Published in final edited form as:

Am J Health Behav. 2014 May ; 38(3): 414–419. doi:10.5993/AJHB.38.3.10.

Social Support, Nutrition Intake, and Physical Activity in Cancer Survivors

Shanice Coleman, MPH [Graduate student], Carla J. Berg, PhD [Assistant Professor], and Nancy J. Thompson, PhD [Associate Professor]

Department of Behavioral Sciences and Health Education, Rollins School of Public Health, Emory University, Atlanta, GA

Abstract

Objectives—To examine depressive symptoms, hope, social support, and quality of life in relation to fruit and vegetable (FV) intake and physical activity (PA) among cancer survivors diagnosed within the past 4 years.

Methods—In 2010, participants were recruited from a southeastern US cancer center and completed a mail-based survey (response rate 22.7%) assessing these psychosocial factors, FV intake, and PA.

Results—Among 128 participants, 72% consumed 5 FV/ day; 77.8% walked for exercise 4 times/ week. Controlling for sociodemographics, consuming 5 FV/day was associated with greater significant other social support ($p = .004$); walking for exercise 4 times/week was associated with greater friend support ($p = .003$).

Conclusions—These findings can inform tertiary cancer prevention interventions.

Keywords

Cancer; cancer survivorship; mental health; physical activity; nutrition

Approximately 64.8% of individuals diagnosed as of 2007 with cancer can expect to survive at least 5 years, joining the estimated 13.7 million people living with a history of cancer in the US.¹ With increased survival rates and more people living longer after their cancer diagnosis, there is expected to be an increase in the number of people with a history of cancer.² Life after cancer diagnosis and treatment can impact physical, psychosocial, and financial well-being.² Unfortunately, complications affecting these dimensions can arise due to cancer and its therapy. Second malignancies are the most serious complication for this high-risk group, accounting for 16% of all cancer incidence.³

Correspondence, Dr Berg; cjberg@emory.edu.

Human Subjects Statement

This study was approved by the Emory University Institutional Review Board.

Conflict of Interest Statement

The authors declare no conflicts of interest.

Many behavioral changes have been researched as ways to affect the health, quality of life, and survival rate of cancer survivors. Specifically, physical activity and a healthy diet are 2 of the main behavioral lifestyle changes that have been previously researched, showing the potential impact they can have on life after cancer diagnosis and treatment.^{4,5} Encouraging cancer patients to be more physically active and consume more fruits and vegetables could be a way to impact cancer survivors' survivorship and the potential for second malignancies.^{4,5}

The current study examines depressive symptoms, hope, social support, and quality of life in relation to fruit and vegetable (FV) intake and physical activity (PA) among cancer survivors. The Theory of Planned Behavior (TPB) provides the theoretical framework for this study.⁶ TPB suggests that the primary predictor of behavior is behavioral intention and a person's intention to perform a behavior is influenced by: (1) the attitudes towards that particular behavior, (2) beliefs about the subjective norms of significant others around them, and (3) the perceived behavioral control around the performance of the particular behavior.⁶ Thus, these variables also predict behavior through behavioral intention.

Applying TPB, it can be said that depressive symptoms, hope, social support, and quality of life may influence FV intake and PA among cancer survivors. Depressive symptoms have been linked with self-efficacy attitudes, normative beliefs, and behavioral capability.⁷ Likewise, quality of life has been linked with self-efficacy, a component of perceived behavioral control.^{8–10} Social support has been linked to all 3 of the constructs: attitude, subjective norms, and perceived behavioral control.^{7,11} Hope, one's ability to set challenging goals and enlist the requisite pathways and agency to reach them, is related to attitudes towards the behavior and perceived behavioral control.¹² In light of these findings, a cancer survivor's level of depressive symptoms, hope, and social support may impact their attitudes and normative beliefs about the impact of lifestyle changes on their treatment outcomes and overall subsequent health outcomes. These factors, as well as the survivor's quality of life, also may impact the survivor's behavioral capability for making a lifestyle change.

