



## Tobacco use and preferences for wellness programs among health aides and other employees of an Alaska Native Health Corporation in Western Alaska

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### ARTICLE INFO

#### Article history:

Received 27 October 2016

Received in revised form 18 January 2017

Accepted 13 March 2017

Available online 18 March 2017

#### Keywords:

Alaska Native

Smoking

Tobacco

Wellness

Health

Employee

### ABSTRACT

This study assessed health behaviors and preferences for wellness programs among employees of a worksite serving Alaska Native-people. Village-based Community Health Aides/Practitioners (CHA/Ps) were compared with all other employees on health indicators and program preferences. Using a cross-sectional design, all 1290 employees at the Yukon Kuskokwim Health Corporation (YKHC) in Western Alaska were invited in 2015 to participate in a 30-item online survey. Items assessed health behaviors, perceived stress, resiliency, and preferences for wellness topics and program delivery formats. Respondents ( $n = 429$ ) were 77% female and 57% Alaska Natives. CHA/Ps ( $n = 46$ ) were more likely than all other employees ( $n = 383$ ) to currently use tobacco (59% vs. 36%;  $p = 0.003$ ). After adjusting for covariates, greater stress levels were associated ( $p = 0.013$ ) with increased likelihood of tobacco use. Employees reported lower than recommended levels of physical activity; 74% had a Body Mass Index (BMI) indicating overweight or obese. Top preferences for wellness topics were for eating healthy (55%), physical activity (50%), weight loss (49%), reducing stress (49%), and better sleep (41%). CHA/Ps reported greater interest in tobacco cessation than did other employees (37% vs. 21%;  $p = 0.016$ ). Preferred program delivery format among employees was in-person (51%). The findings are important because tailored wellness programs have not been previously evaluated among employees of worksites serving Alaska Native people. Promoting healthy lifestyles among CHAP/s and other YKHC employees could ultimately have downstream effects on the health of Alaska Native patients and communities.

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### 1. Introduction

In 2014, cigarette smoking prevalence in the United States (U.S.) population was higher among American Indian and Alaska Native (AI/AN) people (32%) and multiracial persons (25%) than White (22%), Black (21%), Hispanic (16%), or Asian (13%) adults (Jamal et al., 2015). Substantial evidence indicates that employee wellness promotion programs are cost-effective and can achieve positive health outcomes including smoking cessation (Allweiss et al., 2014; Goetzel et al., 2014). However, the efficacy of these programs among employees of worksites serving AI/AN people has not been well documented. Building on our long-standing tobacco control research partnership, this study

represents an initial step in understanding health behaviors, primarily tobacco use, and preferences for wellness programs among employees of a worksite serving AN people.

The Yukon-Kuskokwim (Y-K) Delta region in Western Alaska comprises 58 tribes residing in 47 village locations with populations ranging from 28 to 1133. The Yukon-Kuskokwim Health Corporation (YKHC) is located in Bethel (the hub for all villages) and owns and operates the Y-K Delta Regional Hospital which provides health care for AN people. Employee wellness programs are not available and thus an opportunity exists to initiate such efforts.

About 66% of AN persons in the Y-K Delta region currently use some form of tobacco; one-third use smokeless tobacco (ST) – most often a homemade mixture of ash and tobacco leaves known as Iqmik (Dilley et al., 2013a, b; Hearn et al., 2013). Based on social ecological models of health behavior change (e.g., social cognitive theory), multilevel approaches targeting both intrapersonal influences and social-environmental factors could be effective for reducing tobacco use among AN people (Bandura, 2004; Sallis et al., 2008). Potentially, employees of

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health care facilities serving ANs who are tobacco-free and have healthier lifestyles could serve as role models for patients and the general community (Balcazar et al., 2011; Frank et al., 2000; Plescia et al., 2008). Given the inter-connected relationship between work and family lives, a systems (ecological) approach addressing the interrelationship between work, family, and community could maximize benefits of employee health promotion programs for AN patients and communities (Allweiss et al., 2014).

