression of mental HRQoL by race/ethnicity

Variables	Non-Hispanic White	Asian American
<b>Demographics</b>		
Mean age	0.020 $\pm$ 0.014	-0.006 $\pm$ 0.039
Female	0.422 $\pm$ 0.255	0.734 $\pm$ 0.633
Married	-0.304 $\pm$ 0.264	0.176 $\pm$ 0.662
Education	0.155 $\pm$ 0.097	0.101 $\pm$ 0.211
Income	0.513 $\pm$ 0.075***	0.375 $\pm$ 0.160*
<b>Clinical characteristics</b>		
Months since diagnosis	-0.001 $\pm$ 0.001	0.000 $\pm$ 0.003
Cancer stage	0.397 $\pm$ 0.166*	-0.109 $\pm$ 0.422
<b>Stress factors</b>		
Comorbidities	0.158 $\pm$ 0.069*	-0.304 $\pm$ 0.180
Difficulty with ADLs	-0.780 $\pm$ 0.067***	-1.130 $\pm$ 0.145***
Depressive symptoms	-12.552 $\pm$ 0.293***	-10.546 $\pm$ 0.775***
<b>Coping resources</b>		
Self-rated health	2.166 $\pm$ 0.134***	3.186 $\pm$ 0.345***
English survey language	-5.450 $\pm$ 5.924	2.984 $\pm$ 1.100**
Intercept	48.398 $\pm$ 6.063***	39.793 $\pm$ 3.538***
Adjusted R <sup>2</sup>	0.453	0.484

Values are presented as estimate  $\pm$  standard error.

HRQoL, health-related quality of life; ADLs, activities of daily living.

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Physical HRQoL**

The results of the main effects model for physical HRQoL are reflected in Table 4. Three demographic factors were found to have a significant association with physical HRQoL: age, sex, and income. For each 1-year increase in age, participants exhibited an average decrease of 0.12 points in their physical HRQoL scores ( $p < 0.001$ ). The physical HRQoL scores of older female survivors were, on average, 1.4 points lower than those of older male survivors. Furthermore, with each increase in income level, survivors displayed a 0.21-point increase in physical HRQoL scores. Regarding clinical characteristics, the regression analysis did not reveal a significant relationship with physical HRQoL. However, all stress factors included in the model were significantly associated with physical HRQoL scores. For each additional comorbidity, participants experienced an average of a 1.07-point decrease in their physical HRQoL scores ( $p < 0.001$ ). Similarly, for each 1-level increase in difficulty with ADLs, participants reported a 1.6-point decrease in physical HRQoL score ( $p < 0.001$ ). Individuals who reported experiencing depressive symptoms in the past year had, on average, a 0.76-point increase

in their physical HRQoL scores compared to survivors who did not report experiencing such symptoms ( $p < 0.01$ ). In terms of coping factors, for each 1-level increase in self-rated health, survivors reported an increase of 5.5 points in their physical HRQoL scores ( $p < 0.001$ ). The language of the survey was not found to have a significant association with physical HRQoL.

The parallel regression analysis for physical HRQoL is shown in Table 5. For both AAs and NHWs, factors including increasing age, female sex, a higher number of comorbidities, greater difficulty with ADLs, and lower self-rated health were found to be significantly associated with poorer physical HRQoL scores. The parallel regression analyses also revealed that for NHWs, each 1-level increase in income was significantly associated with a 0.22-point increase in physical HRQoL score ( $p < 0.01$ ); however, income did not significantly impact the physical HRQoL of older AAs. Furthermore, among NHWs who had experienced depressive symptoms in the past year, a 0.81-point increase in physical HRQoL score was observed compared to those who had not experienced such symptoms, after adjusting for all other variables ( $p < 0.01$ ). In contrast, no significant

**Table 4.** Results of multiple linear regression of physical HRQoL

Variables	Estimate $\pm$ SE
<b>Demographics</b>	
Asian American	1.853 $\pm$ 0.320
Age	-0.116 $\pm$ 0.013***
Female	-1.358 $\pm$ 0.232***
Married	-0.084 $\pm$ 0.240
Education	-0.030 $\pm$ 0.086
Income	0.212 $\pm$ 0.066**
<b>Clinical characteristics</b>	
Months since diagnosis	0.001 $\pm$ 0.001
Cancer stage	0.043 $\pm$ 0.151
<b>Stress factors</b>	
Comorbidities	-1.071 $\pm$ 0.063***
Difficulty with ADLs	-1.573 $\pm$ 0.059***
Depressive symptoms	0.759 $\pm$ 0.268**
<b>Coping resources</b>	
Self-rated health	5.505 $\pm$ 0.122***
English survey language	-1.524 $\pm$ 1.023
Intercept	35.137 $\pm$ 1.508***
Adjusted R <sup>2</sup>	0.543
F-test	364.68***

HRQoL, health-related quality of life; SE, standard error; ADLs, activities of daily living.