Based on the aforementioned literature and this theoretical framework, we examined the role of depressive symptoms, hope, social support, and quality of life in FV intake and PA among cancer survivors. We hypothesized that lower depressive symptoms, higher levels of hope, greater social support, and greater quality of life would relate to higher levels of FV intake and greater PA.

METHODS

Participants and Procedure

Participants for this study were identified using electronic medical records (EMR) from a National Cancer Institute (NCI) designated cancer center in a large southeastern city. Individuals with any indication of a history of smoking and with a smoking-related cancer diagnosis (ie, lung, oral cavity, pharynx, larynx, esophagus, bladder, stomach, cervix, kidney, pancreas, and acute myeloid leukemia) within the past 4 years were recruited to complete a mail-based survey. We mailed surveys to 798 potential participants. We received

notifications that 72 were deceased and 65 had incomplete or incorrect addresses. Upon making phone calls one week later to encourage participation, an additional 48 were unreachable. A total of 139 individuals completed and returned the survey for a response rate of 22.7% (N=139/613). Our sample was proportionately representative of the cancer types selected for inclusion in this study: lung cancer: N=39 (32.2%), head/neck cancer: N=17 (14%), and other smoking related cancer: N=65 (53.7%). Analyses for this study focus on the 128 participants who completed measures of interest in the current study.

Measures

The questionnaire assessment included 82 items. The questionnaire was first piloted among mock participants (MPH students) and then pretested among 5 participants (ie, cancer survivors meeting eligibility criteria). Suggested revisions were made subsequent to each pilot test. Below we describe the measures included in the current study.

Sociodemographic and cancer-related characteristics—We assessed age, sex, ethnicity, education level, household income, employment status, marital status, and insurance coverage. We also assessed type of cancer and time since diagnosis.

Depressive symptoms—Depressive symptoms were assessed using the Centers for Epidemiological Studies Depression Scale – 10 item (CES-D), which is a screening tool assessing distress associated with depressive symptoms in the past week.¹³ Response options range from 0 = “Rarely or none of the time” to 3 = “All of the time.” Higher total scores reflect greater distress. A score of 10 or higher indicates significant depressive symptoms. Cronbach’s alpha of this scale in the current study was 0.82.

Hope—Hope was assessed using the 6-item State Hope Scale, which assesses the extent to which an individual endorses hope-related items on a scale of 1 = “Definitely false” to 8 = “Definitely true.”¹⁴ This scale has 3 agency items and 3 pathways items assessing how respondents describe themselves “right now” (versus “in general”). Numerous studies support the scale’s internal reliability (alphas of 0.90–0.95 for the overall scale and 0.90 for the subscales); factor structure; concurrent, discriminant, and convergent validity; and test-retest reliability.^{14,15} Cronbach’s alpha of this scale in the current study was 0.89.

Perceived social support—Perceived social support from family, friends, and significant others was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS),¹⁶ which is a 12-item measure comprising 3 subscales: support from family, support from friends, and support from significant others. There are 4 items per subscale, each with response options ranging from 1 = “Very strongly disagree” to 7 = “Very strongly agree.” Higher scores on each of the subscales indicate higher levels of perceived support, and a sum of the 3 scales yields a summary score. The internal consistency and construct and concurrent validity of the MSPSS have been supported.¹⁶ Cronbach’s alpha for friends, family, and significant others subscales in the current study were 0.81, 0.85, and 0.84, respectively.

Quality of life—Quality of life was assessed using the Functional Assessment of Cancer Therapy – General (FACT),¹⁷ which is a 28-item scale assessing reactions to different items in terms of how they apply to the individual on a scale of 0 = “Not at all” to 4 = “Very much.” It yields a total score and subscale scores for physical, functional, social, and emotional well-being. Coefficients of reliability and validity have been shown to be uniformly high. Cronbach’s alpha for physical, functional, social, and emotional subscales in the current study were 0.83, 0.79, 0.77, and 0.78, respectively.