The impetus for conducting this study was to develop tobacco cessation programs for the YKHC village-based Community Health Aides/Practitioners (CHA/Ps). CHA/Ps are primarily AN and are generally viewed as mentors for healthy lifestyles (Golnick et al., 2012). However, qualitative work (Renner et al., 2004; Patten et al., 2009) indicated people from this region perceived that many CHA/Ps use tobacco and thus lacked credibility to deliver cessation advice. Nonetheless, to address YKHC's interest in health and wellness for all employees, we included all workers, and compared CHA/Ps with all other employees. Moreover, obesity and physical activity were assessed. Data from the 2012 Alaska Behavioral Risk Factor Surveillance Study (BRFSS (State of Alaska, 2014)) indicated that compared with White adults obesity prevalence (Body Mass Index [BMI]  $\geq 30.0$ ) and low levels of aerobic activity was greater among ANs (27% vs. 30% and 39% vs. 48%, respectively). There are limited data on these health indicators among employees of worksites serving AN persons.

Another study objective was to assess current levels of perceived stress and resiliency and the relationship between these psychosocial factors and current tobacco use. Perceived stress and burnout are important factors influencing employee health and wellness (Clark et al., 2011) and elevations in perceived stress have been linked to tobacco use and difficulty quitting (Lawless et al., 2015). In addition, resilience—the ability to adapt in the face of adversity (Ong et al., 2006), has emerged as an important individual and AI/AN cultural protective factor for health and wellness (Ong et al., 2006; Schure et al., 2013; Tuefel-Shone et al., 2006).

We hypothesized that: (1) the prevalence of tobacco use would be higher among CHA/Ps compared to other employees, and (2) based on findings in other populations (Lawless et al., 2015) stress level would be associated with tobacco use.

## 2. Methods

This study was approved by the Alaska Area and Mayo Clinic Institutional Review Boards, and the YKHC Human Studies Committee. The work described was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki). Informed consent was obtained. Data were collected in 2015 and analyzed in 2016.

### 2.1. Study design

Cross-sectional survey design including all YKHC employees.

### 2.2. Study setting

The Y-K Delta region is located approximately 400 air miles from Anchorage, with a population of about 25,000. Encompassing 75,289 mile<sup>2</sup> of coastal wetlands, tundra, and mountains, it includes the town of Bethel (population 6000) and 47 village locations along the coast of the Bering Sea and on the banks of the Yukon and Kuskokwim Rivers and their tributaries. Residents are primarily of Yupik, Cupik, or Athabascan ethnicity, and are fairly homogeneous with respect to culture and language. The population is of low socio-economic status and most maintain a subsistence lifestyle (Alaska Native Epidemiology Center, 2016). No roads connect the villages; residents travel by small plane, boat, or snow machine. A typical village has a K-12 school, a

local tribal council, health clinic, store, post office, church, and community center.

YKHC supports 44 village-built clinics with CHA/Ps that provide acute, chronic, emergency, dental, behavioral health, and preventative health care services at the village level. There are 170 CHA/Ps with 1–8 per village, based on the village population, and are selected by and work in their home communities. CHA/Ps are  $\geq 18$  years of age, have a high school diploma/GED, and are required to undergo an intensive 15 week (600 h) basic medical training curriculum (Golnick et al., 2012).

YKHC has five sub-regional clinics with greater laboratory and x-ray capability than village clinics that staff CHA/Ps and mid-level providers. Bethel-based facilities include the Y-K Delta Regional Hospital, a 39-bed general acute care medical facility; Community Health Services; Pre-maternal Home; and long-term care facilities. Patients requiring tertiary or more complex care travel to the Alaska Native Medical Center located in Anchorage.

YKHC employs 1290 workers across the region. About 65% of employees are female; approximately 59% are AN, 30.4% Caucasian, 1.9% African American, and 2.6% Asian race.

