



Assessment of age and region differences in health beliefs and dietary habits related to colon cancer risk

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BACKGROUND

- Colon cancer (CC) risk is associated with several behavioral factors including diets high in red meat (RM) and low in green leafy vegetables (GLV)
- CC is increasingly diagnosed in younger adults, yet this age group may not be aware of their risk
- The willingness of at-risk adults to modify behaviors to reduce CC risk investigated herein

METHODS

- The validated Dietary Habits and Colon Cancer Beliefs Survey (DHCCBS) was used to assess willingness to engage in health behaviors related to CC risk
- Health Belief Model was used to design the tool, including questions corresponding to the 5 domains: susceptibility, severity, benefits, barriers, and cues to action
- A food frequency questionnaire was used to quantify RM and GLV intake over the previous 30 days
- Differences in age groups and regions were assessed using one-way ANOVA with LSD corrections for multiple comparisons
- US Census regions were used to assess regional differences in RM and GLV consumption

Table 1. Demographics and relevant dietary intakes of survey respondents compared by age group

	Total (n=838)	<35 (n=487)	35-44 (n=227)	45-54 (n=124)	between group p-value
GLV Mean (SD)	1.00 (1.15)	1.04 (1.18)	0.99 (1.09)	0.90 (1.16)	0.525
RM Mean (SD)	0.93 (0.94)	0.96 (0.98)	0.93 (0.97)	0.81 (0.66)	0.494
Sex N (%)					0.001
Female	429 (51.2)	223 (45.8)	132 (58.1)	74 (59.7)	
Male	409 (48.8)	264 (54.2)	95 (41.9)	50 (40.3)	
Race N (%)					0.008
Asian	84 (10)	63 (12.9)	19 (8.4)	2 (1.6)	
Native American	10 (1.2)	7 (1.4)	1 (0.4)	2 (1.6)	
Black	49 (5.8)	33 (6.8)	11 (4.8)	5 (4)	
Pacific Islander	2 (0.2)	1 (0.2)	1 (0.4)	NA	
White	651 (77.7)	359 (73.7)	180 (79.3)	112 (90.3)	
More than one race	42 (5)	24 (4.9)	15 (6.6)	3 (2.4)	
Education N (%)					0.296
<HS	4 (0.5)	3 (0.6)	NA	1 (0.8)	
HS Grad/GED	81 (9.7)	51 (10.5)	17 (7.5)	13 (10.5)	
Some College	209 (24.9)	128 (26.3)	49 (21.6)	32 (25.8)	
Assoc Degree	85 (10.1)	42 (8.6)	30 (13.2)	13 (10.5)	
Bachelor's Degree	343 (40.9)	198 (40.7)	102 (44.9)	43 (34.7)	
Master's Degree	92 (11)	48 (9.9)	25 (11)	19 (15.3)	
Professional Degree	17 (2)	13 (2.7)	3 (1.3)	1 (0.8)	
Doctorate	7 (0.8)	4 (0.8)	1 (0.4)	2 (1.6)	
BMI Category N (%)					0.116
Underweight	25 (3)	17 (3.5)	5 (2.2)	3 (2.4)	
Normal weight	389 (46.4)	238 (48.9)	103 (45.4)	48 (38.7)	
Overweight	259 (30.9)	151 (31)	64 (28.2)	44 (35.5)	
Obese	165 (19.7)	81 (16.6)	55 (24.2)	29 (23.4)	
Region N (%)					0.523
Northeast	148 (17.7)	95 (19.5)	32 (14.1)	21 (16.9)	
Midwest	163 (19.5)	94 (19.3)	43 (18.9)	26 (21)	
South	284 (33.9)	157 (32.2)	82 (36.1)	45 (36.3)	
West	212 (25.3)	123 (25.3)	63 (27.8)	26 (21)	

RESULTS

Table 2. DHCCBS survey responses of US men and women within age groups

	Total	>35	35-44	45-54	between group p-value
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Susceptibility					
Please rate your perceived risk for developing colon cancer in your lifetime:	2.12 (0.60)	2.08 (0.63)	2.18 (0.56)*	2.17 (0.58)	0.068
Severity					
Colon cancer can severely decrease my quality of life	4.67 (0.77)§	4.61 (0.85)† #	4.74 (0.67)*	4.77 (0.59)*	0.046
Colon cancer could lead to death	4.70 (0.70)§	4.65 (0.79)†	4.78 (0.57)*	4.78 (0.50)	0.028
Perceived Benefits					
If I eat less red meat I could decrease my risk of developing colon cancer	3.76 (0.97)	3.69 (0.952)	3.84 (0.96)	3.88 (1.03)	0.053
If I eat more green leafy vegetables I could decrease my risk of developing colon cancer	4.14 (0.85)§	4.09 (0.85)#	4.15 (0.85)	4.32 (0.81)*	0.024
Perceived Barriers					
I don't like the taste of other protein-rich foods	2.08 (1.00)	2.09 (0.98)	2.06 (1.08)	2.07 (0.94)	0.916
I don't like the taste of green leafy vegetables	1.95 (1.16)§	2.06 (1.19)† #	1.85 (1.16)*	1.71 (0.94)*	0.003
I can't imagine never eating red meat	3.25 (1.53)	3.26 (1.53)	3.30 (1.55)	3.14 (1.48)	0.628
Cues to Action					
A healthcare provider has recommended that I eat less red meat	1.64 (0.99)	1.63 (0.96)	1.62 (1.01)	1.72 (1.09)	0.627
A friend or family member has recommended that I eat less red meat	1.84 (1.18)	1.92 (1.22)†	1.72 (1.14)*	1.77 (1.10)	0.085
A healthcare provider has recommended that I eat more green leafy vegetables	2.69 (1.46)	2.71 (1.44)	2.68 (1.49)	2.61 (1.52)	0.798
A friend or family member has recommended that I eat more green leafy vegetables	2.78 (1.49)§	2.91 (1.46)† #	2.66 (1.52)*	2.44 (1.46)*	0.003