Fruit and vegetable (FV) intake and physical activity (PA)—To assess FV intake, we asked: “Over the past 7 days, how many servings of fruit did you eat per day?” and “Over the past 7 days, how many servings of vegetables did you eat per day?” To assess physical activity, we asked: “In the last 2 weeks, how many days have you walked to get exercise?” This assessment of physical activity is limited to walking, but given our population (cancer survivors at an average age of 57.72 years [SD=11.01]), we assumed that the most frequent type of exercise would be walking.¹⁸ We developed a ‘per week’ measurement of physical activity. Based on the recommendations for appropriate FV intake¹⁹ and PA²⁰ and the distributions of the data, we dichotomized the FV variable as < 5 servings vs. ≥ 5 servings of FV per day, and we dichotomized the PA variable as < 4 days vs. ≥ 4 days of PA per week.

Data Analysis

Bivariate analyses were conducted to identify factors related to consuming ≥ 5 servings of FV per day and ≥ 4 days of PA per week using chi-square tests for categorical variables and independent samples t-tests for continuous variables. We also assessed collinearity among the potential correlates of interest. We then developed a binary logistic regression model for each of our outcomes of interest, forcing entry of age, sex, and marital status, and using backwards stepwise entry of other factors associated with our correlates of interest per the bivariate analyses at $p < .10$. Only factors associated at $p < .05$ were allowed to remain in the model. SPSS 19.0 was used for all data analyses. Statistical significance was set at $\alpha = .05$ for all tests.

RESULTS

Table 1 presents participant characteristics and the bivariate analyses comparing participants in relation to their FV intake and their PA. Only 28.0% reported consuming ≥ 5 FV per day; the average numbers of fruits and vegetables consumed per day were 1.78 (SD=2.52) and 2.42 (SD=2.20), respectively. Only 22.2% (N = 28) exercised ≥ 4 per week, engaging in an average of 2.17 (SD = 2.37) days of walking for PA. In the bivariate assessment of collinearity between variables, correlations were found between family social support and social and family well-being ($r = .74, p < .001$) and social support from significant others and family social support ($r = .75, p < .001$).

Fruit and Vegetable Intake

In the bivariate analysis (Table 1), higher hope ($p = .023$); higher social support from family ($p = .002$), friends ($p = .023$), and significant others ($p = .003$); and social and family well-

being ($p = .008$) were found to be significantly higher for those who ate 5 FV a day compared to those who ate fewer. In our multivariate model controlling for age, sex, and marital status, factors associated with consuming 5 FV per day included higher social support from a significant other (OR = 1.20, 95% CI 1.06, 1.35; $p = .004$) and being female (OR = 3.13, 95% CI 1.19, 8.33; $p = .02$; Nagelkerke R-square = .216).

Physical Activity

In the bivariate analysis, hope ($p = .001$); social support from family ($p = .002$), friends ($p = .001$), and significant others ($p = .005$); and physical well-being ($p = .011$), social and family well-being ($p = .002$), emotional well-being ($p = .004$), and functional well-being ($p = .004$) were significantly higher for those who walked for exercise 4 times per week. Multivariate analyses indicated that, after controlling for age, sex, and marital status, greater likelihood of walking for exercise was associated with higher social support from friends (OR = 1.19, 95% CI 1.05, 1.33; $p = .003$; Nagelkerke R-square = .177).

DISCUSSION

This research examined sociodemographic and psychosocial variables in relationship to FV intake and PA among cancer survivors. This study is one of the few studies examining psychosocial factors related to FV intake and PA among cancer survivors. Most notably, our results indicated that, although many psychosocial factors were associated with FV intake and PA, social support was the most important.

Multivariate analyses indicated that consuming 5 FV per day was associated with higher social support from a significant other and being female. Significant others may be more likely to be involved in caretaking and preparing the participants' meals, encouraging higher FV consumption. These findings are consistent with prior research indicating that social support is associated with intentions to eat FV.^{21,22} Also, it has been documented that compared to men, women eat more FV,^{23,24} and have better knowledge about current dietary recommendations, greater awareness of the relationship between diet and disease,²⁵ stronger beliefs in the importance of FV intake for their health, and higher confidence in their ability to eat FV in challenging situations.^{25,26}

Multivariate analyses indicated that higher social support from friends was associated with walking for exercise, which concurs with previous research indicating the role friend support plays in influencing physical activity.^{27–29} Encouragement, love, and support could be reasons that having others and large social networks that include friends and family allows cancer survivors to be more engaged in PA.