### 2.3. Respondents

Eligible criteria were: (1) age  $\geq 18$  years, (2) employed at least part-time with YKHC, and (3) provided informed consent.

All employees were sent an email invitation, as even village-based workers have e-mail access. The study design anticipated a response rate of 30% (387/1290) based on participation with other web-based surveys reported in the literature (Cook et al., 2000; Sheehan, 2001). A sample size of 387 would provide over 80% power to detect differences between CHA/Ps and other employees in the proportion currently using tobacco of 0.25. The response rate was 36% (467/1290). Of these, 38 were excluded because they did not provide an occupation and left most items blank. The final sample of 429 employees formed the basis of this report.

### 2.4. Procedures

YKHC administrators sent an introductory e-mail to all employees, informing them about the project; and an article was placed in the employee newsletter. Employees were invited by e-mail in July of 2015 to complete an online, 30-item, English language survey which took about 10–15 min to complete. The invitation included a description of the project and information regarding privacy and consent that employees could print for their reference, and a link to the survey. Employees not wanting to participate could simply delete the email. Participants were given two weeks to complete the online survey; after one week, an automated e-mail reminder was sent. The survey was anonymous; no identifying information was collected or linked to survey responses. Respondents were offered a small incentive (\$10 gift card); those interested were sent a separate email form – which was not linked to survey responses – to provide their name and work location for its delivery.

## 3. Measures

### 3.1. Survey development

The survey was developed by the researchers and local stakeholders comprising YKHC administrators, leadership, and managers. Telephone and on-site meetings were held in Bethel to draft survey content areas and determine study procedures. While several areas for health promotion were identified, it was decided the survey should focus on tobacco use as the most pressing issue for employees. The survey was piloted for content and duration with 19 research employees.

### 3.2. Demographics

Demographics assessed were gender, AN race (yes/no), age (18–25, 26–34, 35–45, 46–55, 56, and older), occupation, and work location: village clinic, sub-regional clinic, or Bethel.

### 3.3. Health indicators

#### 3.3.1. Tobacco use

Current tobacco use including ever use of tobacco, and 7-day point-prevalence current use of any tobacco/nicotine product was assessed with standard questions (Jamal et al., 2015). Current tobacco users were asked to provide type of product used (cigarette smoking, Iqmik/ST, electronic cigarettes), indicate if they had made a quit attempt in the past year, and note their readiness to quit using the validated Contemplation Ladder (Biener and Abrams, 1991).

#### 3.3.2. Exposure to second-hand smoke

Exposure to second-hand smoke was assessed using standard measures adapted in prior studies of tobacco use in AN adults (Benowitz et al., 2012; Renner et al., 2013). These items assessed how much time respondents were exposed to cigarette smoke in a usual day at home, work, or during social activities with response options: <30 min, 30 min to <1 h, 1–3 h, 4–7 h, or 8 or more hours; how many people who lived in their home (excluding the respondent) smoked cigarettes or chewed tobacco. In addition, respondents were asked about home smoking bans with response options: no one is allowed to smoke anywhere, smoking is allowed in some places or at certain times, or smoking is permitted anywhere at any time. The same question was asked for rules about Iqmik/ST use in the home.

#### 3.3.3. BMI

BMI was calculated using two items assessing self-reported weight and height.

#### 3.3.4. Physical activity

A single item assessed current engagement in physical activity (Clark et al., 2011; Singh et al., 2014). Respondents were asked “How would you rate your current level of physical activity?” using a scale from 0 (not active at all) to 10 (very active).

#### 3.3.5. Perceived Stress Scale (PSS)

The validated 4-item PSS was used to assess perceived stress over the past month (Cohen et al., 1983; Cohen, 1988); e.g., “How often have you felt you were unable to control the important things in your life.” Items were rated on a 5-point scale ranging from 0 = never, 2 = sometimes, to 4 = fairly often.

