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DANA-FARBER / HARVARD CANCER CENTER

The relationships among stress, multiple risk behaviors and health-related quality of life in lung cancer patient-family member dyads

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Aims

- Examine the relationships among stress and health behaviors (*diet, alcohol, physical activity and smoking*)
- Examine the relationships among stress, multiple risk behaviors and HR-QOL in lung cancer patient-family member dyads

Definition of Health Behaviors

- American Cancer Society guidelines for cancer prevention
 - Eat at least 5 fruits or vegetables/day
 - Exercise for 30 minutes/day for at least 5 days a week
 - No smoking
 - Moderate alcohol use
 - 1 drink/day for women
 - 2 drinks/day for men



Background

- Healthy behaviors decrease comorbidity and improve survival among the general population
 - Men and women who were non-smokers and were most consistent in following the cancer prevention guidelines had *a 42% lower risk of death* from any cause during the 14-year follow up as compared to individuals whose behaviors were least consistent (McCullough et al, 2011)
 - The risk for cancer or cardiovascular disease was significantly lower among those reporting behaviors consistent with the guidelines.
 - Although ideal body weight seemed to be the most important component associated with lower mortality, adherence to all lifestyle factors contributed significantly to reduction of mortality.



Background

- Healthy behaviors improve HR-QOL and survival after the diagnosis of cancer
 - As the number of positive health behaviors increased there were increases in improved HR-QOL among a large cohort of cancer survivors ($p < .001$) (Blanchard et al. 2008).
 - Although smoking was the strongest predictor of survival in multivariate analysis, problem drinking, low fruit intake and physical activity were associated with survival in univariate analyses among patients with squamous cell head and neck cancer (Duffy et al., 2009).

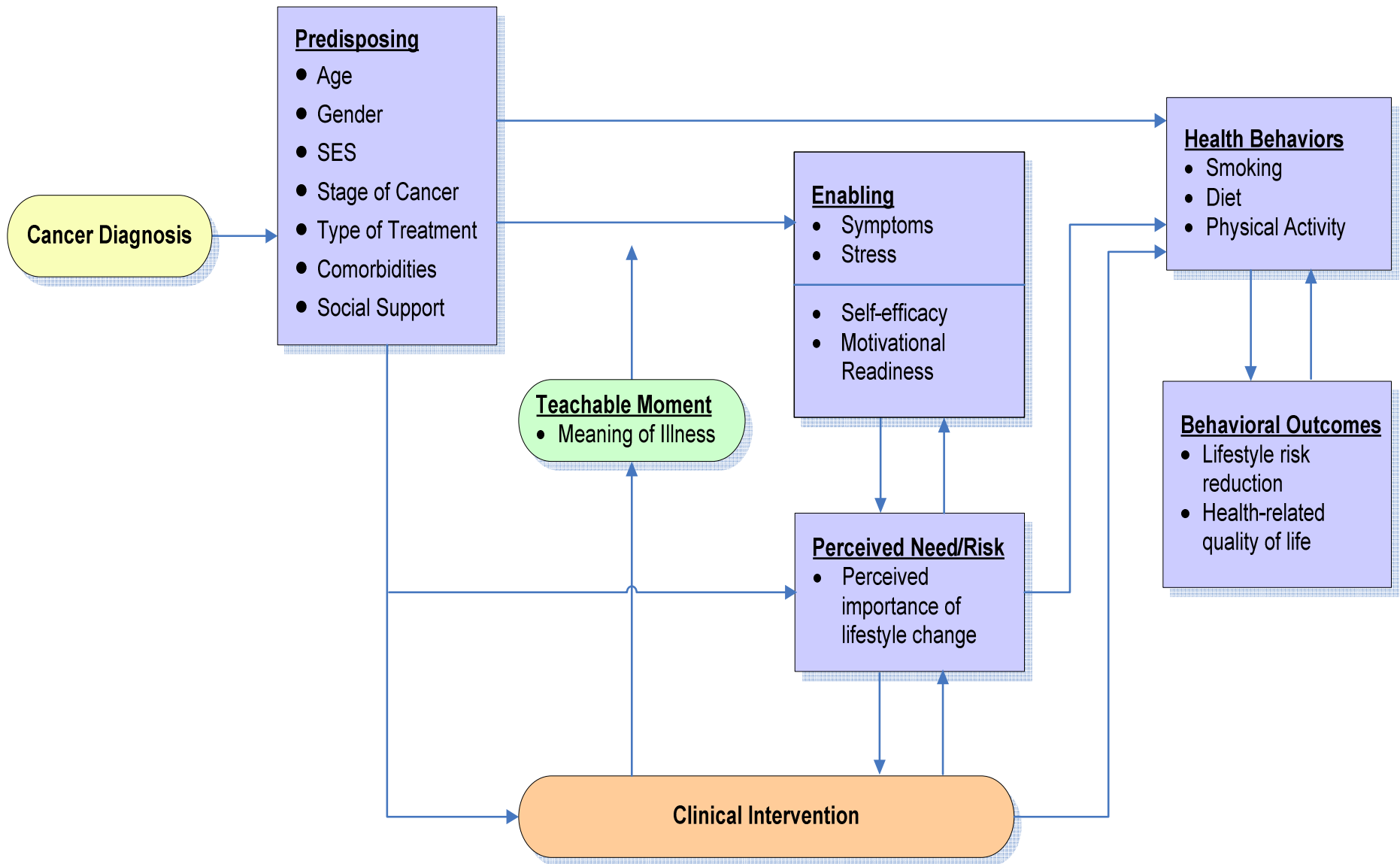


Background

- Healthy behaviors prevent or lower risk of lung cancer
 - Risk for lung cancer was 22% lower in case control studies and 17% lower in cohort studies among those with the highest levels of cruciferous vegetables (Lam et al, 2009; Lam et al, 2010)
 - Physical activity reduces lung cancer risk by 20-30% for women and 20-50% for men and there is a dose response relationship (Alfano et al, 2004; Emaus & Thune, 2011)