The bivariate analyses demonstrated that there was no significant relationship between depressive symptoms and FV intake or PA, which may be due to the somatic symptoms assessed by depression screening instruments that inaccurately reflect depressive symptoms among individuals with compromised health.³⁰ However, higher hope was related to greater FV intake and PA among cancer survivors, which is in line with prior research documenting higher levels of hope associated with nutrition and PA among college students.³¹ Thus, hope may reflect emotional state better among cancer survivors.³²

In addition, quality of life subscales assessing social and family well-being and functional well-being were found to be significantly higher for those who ate more FV and engaged in PA more frequently. Social and family well-being was also highly correlated with the social support scale. Because of the cross-sectional nature of this study, it is not clear whether increased quality of life leads to greater FV intake and PA, or the reverse. In other studies, quality of life improvements were found during treatment of breast cancer, prostate cancer, and hematologic malignancies when patients engaged in PA.³³ In addition, interventions designed to increase PA have been effective in improving quality of life.^{34,35} Another consideration may be that greater functional quality of life reflects greater capability to engage in PA and greater access to FV by being able to get to and from the grocery store. Moreover, greater social support also may be an indicator of increased access to FV if social support is engaged to purchase, deliver, or provide transportation to obtain FV.

Additionally, cancer-related factors (ie, type of cancer and time since diagnosis) were not related to engaging in these health behaviors. Given the literature suggesting that cancer survivors should engage in some level of physical activity regardless of treatment,^{4,5} these findings are promising. However, we documented that only about 20% of participants were physically active at least 4 times per week. Furthermore, less than one-third of this sample consumed the recommended level of fruits and vegetables. Thus, attention toward these modifiable risk factors among this vulnerable population is warranted.

This study has implications for research and practice. Research should focus on examining the relationships among these variables in a larger sample and whether interventions to increase the hope and social support and decrease depressive symptoms increase cancer survivors' FV intake and PA. In terms of practice, clinical encounters provide the opportunity to assess FV intake and PA and to communicate the benefits of increased FV intake and PA for cancer survivors. Furthermore, it is important to engage cancer survivors' support systems in influencing these behaviors.

Limitations

The cross sectional nature of the study and a low response rate limit generalizability. However, careful analyses of the characteristics of this sample versus the population of patients from which this sample was drawn (per medical record information) suggests that this sample reflects the characteristics of the patient population comprising the sampling frame in terms of age, sex, race/ ethnicity, and cancer type. The self-report nature of information is an additional limitation. Furthermore, because the current research question was not the primary research question of the central study, we did not conduct comprehensive assessments of nutritional intake or physical activity. Moreover, due to the small sample size and limited assessment, more elaborate analyses could not be conducted. In addition, we did not assess medical interventions or medications prescribed to participants that may impact diet, appetite, or energy level. However, these preliminary findings provide insight upon which future research can build. Future research should examine the predictive validity of these findings in longitudinal studies examining nutritional intake and PA in cancer survivors.

Conclusions

Factors associated with consuming 5 FV per day included higher social support from a significant other and being female. Greater likelihood of walking for exercise was associated with higher social support from friends. Moreover, bivariate analyses found relationships of hope and quality of life to engaging in these health behaviors. Thus, further research is warranted to examine the effects of engaging the social support system; moreover, increasing hope may improve health behaviors and quality of life among cancer survivors.

Acknowledgments

This research was supported by the Emory University Winship Cancer Institute Kennedy Seed Grant (PI: Berg) and the Georgia Cancer Coalition (PI: Berg).