#### 3.3.6. Brief Resilience Scale (BRS)

The validated 6-item BRS (Smith et al., 2008) was used to assess resilience; e.g., “I tend to bounce back quickly after hard times.” Items are rated on a 5-point scale with 1 = strongly disagree, 3 = neutral, and 5 = strongly agree.

### 3.4. Wellness program preferences

Two items adapted from prior surveys (Booth et al., 1997; Jones and Courneya, 2002) assessed interest in health and wellness topics and preferences for program delivery. First, respondents were asked “We would like to know about types of health and wellness topics you are interested in. Please check all areas you would like to learn more about.” Response options were: quitting or reducing tobacco, diabetes prevention or management, being more physically active, eating healthy, cancer screening, reducing stress, heart health, getting better sleep, weight loss, alcohol or other drugs, or none of the above. Second, respondents were asked “If we created a special wellness program for staff, what

ways would you like to get information and support? (Check all that apply.)” Response options were: DVD, in person, educational workshop groups, written materials, posters, flyers, pamphlets, mailed educational material, e-mails, mobile app, phone calls, text messages, or a hospital-based program.

### 3.5. Statistical methods

Summaries were generated for the total sample using descriptive statistics. Two-group comparisons were done between (1) CHA/Ps and (2) all remaining employees using the Chi-square or Kruskal Wallis test, as appropriate. Endorsement of program topics or delivery modes by one-third or more of respondents was considered of relevance for designing employee wellness programs (McPherson et al., 2014).

Logistic regression was used to assess the association between the PSS score and current use of tobacco. For this analysis, current use of any tobacco product (yes/no) was the dependent variable and PSS score was the independent variable. The analysis was adjusted for gender, age, AN race, occupational group (CHA/P vs. all other employees), work location (village clinic, sub-regional clinic, Bethel), current physical activity, and BMI. A similar model was run with BRS score as the independent variable and current tobacco use as the dependent variable. Odds ratios (OR) and 95% confidence intervals (CI) were generated. In all cases,  $p$ -values  $\leq 0.05$  were considered statistically significant.

## 4. Results

### 4.1. Respondents

Table 1 presents demographic characteristics of all employees and by occupation group. Of the 429 respondents, 77% were female and 57% were AN race. CHA/Ps ( $n = 46$ ) were younger, more likely to be AN, and village-based compared to other employees ( $n = 383$ ).

## 5. Health indicators

### 5.1. Tobacco use

Table 2 presents information on tobacco use and other health indicators for all employees and by occupation group. Use of any tobacco was 39%, while multiple tobacco products and electronic cigarettes were less prevalent. CHA/Ps were more likely to have ever used tobacco (91% vs. 65%;  $p < 0.001$ ), and to currently use any tobacco (59% vs. 36%;  $p = 0.003$ ) and Iqmik (37% vs. 15%;  $p < 0.001$ ) compared with other respondents.

### 5.2. Second-hand smoke exposure

About two-thirds (68%; 288/429) were exposed to cigarette smoke for <30 min in a typical day; most employees (84%) reported a smoking ban in their home. CHA/Ps were more likely than other respondents to report one or more tobacco chewers in their home (65% vs. 28%;  $p < 0.001$ ) and were less likely to report a home chewing ban (41% vs. 60%;  $p = 0.049$ ).

### 5.3. BMI

About three-quarters of employees (74%) had BMI indicating overweight or obesity, with no difference detected between CHA/Ps and other respondents (Table 2).

### 5.4. Physical activity

Employees reported lower than recommended levels of physical activity (Table 2), with no differences detected between CHA/Ps and other respondents.

**Table 1**  
Demographic characteristics of employee survey respondents (n = 429) of an Alaska Native-Serving Health Corporation in Western Alaska, 2015.