Figure 1: Theoretical Framework: The Health Behavior Model in Vulnerable Populations and The Teachable Moment



Methods

- Descriptive, cross-sectional study design
- One time data collection through in person or phone interviews
- Self report standardized questionnaires used to collect data
 - Perceived stress scale-4 item
 - SF-8
- Data collected separately for patients and their family members



Methods

- **Inclusion criteria for patients**

- ≥ 18 years of age
- English speaking
- Diagnosis of lung cancer
- Performance status of ≤ 1
- Current smoker or recent quitter
- Family member willing to participate

- **Inclusion criteria for family**

- ≥ 18 years of age
- English speaking
- Spouse, unmarried partner or adult child.



Data Analyses

- Descriptive statistics
- Wilcoxon sum rank tests
- Linear regression



Sample (n=37 dyads)

- Patient characteristics
 - Age- 59 years
 - Gender
 - Male n=20 (54%)
 - Female n=17 (46%)
 - Race
 - White n=32 (86%)
 - Black n=5 (14%)
 - Education
 - ≤HS n=18 (49%)
 - >HS n=19 (51%)
- Family characteristics
 - Age-49 years
 - Gender
 - Male n=11 (30%)
 - Female n=26 (70%)
 - Race
 - White n=33 (89%)
 - Black n=4 (11%)
 - Education
 - ≤HS n=9 (24%)
 - >HS n=28 (76%)
 - Relationship
 - Partnered n=21 (57%)
 - Adult child n= 16 (43%)



Sample (n=37)

- Clinical characteristics of patient participants
 - Length of time since diagnosis
 - Mean 5.9 (months) SD=4.4 (months)
 - Histology
 - NSCLC n= 30 (91%)
 - SCLC n= 7 (19%)
 - Stage
 - Early (stage I, II, IIIA, limited) n=17 (46%)
 - Late (stage IIIB, IV, extensive) n=20 (54%)

Results: *Examine the relationships among stress and health behaviors for patients*

Behavior	Mean PSS	SD	n	p-value
No smoke	5.7	2.9	21	0.62
Smoke	5.1	3.8	16	
<i>5/day diet</i>	9	<i>1.7</i>	3	<i>0.004</i>
<i>No 5/day</i>	<i>5.1</i>	<i>3.2</i>	<i>34</i>	
CAGE <2	5.5	3.4	29	0.94
CAGE <u>≥</u> 2	5.2	3.1	5	
150min/PA	6.3	3.7	6	0.55
No 150min	5.3	3.2	31	

Results: *Examine the relationships among stress and health behaviors for family members*

Behavior	Mean PSS	SD	n	p-value
No smoke	6.4	4.1	26	0.61
Smoke	7.1	3.5	10	
5/day diet	6.5	4.9	2	1.00
No 5/day	6.6	4.0	34	
CAGE <2	6.8	4.4	27	0.96
CAGE $\geq$ 2	6.3	2.2	6	
150min/PA	5.7	3.4	6	0.49
No 150min	6.8	4.0	30	

Results: *Examine the relationship between stress, multiple behaviors and HR-QOL among patients*

Variable	Univariate analysis Estimate	p-value
<i># of risk behaviors</i>	<i>-1.60</i>	<i>0.07</i>
SF-8 PCS	-0.07	0.33
<i>SF-8 MCS</i>	<i>-0.21</i>	<i><0.0001</i>

Results: *Examine the relationship between stress, multiple behaviors and HR-QOL among patients*

Variable	Multivariable analysis Estimate	p-value
<i># of risk behaviors</i>	<i>-.76</i>	<i>0.30</i>
<i>SF-8 MCS</i>	<i>-0.20</i>	<i>0.0002</i>

Results: Examine the relationship between stress, multiple behaviors and HR-QOL among family members

Variable	Univariate analysis Estimate	p-value
# of risk behaviors	0.45	0.61
SF-8 PCS	-0.02	0.33
SF-8 MCS	-0.24	<0.0001

Post-hoc analysis: Stress levels for patients by stage

Stage	n	Mean	SD	p-value
Early	17	4.7	3.3	.20
Late	20	6.1	3.2	

Post-hoc analysis: Stress levels for family members by stage

Stage	n	Mean	SD	p-value
Early	17	4.5	3.0	0.001
Late	20	8.5	3.8	

Conclusions

- Patients who had higher stress appeared to eat a healthy diet as compared to those with less stress
- Decreased number of risk behaviors were marginally associated with increased stress among patients
- Heightened stress may influence positive behavioral change in diet among patients with lung cancer, which may provide support for the “teachable moment”. Further study is needed with larger samples
- Increased stress was associated with lower emotional HR-QOL among patients
- Addressing stress (*distress*) levels appears to be an important target to enhance emotional HR-QOL among patients

Conclusions

- No relationships were noted between stress and any of the individual health behaviors among family members
- Among family members, only lower emotional HR-QOL was associated with increased stress
- Addressing stress (*distress*) levels appears to be an important target to enhance emotional HR-QOL among family members, especially among those whose loved one has advanced disease

Limitations

- Small sample size
- Self-report for smoking behaviors, weight and diet

Thank you!