References

1. American Cancer Society. Cancer Treatment and Survivorship Facts & Figures 2012–2013. Atlanta, GA: American Cancer Society; 2012.
2. Centers for Disease Control and Prevention (CDC). Cancer Survivors - United States. Atlanta, GA: CDC; 2007.
3. Valdivieso M, Kujawa AM, Jones T, Baker LH. Cancer survivors in the United States: a review of the literature and a call to action. *Int J Med Sci.* 2012; 9(2):163–173. [PubMed: 22275855]
4. Wei EK, Wolin KY, Colditz GA. Time course of risk factors in cancer etiology and progression. *J Clin Oncol.* 2010; 28(26):4052–4057. [PubMed: 20644083]
5. Winzer B, Whiteman D, Reeves M, Paratz J. Physical activity and cancer prevention: a systematic review of clinical trials. *Cancer Causes Control.* 2011; 22(6):811–826. [PubMed: 21461921]
6. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991; 50(2):179–211.
7. Courneya KS, Blanchard CM, Laing DM. Exercise adherence in breast cancer survivors training for a dragon boat race competition: a preliminary investigation. *Psychooncology.* 2001; 10(5):444–452. [PubMed: 11536423]
8. Cunningham AJ, Lockwood GA, Cunningham JA. A relationship between perceived self-efficacy and quality of life in cancer patients. *Patient Ed Counseling.* 1991; 17(1):71–78.
9. de Castro EK, Ponciano C, Meneghetti B, et al. Quality of life, self-efficacy and psychological well-being in Brazilian adults with cancer: a longitudinal study. *Psychology.* 2012; 3(4):304–309.
10. Ajzen I. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *J Applied Soc Psychol.* 2006; 32(4):665–683.
11. Rhodes RE, Jones LW, Courneya KS. Extending the theory of planned behavior in the exercise domain: a comparison of social support and subjective norm. *Res Q Exerc Sport.* 2002; 73(2):193–199. [PubMed: 12092894]
12. Snyder CR, Harris C, Anderson JR, et al. The will and the ways: development and validation of an individual-differences measure of hope. *J Pers Soc Psychol.* 1991; 60(4):570–585. [PubMed: 2037968]
13. Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. *Appl Psychol Meas.* 1977; 1(3):385–401.
14. Snyder CR, Sympton SC, Ybasco FC, et al. Development and validation of the State Hope Scale. *J Pers Soc Psychol.* 1996; 70(2):312–335.
15. Feldman, DB.; Snyder, CR. The State Hope Scale. In: Maltby, J.; Lewis, CA.; Hill, A., editors. *A Handbook of Psychological Tests.* Lampeter, Wales: Edwin Mellen Press; 2000.
16. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The Multidimensional Scale of Perceived Social Support. *J Pers Assess.* 1988; 52:30–41.
17. Cella DF, Tulsky DS, Gray G, et al. The Functional Assessment of Cancer Therapy scale: development and validation of the general measure. *J Clin Oncol.* 1993; 11(3):570–579. [PubMed: 8445433]