Occupational group	CHA/P (n = 46) n (%)	Other Occupation (n = 383) n (%)	Total (n = 429) n (%)	p value <sup>a</sup>
Female gender	38 (82.6%)	289 (76.5%)	327 (77.1%)	0.35
Alaska Native	43 (95.6%)	200 (52.5%)	243 (57.0%)	<0.001
Age				0.029
18–25	12 (26.1%)	69 (18.0%)	81 (18.9%)	
26–34	19 (41.3%)	100 (26.1%)	119 (27.7%)	
35–45	5 (10.9%)	89 (23.2%)	94 (21.9%)	
46–55	8 (17.4%)	70 (18.3%)	78 (18.2%)	
56 +	2 (4.3%)	55 (14.4%)	57 (13.3%)	
Occupation				
CHA/P	46 (100%)	—	—	
Nurse	—	57 (14.9%)	—	
Clinical professional	—	82 (21.4%)	—	
Technical	—	16 (4.2%)	—	
Office/clerical	—	76 (19.8%)	—	
Administrative	—	68 (17.8%)	—	
Ancillary (facilities/construction)	—	9 (2.3%)	—	
Service (food service/custodial)	—	4 (1.0%)	—	
Other	—	71 (18.5%)	—	
Facility where work was based				<0.001
Village clinic	39 (84.8%)	26 (6.8%)	65 (15.2%)	
Sub-regional clinic	6 (13.0%)	39 (10.2%)	45 (10.5%)	
Bethel	1 (2.2%)	318 (83.0%)	319 (74.3%)	

CHA/P = Community Health Aides/Practitioners.

<sup>a</sup> Chi-square test comparing CHA/P group versus Other Occupational group.

### 5.5. Perceived stress and resilience

Employees reported moderate levels of stress (mean PSS score = 5.0 of a possible 10) compared with a U.S. probability sample mean score of 4.5 (Benowitz et al., 2012). Employees reported high levels of resiliency (mean BRS score = 3.7 of a possible 5). Compared with other employees, CHA/Ps reported *higher* PSS scores ( $p = 0.006$ ) and *lower* BRS scores ( $p < 0.001$ ; see Table 2).

### 5.6. Relationship of perceived stress and resilience to current tobacco use

After adjusting for covariates (gender, age, AN race, occupation group, work location, current physical activity, and BMI), higher PSS scores were associated with current tobacco use (OR = 1.12; 95% CI: 1.02–1.22;  $p = 0.013$ ). No significant association was found for BRS scores and current use of any tobacco; adjusted OR = 0.72; 95% CI: 0.50–1.05;  $p = 0.087$ .

### 5.7. Wellness program preferences

Table 3 presents the reported interest among employees in wellness program topics. Overall preferences were: (1) eating healthy (55%), (2) physical activity (50%), (3) reducing stress (49%), (4) weight loss (49%), and (5) better sleep (41%). The least preferred topic was alcohol or drugs (12%); only 23% indicated interest in tobacco cessation.

CHA/Ps were *less* likely to indicate interest in healthy eating (30% vs. 58%;  $p < 0.001$ ) compared to other respondents. CHA/Ps were *more* interested in tobacco cessation (37% vs. 21%;  $p = 0.016$ ) and other substance use program topics (33% vs. 9%;  $p < 0.001$ ).

Preferences were for face-to-face delivery of programs (51%). Least preferred modalities were telephone delivery (6%) and text messaging (15%). CHA/Ps indicated less of a preference for programs done by e-mail (28% vs. 50%;  $p = 0.006$ ). For CHA/Ps, the next preferred modality aside from in-person was for program delivery by DVD (41%).