\*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 5.** Results of multiple linear regression of physical HRQoL by race/ethnicity

Variables	Non-Hispanic White	Asian American
<b>Demographics</b>		
Age	-0.106 $\pm$ 0.014***	-0.195 $\pm$ 0.037***
Female	-1.280 $\pm$ 0.252***	-2.018 $\pm$ 0.587***
Married	-0.200 $\pm$ 0.261	0.366 $\pm$ 0.614
Education	0.024 $\pm$ 0.096	-0.325 $\pm$ 0.196
Income	0.223 $\pm$ 0.074**	0.188 $\pm$ 0.148
<b>Clinical characteristics</b>		
Months since diagnosis	0.001 $\pm$ 0.001	-0.001 $\pm$ 0.003
Cancer stage	0.009 $\pm$ 0.164	0.284 $\pm$ 0.392
<b>Stress factors</b>		
Comorbidities	-1.098 $\pm$ 0.069***	-0.840 $\pm$ 0.167***
Difficulty with ADLs	-1.687 $\pm$ 0.066***	-1.056 $\pm$ 0.135***
Depressive symptoms	0.813 $\pm$ 0.289**	0.468 $\pm$ 0.719
<b>Coping resources</b>		
Self-rated health	5.464 $\pm$ 0.132***	5.368 $\pm$ 0.320***
English survey language	-3.965 $\pm$ 5.855	-0.500 $\pm$ 1.022
Intercept	36.946 $\pm$ 5.992***	42.307 $\pm$ 3.285***
Adjusted R <sup>2</sup>	0.552	0.482

Values are presented as estimate  $\pm$  standard error.

HRQoL, health-related quality of life; ADLs, activities of daily living.

\*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

difference was observed in the physical HRQoL scores of older AAs who had experienced depressive symptoms in the past year compared to those who had not.

## DISCUSSION

The findings of this study partially corroborate the hypothesis that race has a differential impact on the HRQoL of older cancer survivors. Older AA survivors were found to exhibit significantly poorer mental HRQoL than their older NHW counterparts, even though both racial groups reported comparable physical HRQoL. This could potentially be explained by the theory of cumulative inequality, which posits that inequality, such as racial discrimination, accumulates over a lifetime and adversely impacts health in later years [22,23]. Similarly, Mui et al. [14] proposed that the HRQoL of elderly AAs is affected by cohort-specific traumas and hardships, such as the Cultural Revolution in China, civil wars in Korea and Vietnam, and immigration discrimination. Therefore, while older AA survivors may have physical HRQoL similar to that of older NHW survivors, they may not be as mentally equipped to handle a late-life cancer diagnosis. Future studies should examine the influence of race and aging on the HRQoL of older cancer survivors.

An inverse relationship was observed between increasing age and physical HRQoL. This is a predictable outcome, given that physical functionality tends to deteriorate with advancing age, particularly in later life. However, this finding still highlights the necessity for more concentrated research on elderly cancer survivors. Additionally, being female was associated with a lower physical HRQoL. This could be attributed to the more pronounced decline in physical functionality that female experience in later life, with conditions such as menopause, loss of bone density, and increased multimorbidity [24]. Further research is required to comprehend how sex-related experiences affect HRQoL in elderly cancer survivors. Income was found to have a positive and significant correlation with HRQoL across all models. This is not surprising, as income has been consistently demonstrated to influence health outcomes [25]. Therefore, efforts should be directed towards formulating policies that mitigate the effects of socioeconomic disparities on health.

The positive association between later cancer stage and mental HRQoL was an unexpected finding, contradicting the existing literature. This is because later-stage cancers are relatively difficult to treat, involve more severe activity limitations,

and are psychologically more stressful for patients [26,27]. However, this observation may be explained by the principles of posttraumatic growth theory. This theory suggests that experiencing severe life-threatening crises can result in enhanced positive psychological outcomes. Some research indicates that individuals with later-stage cancers may experience greater posttraumatic growth, leading to a heightened appreciation for life and, consequently, an improved HRQoL [28]. This seemingly contradictory finding could also be attributed to survival bias. Within the context of cancer survivorship, survival bias can be seen as a form of selection bias. Those who are unable to cope with cancer may pass away, leaving a group of healthier or so-called elite survivors as respondents [29]. Interestingly, in the parallel regression analysis, the association between cancer stage and mental HRQoL was only significant for NHWs. This suggests that racialized experiences could potentially moderate this relationship. The quality of care, treatment modality (for example, surgery or chemotherapy), and survivorship services (such as palliative care) may influence the relationship between cancer stage and mental HRQoL. However, our study lacked data on these variables. Therefore, further research is required to examine these factors and better understand the impact of cancer stage on mental HRQoL.