18. Watson T, Mock V. Exercise as an intervention for cancer-related fatigue. *Physical Therapy*. 2004; 84(8):736–743. [PubMed: 15283624]
19. World Health Organization. Fruit and Vegetables for Health: Report of a Joint FAO/WHO Workshop, 1–3 September 2004, Kobe, Japan. Geneva, Switzerland: World Health Organization and Food and Agriculture Organization of the United Nations; 2005.
20. US Department of Health and Human Services (USD-HHS). 2008 Physical Activity Guidelines for Americans. Washington, DC: USDHHS; 2008.
21. Brug J, Lechner L, De Vries H. Psychosocial determinants of fruit and vegetable consumption. *Appetite*. 1995; 25(3):285–296. [PubMed: 8746967]
22. Burke V, Giangiulio N, Gillam HF, et al. Health promotion in couples adapting to a shared lifestyle. *Health Educ Res*. 1999; 14(2):269–288. [PubMed: 10387506]
23. Serdula MK, Gillespie C, Kettel-Khan L, et al. Trends in fruit and vegetable consumption among adults in the United States: Behavioral Risk Factor Surveillance System, 1994–2000. *Am J Public Health*. 2004; 94(6):1014–1018. [PubMed: 15249308]
24. Serdula MK, Coates RJ, Byers T, et al. Fruit and vegetable intake among adults in 16 states: results of a brief telephone survey. *Am J Public Health*. 1995; 85(2):236–239. [PubMed: 7856784]
25. Baker AH, Wardle J. Sex differences in fruit and vegetable intake in older adults. *Appetite*. 2003; 40(3):269–275. [PubMed: 12798784]
26. Emanuel AS, McCully SN, Gallagher KM, Updegraff JA. Theory of Planned Behavior explains gender difference in fruit and vegetable consumption. *Appetite*. 2012; 59(3):693–697. [PubMed: 22898607]
27. Rogers LQ, Markwell SJ, Verhulst S, et al. Rural breast cancer survivors: exercise preferences and their determinants. *Psychooncology*. 2009; 18(4):412–421. [PubMed: 19241491]
28. Carlson JA, Sallis JF, Conway TL, et al. Interactions between psychosocial and built environment factors in explaining older adults' physical activity. *Prev Med*. 2012; 54(1):68–73. [PubMed: 22027402]
29. Eyler AA, Brownson RC, Donatelle RJ, et al. Physical activity social support and middle- and older-aged minority women: results from a US survey. *Soc Sci Med*. 1999; 49(6):781–789. [PubMed: 10459889]
30. Zich JM, Attkisson CC, Greenfield TK. Screening for depression in primary care clinics: the CES-D and the BDI. *Int J Psych Med*. 1990; 20(3):259–277.
31. Berg CJ, Ritschel LA, Swan DW, et al. The role of hope in engaging in healthy behaviors among college students. *Am J Health Behav*. 2011; 35(4):402–415. [PubMed: 22040587]
32. Hoppmann CA, Gerstorf D, Smith J, Klumb PL. Linking possible selves and behavior: do domain-specific hopes and fears translate into daily activities in very old age? *J Gerontol B Psychol Sci Soc Sci*. 2007; 62(2):104–111.
33. Speed Andrews AE, Courneya KS. Effect of exercise on quality of life and prognosis in cancer survivors. *Curr Sports Med Rep*. 2009; 8(4):176–181. [PubMed: 19584603]
34. Mock V, Pickett M, Ropka ME, et al. Fatigue and quality of life outcomes of exercise during cancer treatment. *Cancer Practice*. 2001; 9(3):119–127. [PubMed: 11879296]
35. Morey MC, Snyder DC, Sloane R, et al. Effects of home-based diet and exercise on functional outcomes among older, overweight long-term cancer survivors: RENEW: a randomized controlled trial. *JAMA*. 2009; 301(18):1883–1891. [PubMed: 19436015]

Participant Characteristics and Bivariate Analyses Comparing Cancer Survivors Reporting Consumption of 5 Fruits and Vegetables Per Day versus Less and Those Reporting 4 Days of Physical Activity versus Less

Table 1

Variable	Total N = 128 N (%) or M (SD)	FV <5 per day N = 90 N (%) or M (SD)	FV 5 per day N = 38 N (%) or M (SD)	p	PA <4 per week N = 98 N (%) or M (SD)	PA 4 per week N = 30 N (%) or M (SD)	p
Sociodemographics							
Age (SD)	57.72 (11.01)	58.11 (11.12)	56.82 (11.17)	.567	57.26 (10.43)	59.26 (13.22)	.409
Sex (%)				.348			.341
Male	68 (53.5%)	49 (55.1%)	16 (45.7%)		49 (50.5%)	17 (60.7%)	
Female	59 (46.5%)	40 (44.9%)	19 (54.3%)		48 (49.5%)	11 (39.3%)	
Ethnicity (%)				.435			.319
White	101 (80.2%)	72 (81.8%)	26 (74.3%)		75 (77.3%)	24 (88.9%)	
Black	20 (15.9%)	12 (13.6%)	8 (22.9%)		17 (17.5%)	3 (11.1%)	
Other	5 (4%)	4 (4.5%)	1 (2.9%)		5 (5.2%)	0 (0%)	
Marital status (%)				.258			.498
Married/living with partner	71 (56.3%)	48 (54.5%)	23 (65.7%)		54 (55.7%)	17 (63%)	
Other	55 (43.7%)	40 (45.5%)	12 (34.3%)		43 (4.3%)	10 (37%)	
Education (%)				.213			.243
High school	39 (31%)	25 (28.4%)	14 (40.0%)		33 (34.0%)	6 (22.2%)	
> High school	87 (69%)	63 (71.6%)	21 (60.0%)		64 (66.0%)	21 (77.8%)	
Employment status (%)				.529			.302
Employed part- or full-time	40 (32%)	30 (34.5%)	10 (28.6%)		29 (30.2%)	11 (40.7%)	
Other	85 (68%)	57 (65.5%)	25 (71.4%)		67 (69.8%)	16 (59.3%)	
Income (%)				.882			.116
\$2,399/month	62 (50.8%)	43 (50.0%)	16 (48.5%)		51 (53.7%)	9 (36.0%)	
> \$2,399/month	60 (49.2%)	43 (50.0%)	17 (51.5%)		44 (46.3%)	16 (64.0%)	
Insurance (%)				.462			.262