## 6. Discussion

This study provided novel information about tobacco use and interest in wellness programs among employees of a health corporation serving AN people. The findings are important because tailored wellness programs have not been previously evaluated among employees of worksites that serve AN people. Strengths of this study were the relatively large sample size, more than half of employees were AN, and the survey was developed with participation from local stakeholders. The prevalence of any tobacco use (39%) was much greater than that reported in a general U.S. adult population sample of 25% (Agaku et al., 2014) and largely accounted for by Iqmiq use. The prevalence of cigarette smoking (18%) was identical to a large national sample of health care workers (18%) (Helfand and Mukamal, 2013), and only slightly higher than in the general population 17% (Jamal et al., 2015). Multiple tobacco use was not common and the use of e-cigarettes was very low. The low exposure to second-hand smoke along with the high percentage of reported home smoking bans is encouraging. Interestingly, despite the high prevalence of tobacco use, tobacco cessation did not emerge as a top priority of employees.

The findings could be useful for YKHC in their goal of promoting health and wellness among their employees, by identifying areas for growth and change pertaining to adoption of health behaviors among employees. Employees preferred programs directed toward weight loss, healthy eating, and physical activity, along with reducing stress and sleeping better. These types of program areas could be beneficial, as the majority of employees had BMI indicating overweight or obesity, reported on average having lower than recommended levels of current physical activity, and high stress levels. Obesity prevalence and levels of physical activity reported are similar to a larger studies including ANs statewide (State of Alaska, 2014; Redwood et al., 2009) and the general U.S. population (Centers for Disease Control and Prevention, 2010). As hypothesized, a novel finding is that elevated stress levels were associated with current use of tobacco among ANs; thus, targeting stress reduction could be indirectly beneficial for cessation. The high levels of resilience reported is a strength that could be cultivated and reinforced

**Table 2**  
Tobacco use and other health indicators of employee survey respondents (n = 429) of an Alaska Native-Serving Health Corporation in Western Alaska, 2015.

Occupational group	CHA/P (n = 46) n (%)	Other Occupation (n = 383) n (%)	Total (n = 429) n (%)	p value <sup>a</sup>
Body Mass Index				0.12
Mean (SD)	31.5 (7.2)	29.9 (7.0)	30.0 (7.0)	
Range	19.7–56.6	14.4–56.1	14.4–56.6	
% BMI <24	10 (23.3%)	96 (26.4%)	106 (26.1%)	
% overweight (BMI 25–29)	9 (20.9%)	113 (31.1%)	122 (30.0%)	
% obese (BMI > 30)	24 (55.8%)	154 (42.4%)	178 (43.8%)	
Current level of physical activity <sup>b</sup>				0.49
Mean (SD)	5.1 (2.1)	5.0 (2.2)	5.0 (2.2)	
Range	0–9	0–10	0–10.0	
Motivation for exercise <sup>c</sup>				0.14
Mean (SD)	4.5 (2.7)	5.2 (2.5)	5.1 (2.5)	
Range	0–10	0–10	0–10	
Time exposed to smoke in a usual day				0.91
<30 min	31 (67.4%)	257 (67.6%)	288 (67.6%)	
30 min to 1 h	6 (13.0%)	40 (10.5%)	46 (10.8%)	
1–3 h	3 (6.5%)	39 (10.3%)	42 (9.9%)	
4–7 h	3 (6.5%)	25 (6.6%)	28 (6.6%)	
8+ h	3 (6.5%)	19 (5.0%)	22 (5.2%)	
# of smokers in home(excluding self)				0.06
0	26 (56.5%)	268 (70.0%)	294 (68.5%)	
1	13 (28.3%)	81 (21.1%)	94 (21.9%)	
2+	7 (15.2%)	34 (8.9%)	41 (9.5%)	
# chewers in home (excluding self)				<0.001
0	16 (34.8%)	275 (72.0%)	291 (68.0%)	
1	13 (28.3%)	55 (14.4%)	68 (15.9%)	
2+	17 (36.9%)	52 (13.6%)	69 (16.1%)	
Home smoking rules				0.47
No smoking	41 (89.1%)	316 (82.9%)	357 (83.6%)	
Smoking in some places	5 (10.9%)	59 (15.5%)	64 (15.0%)	
Smoking anywhere	0 (0.0%)	6 (1.6%)	6 (1.4%)	
Home chewing rules				0.049
No chewing	19 (41.3%)	227 (59.9%)	246 (57.9%)	
Chewing in some places	12 (26.1%)	74 (19.5%)	86 (20.2%)	
Chewing anywhere	15 (32.6%)	78 (20.6%)	93 (21.9%)	
Ever used tobacco	42 (91.3%)	250 (65.4%)	292 (68.2%)	<0.001
Current use				
Any tobacco/nicotine product (past 7 days)	27 (58.7%)	138 (36.3%)	165 (38.7%)	0.003
Two or more nicotine/tobacco products	6 (13.0%)	26 (6.8%)	32 (7.5%)	0.13
Cigarettes	10 (21.7%)	69 (18.1%)	79 (18.5%)	0.55
Iqmik	17 (37.0%)	57 (15.0%)	74 (17.4%)	<0.001
Commercial chew	6 (13.0%)	39 (10.2%)	45 (10.5%)	0.56
E-cigarettes	0 (0.0%)	5 (1.3%)	5 (1.2%)	0.43
Past year tried quitting tobacco (current tobacco users only)	18 (66.7%)	68 (49.3%)	86 (52.1%)	0.098
Contemplation Ladder: readiness to quit <sup>d</sup> (current tobacco users only)				0.87
Mean (SD)	4.6 (3.0)	4.6 (3.1)	4.6 (3.1)	
Range	0–10	0–10	0–10	
Perceived Stress Scale score <sup>e</sup>				0.006
Mean (SD)	6.1 (2.7)	4.9 (3.0)	5.0 (3.0)	
Range	0–12	0–13	0–13	
Brief Resilience Scale score <sup>f</sup>				<0.001
Mean (SD)	3.4 (0.5)	3.7 (0.7)	3.7 (0.7)	
Range	2.2–5.0	1.8–5.0	1.8–5.0	