§ between group significance; *significance between >35 age group; † significance between 35-44 age group; # significance between 45-54 age group

- Perceived severity was significantly lower in younger adults (<35) compared to older adults (35-44, p=0.042; 45-54, p=0.003)
- Older participants (45-54) reported greater benefits to increasing GLV consumption to reduce CC risk than the younger age group (<35; p=0.006)
- Younger participants (<35) received more recommendations from friends and family members to increase GLV intake in order to reduce colon cancer risk (35-44, p=0.033; 45-55, p=0.002)
- The middle age group (35-44) in the Southern US consumed significantly more RM than corresponding individuals in the Northeastern region (p=0.021)
- Each age group differed in GLV consumption between the South and West regions (<35, p=0.050; 35-44, p=0.005; 45-54, p=0.044; total, p<0.001)

RESULTS

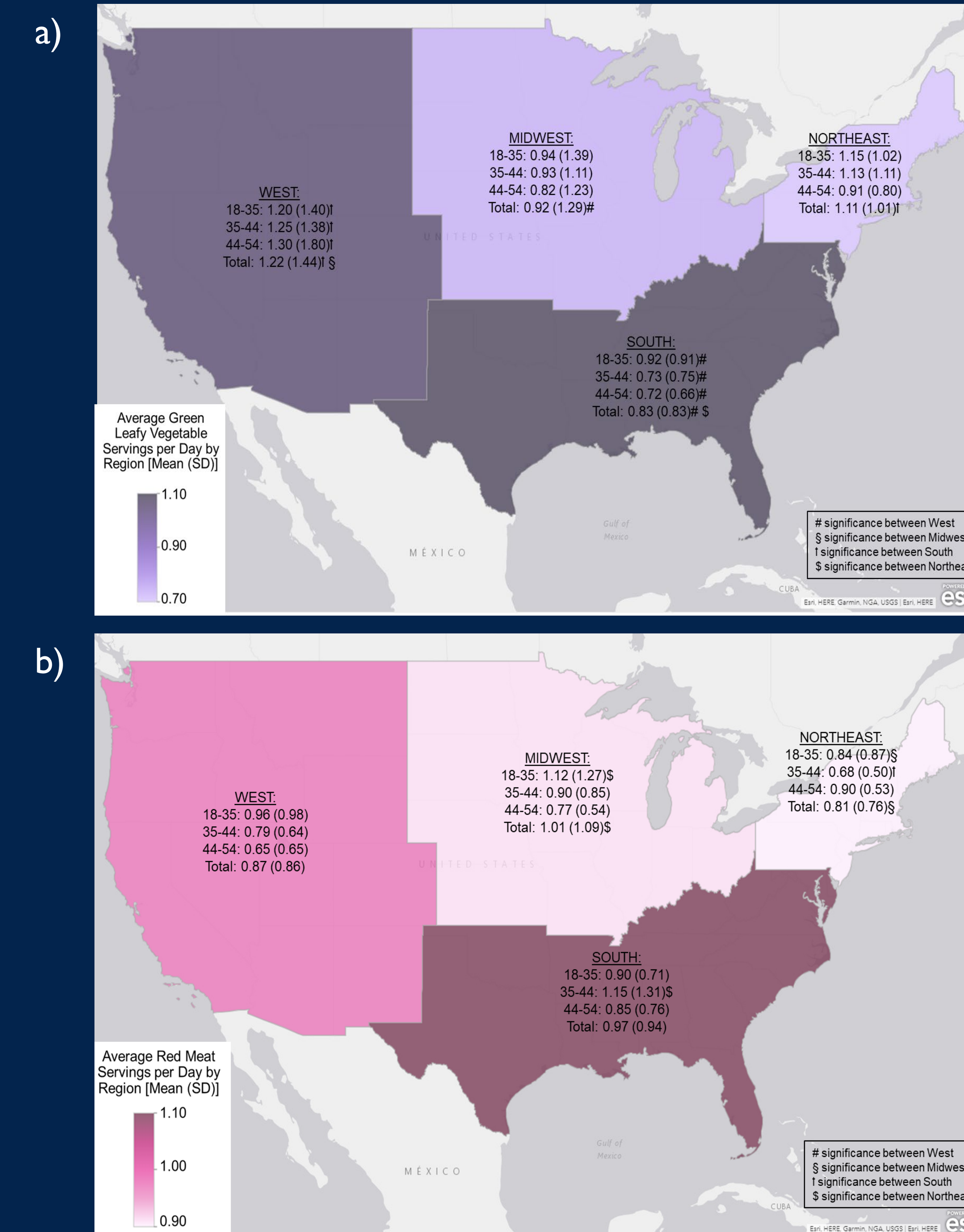


Figure 1a. Average green leafy vegetable consumption within US Census Regions by age group. Data is presented as mean (SD) and differences considered significant at p<0.050. Figure 1b. Average red meat servings per day within US Census Regions by age group, presented as mean (SD).

CONCLUSIONS

- Younger participants do not recognize the severity of CC diagnosis compared to older participants, reflecting further investigation of early detection strategies are needed
- Public health recommendations should be adjusted to provide feasible health behaviors and consider regional differences in dietary patterns
- Providing CC screenings for younger adults that also include behavioral risk reduction guidance may decrease CC morbidity and mortality
- Dietary recommendations that address dietary habits and behavioral barriers, such as increasing GLV over reduction of RM to obtain benefits may be most beneficial.