Variable	Total N = 128 N (%) or M (SD)	FV <5 per day N = 90 N (%) or M (SD)	FV 5 per day N = 35 N (%) or M (SD)	PA <4 per week N = 98 N (%) or M (SD)	PA 4 per week N = 28 N (%) or M (SD)	p
Uninsured	12 (9.5%)	9 (10.1%)	2 (5.9%)	10 (10.4%)	1 (3.6%)	
Some type of insurance	114 (90.5%)	80 (89.9%)	32 (94.1%)	86 (89.6%)	27 (96.4%)	
Cancer-related Factors						
Type of cancer (%)						.295
Lung	39 (32.2%)	30 (35.7%)	8 (23.5%)	31 (33.7%)	7 (25.9%)	
Head/neck	17 (14%)	10 (11.9%)	6 (17.6%)	10 (10.9%)	6 (22.2%)	
Other cancer	65 (53.7%)	44 (52.4%)	20 (58.8%)	51 (55.4%)	14 (51.9%)	
Years since diagnosis (SD)	2.17 (1.31)	2.13 (1.31)	2.23 (1.33)	2.24 (1.35)	1.89 (1.13)	.210
Psychosocial Factors						
Depressive symptoms (SD)	10.23 (5.60)	10.67 (5.81)	9.26 (5.90)	10.35 (6.21)	9.75 (3.17)	.746
Hope (SD)	33.45 (10.69)	32.03 (10.36)	36.97 (11.19)	31.72 (10.98)	39.37 (7.27)	.001
Social Support (SD)						
Family	22.78 (5.63)	21.78 (5.92)	25.30 (4.06)	21.96 (6.00)	25.64 (2.97)	.002
Friends	21.19 (6.33)	20.29 (6.49)	23.21 (5.66)	20.18 (6.60)	24.56 (3.94)	.001
Significant other	22.89 (6.78)	21.86 (7.32)	25.82 (3.38)	22.10 (7.00)	26.11 (4.28)	.005
FACT scales (SD)						
Physical well-being	19.38 (7.07)	19.52 (7.22)	19.47 (6.56)	18.48 (7.25)	22.41 (5.81)	.011
Social and family well-being	19.75 (6.19)	18.77 (5.95)	22.03 (6.17)	18.85 (6.4%)	22.89 (3.91)	.002
Emotional well-being	17.41 (5.26)	17.14 (5.32)	18.41 (4.76)	16.69 (5.34)	19.93 (4.07)	.004
Functional well-being	16.74 (7.13)	15.94 (7.17)	18.69 (6.73)	15.76 (6.98)	20.29 (6.63)	.004
FV intake per day (%)						
5 per day	35 (28%)	--	--	28 (28.6%)	7 (25.9%)	.786
<5 per day	90 (72%)			70 (77.8%)	20 (74.1%)	
PA days past week (%)						
4 days	28 (22.2%)	20 (22.2%)	7 (20.0%)	--	--	--

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Variable	Total N = 128 N (%) or M (SD)	FV <5 per day N = 90 N (%) or M (SD)	FV 5 per day N = 35 N (%) or M (SD)	p	PA <4 per week N = 98 N (%) or M (SD)	PA 4 per week N = 28 N (%) or M (SD)	p
<4 days	98 (77.8%)	70 (77.8%)	28 (80.0%)				