HOPE
Community Resources Inc.

Social and cultural influences on older adult diet, activity, and wellbeing in Anchorage, Alaska

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Outline

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Introduction

- In the US, the proportion of people over 60 years of age is growing faster than any other age group.
- Alaska's senior population grew by 79% between 2000 and 2013.
- The number of Alaskans over 70 is expected to grow by almost 60% in the next 7 years.
- Obesity & overweight are 2x higher for people with IDD and seniors than general population.

Background

- Cross-cultural research has shown that the experience of aging is markedly different across the world's populations because aging is a biological process rooted in sociocultural context.
- The sociocultural influences on older adults and people with disabilities contribute to complex decisions about food and physical activity patterns.

The Study

- 8-month mixed-methods anthropological study
- Research Question:

What is the relationship between the sociocultural factors that shape diet, physical activity, and nutritional status among Alaskan seniors in Anchorage?

Methods

- Qualitative & quantitative data collection
  - Participant observation
  - In-depth, semi-structured interviews (N=15)
  - Questionnaires (N=82)
    - FFQ, CHAMPS, SIS
  - Anthropometric measurements (N=82)

Dietary Assessment

- Calculated intake of food groups
- Calculated HEI (Healthy Eating Index)
  - measure of diet quality developed by the USDA
  - the sum of 10 dietary components are weighted
  - each component of the HEI has a possible score of 0 – 10
  - Total maximum HEI score is 100, where a higher score indicates greater dietary quality, closer to the recommended ranges and amounts of different food groups

Physical Activity Calculations

- Recorded activity frequency per week
- Calculated energy expenditure based on METs (metabolic equivalent values)
  - MET is a measure of energy cost of physical activities
  - Is an index of activity intensity
  - Example, MET value of sleeping = 0.9
    MET value of running = 23

Anthropometric Measurements

- Body measurements included height, weight, waist circumference
- Calculated:
  - BMI: Body Mass Index
  - WtHR: waist-to-height ratio

$$\text{BMI} = \frac{\textit{weight (kg)}}{\textit{height}^2\textit{ (m)}}$$

$$\text{WtHR} = \frac{\textit{waist circumference (cm)}}{\textit{height (cm)}}$$

BMI	Nutritional Status
<18.5	Underweight
18.5 – 24.9	Healthy weight
25-29.9	Overweight
30+	Obese

The Study Population

- Data collected in 2014
- 82 older adults (aged 65+)
  - White
  - Asian
  - Alaska Native
  - African American

Characteristics		N	Percent
Sex	Male	30	37%
	Female	52	63%
Age	Under 69 years	31	37.8%
	70 – 79 years	26	31.7%
	80+ years	25	30.5%
Ethnicity	Euro-American	50	61%
	American Indian/Alaska Native (AI/AN)	12	15%
	Asian	12	15%
	African-American	8	10%
Income	< $25,000	44	54%
	$25,000 - $44,999	19	23%
	$45,000 – 99,999	12	15%
	≥$100,000	7	9%
Length of Residence in Anchorage	≤ 10 years	16	19.5%
	11 – 20 years	17	20.7%
	≥ 21 years	49	59.8%
Number of people residing in household	1	52	63%
	2+	30	37%

The Study Population

- 82% of sample had BMI above 25
  - (overweight/obese)
- 90% of sample had unhealthy WtHR
  - (greater than 50%)
- Only 8 individuals had healthy WtHR
  - all were female