CHA/P = Community Health Aides/Practitioners. BRS = Brief Resilience Scale; PSS = Perceived Stress Scale; SD = standard deviation.

<sup>a</sup> Comparing CHA/P group versus Other Occupation group using the Chi-Square test for categorical variables and the Kruskal Wallis test for continuous variables.

<sup>b</sup> One item: 0–10 scale, 0 = not active at all, 10 = very active.

<sup>c</sup> One item: 0–10 scale, 0 = not motivated, 10 = very motivated.

<sup>d</sup> One item: Contemplation Ladder operates as 0–10 point scale, 0 = not at all ready to quit, 10 = ready to quit now.

<sup>e</sup> Four items: Two items reverse coded; total PSS score calculated by summing across all four items. Possible scores can range from 0 to 16, with higher scores indicating greater levels of perceived stress. The normative mean score was 4.49 in a U.S. probability sample (Benowitz et al., 2012).

<sup>f</sup> Six items: Three items reverse coded; total BRS score calculated as the mean of the six items. Possible scores can range from 1 to 5, with higher scores indicating greater feelings of resiliency.

as part of employee wellness programs (Schure et al., 2013; Tuefel-Shone et al., 2006).

As hypothesized, CHA/Ps were more likely than other employees to currently use tobacco (59% vs. 36%); this difference was largely driven by CHA/Ps' use of Iqmik. CHA/Ps reported more in-home exposure to tobacco chewing; this socio-environmental influence could thus be considered when designing tobacco cessation interventions for these

workers. Encouragingly, CHA/Ps' interest in tobacco cessation was greater than for other employees.

Our findings may have applicability to other regions of Alaska; over half of AN people live in rural communities where care is provided by CHA/Ps (Golnick et al., 2012). Community health workers, including lay health advisors or influencers, and *promotores de salud* have gained increased visibility across the U.S., addressing many health access and

**Table 3**

Interest in health and wellness programs and preferences for program delivery among employee respondents (n = 429) of an Alaska Native-Serving Health Corporation in Western Alaska, 2015.