The existing literature aligns with our findings that a higher number of comorbidities correlated with a lower HRQoL [30]. However, our group-specific analyses indicated that this correlation was only statistically significant for the mental HRQoL of NHWs. This suggests that older AA survivors with comorbidities may exhibit greater psychological resilience than their NHW counterparts. Future research should investigate the impact of comorbidity on the HRQoL of older survivors and explore why this impact might differ among racial groups.

The observed association between increased difficulty with ADLs and lower HRQoL aligns with the existing literature [31]. Elderly cancer survivors who struggle with ADLs may face heightened stress in maintaining their health and well-being. Similarly, the presence of more severe depressive symptoms was found to predict lower mental HRQoL, a finding that is also consistent with the literature [32]. However, contrary to previous research, higher depressive symptoms were found to predict better physical HRQoL in the main effects model and among NHW survivors, but not in AA survivors. This observation could potentially be explained by factors not included in our model, such as pre-diagnosis depressive symptomatology or the presence of social support. Further research is required

to explore this relationship. Therefore, interventions to improve HRQoL should be designed in consideration of both ADL ability and depressive symptoms.

The association between self-rated health and increased HRQoL was found to be both significant and positive across all models, a result that aligned with expectations. Previous studies have demonstrated a strong correlation between self-rated health and objective health measures [33]. It is plausible that elderly survivors who perceive their health as good might possess superior coping resources, thereby experiencing enhanced HRQoL [34]. Therefore, it is crucial to develop interventions aimed at improving the self-rated health of older cancer survivors.

In the main-effects model, a significant association was observed between completing the survey in English and higher mental HRQoL. Further scrutiny of the by-group models revealed that older AA survivors who completed the survey in English demonstrated better mental HRQoL than their counterparts who completed the survey in Chinese. This could suggest that the use of the Chinese survey may be indicative of difficulties with the English language and/or lower levels of acculturation. It is plausible that this finding mirrors the cultural, linguistic, and systemic barriers frequently encountered by less acculturated AAs [35]. AAs struggling with English language proficiency and/or low acculturation often face linguistic and cultural obstacles when it comes to adopting cancer screening, experience difficulties in patient-provider communication, and encounter delays in receiving health care [36,37]. Therefore, it is crucial to develop interventions that address the unique needs of older AA cancer survivors.

The present study had several limitations. First, the cross-sectional nature of the analyses precluded drawing any conclusions about causality. Second, the data were restricted to individuals living in SEER catchment areas who received care from Medicare Advantage Organizations administering the MHOS. This restricts the applicability of the study findings to those within the SEER and MHOS populations. Additionally, logistical constraints meant that the dataset was limited to cancer survivors aged 65 years and older with a primary diagnosis of nasopharyngeal, stomach, colorectal, liver, or cervical cancers. Therefore, these findings may not be representative of all cancer survivors. Moreover, the only Asian language included in this study was Chinese, as the MHOS survey was not administered in other Asian languages. Thus, the language survey preference was limited to those who were literate in Chinese.

Finally, the study was unable to assess the type of treatment received, a factor known to affect the HRQoL of cancer survivors [38,39].

Despite these limitations, this study has several important implications. Substantial cultural differences may exist between NHW and AA cancer survivors' needs and experiences, which could contribute to disparities in HRQoL. Culturally and linguistically tailored interventions to enhance HRQoL among older AA cancer survivors are necessary to mitigate cancer disparities. Additionally, more effort should be directed towards reaching individuals who struggle with English communication and those from lower socioeconomic groups. Particular attention should be given to older cancer survivors who have comorbidities, difficulties with ADLs, or a history of depressive symptoms. Further research is required to comprehend the intersection of aging, culture, and cancer to improve the HRQoL of elderly cancer survivors.

## CONFLICT OF INTEREST

The author has no conflicts of interest associated with the material presented in this paper.

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## AUTHOR CONTRIBUTIONS

All work was done by SV.

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