		Anthropometrics				Weight Status		
	N	Height (cm) Mean (SD)	Weight (kg) Mean (SD)	BMI Mean (SD)	WtHR Mean (SD)	Healthy (%)	Over-weight (%)	Obese (%)
Overall	82	162.21(10.07)	81.39(23.77)	31.31(10.86)	0.62(0.09)	18.3%	36.6%	45.1%
Sex								
Male	30	170.42(8.74)*	92.36(23.78)[‡]	33.2(12.15)	0.64(0.09)	6.7%	40%	53.3%
Female	52	157.48(7.43)	75.05(23.26)	30.23(9.26)	0.62(0.09)	25%	34.6%	40.4%
Age								
Under 69 years	31	164.36(9.91)	90.76(24.95)	35.02(13.43)	0.64(0.11)	9.7%	25.8%	64.5%
70 – 79 years	26	161.97(9.27)	73.87(14.3)	28.09(4.65)	0.59(0.08)	23.1%	42.3%	34.6%
80+ years	25	159.8(10.86)	77.58(29.83)	30.07(10.93)	0.62(0.07)	24%	44%	32%
Ethnicity								
Euro-American	50	164.68(8.83)	84.68(22.99)	32.23(12.36)	0.61(0.09)	16%	34%	50%
AI / AN	12	157.83(11.84)	69.18(29.24)	27.12(7.36)	0.58(0.12)	33.3%	50%	16.7%
Asian	12	156.17(9.86)	77.97(24.55)	31.43(7.52)	0.66(0.09)	16.7%	33.3%	50%
African-American	8	162.43(10.77)	84.21(27.38)	31.7(9.16)	0.63(0.06)	12.5%	37.5%	50%
Income								
< $25,000	44	158.73(8.20)	76.39(23.16)	31.15(12.08)	0.62(0.1)	20.5%	38.6%	40.9%
$25,000-44,999	19	162.4(10.48)	90.47(33.30)	34.11(12.37)	0.66(0.09)	15.8%	26.3%	57.9%
$45,000-99,999	12	168.71(10.63)	81.88(14.75)	28.73(3.95)	0.58(0.09)	25%	33.3%	41.7%
> $100,000	7	172.49(7.39)	87.3(15.15)	29.21(3.86)	0.6(0.06)	0%	57.1%	42.9%
Years in ANC								
< 10 years	16	160.06(7.37)	64.51(13.41)	25.05(4.11)	0.55(0.07)	50%	37.5%	12.5%
11 – 20 years	17	161.45(11.1)	93.86(36.34)	38.81(5.79)	0.63(0.09)	5.9%	41.2%	52.9%
≥ 21 years	49	163.18(10.51)	82.57(19.7)	30.81(5.79)	0.63(0.09)	12.2%	43.7%	53.1%
# of people in HH								
1	52	159.94(9.06)[∞]	77.14(20.26)[§]	30.86(10.75)	0.62(0.09)	17.3%	40.4%	42.3%
2+	30	166.15(10.67)	88.74(30.07)	32.09(11.18)	0.62(0.09)	20%	30%	50%

**Significant difference in height between men and women ($t(80) = 7.12$, $p = 0.000$).*
[‡]Significant difference in weight between men and women ($t(80) = 3.22$, $p = 0.002$).
[∞]Significant difference in height by number of people residing in household ($t(80) = -2.8$, $p = 0.006$).
[§] Significant difference in weight by number of people residing in household ($t(80) = -2.08$, $p = 0.04$).

Results

- No significant differences in BMI or WtHR by ethnicity or income level
- Greatest BMIs in 65-69 and 80+ age groups
- People who had lived in Anchorage longer had significantly higher BMI and WtHR

Does sample nutritional status vary by:	**Sum of Squares**	**df**	**Mean Square**	***f-value***	***p-value***
BMI					
By age	733.41	2	366.7	3.29	0.043*
ethnicity	254.68	3	84.89	0.71	0.548
income	260.73	3	86.91	0.73	0.537
# years in ANC	1558.9	2	779.45	7.71	0.001*
# people in HH	0.048	1	0.048	0.08	0.775
WtHR					
By age	0.043	2	0.022	2.58	0.082
ethnicity	0.032	3	0.011	1.24	0.299
income	0.047	3	0.016	1.84	0.148
# years in ANC	0.114	2	0.057	7.58	0.001*
# people in HH	0.000	1	0.000	0.003	0.956

**Indicates statistically significant value at the <0.05 level.*

Diet

- Anchorage men low on fiber but too high in carbs, fat, and sweets
- Anchorage women low on fiber, but high in carbs, fat, and protein

		Sample Mean	Standard Deviation	*t-value*	*p-value*
Recommended macronutrient intakes for males					
Total calories (kcal)	1800	1581.11	653.13	-1.74	0.093
Protein (g)	56	62.15	29.08	1.10	0.282
Carbohydrates (g)	130	162.93	68.96	2.48	0.020*
Dietary fiber (g)	28	16.3	9.76	-6.22	0.000*
Kcal from fat (%)	20-35	43.18	8.99	7.61	0.000*
Kcal from protein (%)	10-35	14.27	2.26	-1.67	0.107
Kcal from carbohydrates (%)	45-65	43.99	8.75	-3.57	0.000*
Kcal from sweets (%)	<10	12.4	10.55	2.16	0.040*
Recommended macronutrient intakes for females					
Total calories (kcal)	1600	1775.91	741.59	1.609	0.115
Protein (g)	46	65.98	29.27	4.63	0.000*
Carbohydrates (g)	130	206.09	77.39	6.67	0.000*
Dietary fiber (g)	22	18.9	9.52	-2.19	0.030*
Kcal from fat (%)	20-35	39.03	8.37	7.32	0.000*
Kcal from protein (%)	10-35	16.05	6.1	0.061	0.951
Kcal from carbohydrates (%)	45-65	46.38	11.55	0.22	0.826
Kcal from sweets (%)	<10	9.96	7.83	1.70	0.096

**Indicates statistically significant value at the <0.05 level.*

Diet

- Men consume significantly more fats/sugars than females in Anchorage
  - $t(80)=3.06, p=0.003$
- No dietary patterns differed by age, ethnicity, income, other people in the household, or length of time spent in Anchorage

Diet

- Anchorage seniors differed significantly from USDA recommended intakes in all food groups.
- Anchorage HEI scores significantly worse than national sample

		Sample Mean (SD)	*t-value*	*p-value*
Food categories	*Recommended # of daily servings*			
Vegetables	4-5	3.45 (3.5)	-13.84	0.000*
Fruit	4	1.41 (1.09)	-26.74	0.000*
Grains	5	4.42 (4.78)	-19.19	0.000*
Protein	3-4	2.42 (1.61)	-3.23	0.002*
Dairy	2-3	1.36 (1.49)	-2.31	0.023*
Fats/sugars	2	2.93 (1.75)	7.94	0.000*
HEI score	*Reference population mean*			
Overall	68.29	57 (13.7)	-7.42	0.000*
$\leq$ 70 yrs	62	55.97 (14.89)	-2.25	0.032*
70+ yrs	66	57.75 (13.02)	-4.53	0.000*

**Indicates statistically significant value at the <0.05 level.*

Physical Activity

- Very few Anchorage seniors engage in exercise-related activities
- 6 individuals engaged in some vigorous exercise

Activities	N	Percent (%)	MET value
Reading	73	89%	1
Visiting with friends or family	68	82.9%	1.5
Doing light work around the house (such as sweeping or vacuuming)	64	78.1%	2.5
Walking to do errands (such as to/from a store)	61	74.4%	2.5
Using a computer	52	63.4%	1.5
Walking leisurely for exercise or pleasure	49	59.8%	2.5
Going to the senior center	47	57.3%	1.5
Doing stretching or flexibility exercises (do not count yoga or Tai Chi)	46	56.1%	2.0
Attending church or take part in church activities	43	52.4%	1.5
Doing volunteer work	34	41.46%	2.5

		N	Energy expenditure of all activities	Energy expenditure of light activities	Energy expenditure of moderate activities	Energy expenditure of vigorous activities
Sex	*Overall*	82	3955 (3271)	2020 (1597)	1809 (2271)	201 (810)
	Male	30	4998 (3855)*	2100 (1757)	2713 (2885)**	324 (1021)
	Female	52	3353 (2744)	1974 (1514)	1287 (1643)	130 (660)
Age	Under 69	31	2481 (4190)	2336 (1734)	2769 (3091)	531*** (1262)
	70 – 79	26	3204 (2268)	1778 (1543)	1426 (1480)	0 (0)
	Over 80	25	2845 (1973)	1881 (1469)	10167 (1084)	0 (0)
Ethnicity	Euro-American	49	4636.7 (3458)	2214 (1678)	2200 (2556)	311 (1019)
	Asian	12	3762 (2869)	2149 (1363)	1613 (2006)	0 (0)
	AI / AN	12	2517 (2637)	1425 (1625)	1016 (1455)	76 (262)
	African-American	8	2143 (2346)	1509 (1246)	844 (993)	0 (0)
Annual Income	< $25,000	44	3225 (2531)	1509 (1246)	1290 (1473)	0 (0)
	$25,000-44,999	19	4038 (3372)	2132 (2075)	1763 (2369)	57 (685)
	$45,000-99,999	12	5236 (3893)	2040 (1387)	2702 (2363)	494 (1113)
	$100,000+	7	6124 (4888)	2161 (1056)	3662 (4407)	896 (1988)
Length of Time in Anchorage	< 10 yrs	16	2418 (1818)	1538 (1272)	962 (877)	0 (0)
	11-20	17	5030 (3637)	2548 (2111)	2333 (2211)	150 (422)
	21+ yrs	49	4084 (3375)	1995 (1462)	1903 (2547)	284 (1014)
# people in HH	1	52	3486 (2711)	1936 (1559)	1488 (1668)	100 (462)
	2+	30	4769 (3984)	2166 (1679)	2365+ (3001)	376+ (1187)

Physical Activity

- Younger seniors expended more energy than older seniors
- Seniors living with someone else expended more energy than those that live alone
- Males expend more energy per week than females, but do not necessarily get more "exercise"

Does sample physical activity vary by:	Sum of Squares	df	Mean Square	*f-value*	*p-value*
Frequency of all activities					
By age	889.93	2	444.97	3.90	0.024*
ethnicity	938.18	3	312.73	2.72	0.050*
income	168.56	3	56.19	0.45	0.720
# years in ANC	146.31	2	73.16	0.59	0.555
# people in HH	146.03	1	146.03	1.19	0.277
Energy expenditure of all activities					
By age	117710594	2	58855297	6.21	0.003*
ethnicity	74776426	3	24925475	2.46	0.069
income	76158998	3	25386333	2.51	0.065
# years in ANC	58258205	2	29129102	2.85	0.064
# people in HH	31309605	1	31309605	2.99	0.087
Frequency of moderate activities					
By age	248.16	2	124.08	4.00	0.022*
ethnicity	214.31	3	71.44	2.25	0.090
income	168.76	3	56.25	1.74	0.166
# years in ANC	36.07	2	18.03	0.54	0.587
# people in HH	84.61	1	84.61	2.59	0.111
Energy expenditure of moderate activities					
By age	48055142	2	24027571	5.13	0.008*
ethnicity	23132371	3	7710790	1.52	0.215
income	45489922	3	15163307	3.18	0.029*
# years in ANC	16569861	2	8284930	1.63	0.202
# people in HH	14649581	1	14649581	2.91	0.092

Indicates statistically significant value at the <0.05 level.

Physical Activity

- Only one person in Anchorage sample achieved recommended exercise
  - 150 minutes of moderate exercise + muscle-strengthening activities twice a week, ***OR***
  - 70 minutes of vigorous exercise + muscle-strengthening activities twice a week

Sociocultural Influences

- At least half of sample recognize role of family, cultural identity, and cultural events on diet & exercise patterns
- Fewer recognize the media, friends, or subsistence practices as influences

Sociocultural Influences	Has no role in my choices		Has very little role in my choices		Has some role in my choices		Has strong role in my choices		Is most important role in my choices	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*	*N*	*%*
The media	22	26.8%	24	29.3%	22	26.8%	11	13.4%	3	3.7%
Friends	22	26.8%	23	28%	24	29.3%	8	9.8%	5	6.1%
Family	16	19.5%	14	17.1%	19	23.2%	20	24.4%	13	15.9%
Cultural identity	27	32.9%	14	17.1%	16	19.5%	16	19.5%	9	11%
Participating in cultural events	19	23.2%	21	25.6%	23	28%	15	18.3%	4	4.9%
Subsistence knowledge/skills	67	81.7%	6	7.3%	3	3.7%	4	4.9%	2	2.4%

Sociocultural Influences

- Oldest seniors report most influence of media
- Youngest seniors report most influence of friends
- Alaska Native seniors report stronger influence of their cultural identity on diet and exercise than other groups
- Seniors living in Anchorage the longest report stronger influence of friends
- Seniors living with family report higher influence of family on diet and exercise

Sociocultural Influences

- Greater media influence = higher energy expenditure in physical activities
- Greater friends influence = higher energy expenditure in physical activities
- Greater family influence = greater fruit consumption
- Greater participation in cultural/social events = greater consumption of fats/sweets
- No relationships to BMI, waist circumference, or WtHR

Implications

- Tailor approaches for individuals based on their preferences, social networks, and cultural meaning
- Strengthening social and cultural ties can positively affect nutrition, activity, and limit isolation
- Find low-impact activities, like walking groups
- Media campaigns and outreach to ethnic minorities

Relationship to Disabilities

- Research suggests many of these findings also apply to people with disabilities
- Analyzed 35 research articles, theses, and dissertations on weight management for IDD in US, UK, Europe
  - Strengthening social and cultural ties can positively affect nutrition, activity, and limit isolation
  - Isolation is a leading cause of poor health outcomes

Recommendations

- Strategies could include:
  - Clear behavioral modification plans
  - Clinical / medical support
  - DSP and family as role models
  - Use appropriate language and visual aids
  - Fitbits can work!
  - Food substitutions & portion control
  - Watch less than 10 hrs/week of TV
  - Stick to routines (esp sleep!) and reduce stress

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