Occupational group	CHA/P (n = 46) n (%)	Other Occupation (n = 383) n (%)	Total (n = 429) n (%)	p value <sup>a</sup>
<b>Health and wellness program topics</b>				
Eating healthy	14 (30.4%)	222 (58.0%)	236 (55.0%)	<0.001
Physical activity	17 (37.0%)	197 (51.4%)	214 (49.9%)	0.064
Reducing stress	21 (45.7%)	189 (49.3%)	210 (49.0%)	0.64
Weight loss	18 (39.1%)	191 (49.9%)	209 (48.7%)	0.17
Better sleep	14 (30.4%)	163 (42.6%)	177 (41.3%)	0.11
Heart health	12 (26.1%)	90 (23.5%)	102 (23.8%)	0.70
Quitting/reducing tobacco	17 (37.0%)	81 (21.1%)	98 (22.8%)	0.016
Cancer screening	12 (26.1%)	81 (21.1%)	93 (21.7%)	0.44
Diabetes prevention	14 (30.4%)	73 (19.1%)	87 (20.3%)	0.07
Alcohol or other drugs	15 (32.6%)	36 (9.4%)	51 (11.9%)	<0.001
Interested in none	4 (8.7%)	26 (6.8%)	30 (7.0%)	0.63
<b>Preferences for program delivery</b>				
Face-to-face (in person)	29 (63.0%)	188 (49.3%)	217 (50.6%)	0.074
Emails	13 (28.3%)	190 (49.6%)	203 (47.3%)	0.006
DVD	19 (41.3%)	116 (30.3%)	135 (31.5%)	0.13
Posters	18 (39.1%)	109 (28.5%)	127 (29.6%)	0.13
Written materials	13 (28.3%)	110 (28.7%)	123 (28.7%)	0.95
Hospital program	9 (19.6%)	110 (28.7%)	119 (27.7%)	0.19
Mobile app	9 (19.6%)	98 (25.6%)	107 (24.9%)	0.37
Pamphlets	13 (28.3%)	93 (24.3%)	106 (24.7%)	0.55
Flyers	15 (32.6%)	85 (22.2%)	100 (23.3%)	0.11
Mail	13 (28.3%)	67 (17.5%)	80 (18.6%)	0.077
Text messaging	8 (17.4%)	56 (14.6%)	64 (14.9%)	0.62
Telephone	3 (6.5%)	22 (5.7%)	25 (5.8%)	0.83

CHA/P = Community Health Aides/Practitioners.

Percentages do not add to 100 because respondents could select more than one option.

<sup>a</sup> Chi-square test comparing CHA/P group versus Other Occupation group.

health disparities issues from a community-centered approach (Balcazar et al., 2011; American Public Health Association, 2016; Guide to Community Preventive Services, 2015). Despite some promising studies in Hispanic and low income communities (Cox et al., 2011; Krieger et al., 2005; Muramoto et al., 2014; Suarez et al., 2012), the potential role of CHA/Ps in tobacco control efforts within AI or AN communities has not been studied (Bittencourt and Scarinci, 2014).

From these findings, next steps related to tobacco control research include the development of tobacco cessation programs for CHA/Ps, perhaps also addressing other substance use as there was also interest in that topic. Barriers to in-person delivery of programs (preferred by 63% of CHA/Ps) include geography and climate. Unlike other employees, CHA/Ps preferred a DVD format (30% vs. 41%). A possible strategy to combine a personal approach with an electronic delivery format could be a digital story telling DVD, perhaps one that emphasizes stories of resilience around tobacco cessation. Digital storytelling has been found to be a culturally acceptable health messaging tool among AN people, including CHA/Ps (Cueva et al., 2006; Wexler et al., 2013). This approach could serve as a catalyst for tobacco cessation not only among CHA/Ps but among patients/community members. Cueva and colleagues (Cueva et al., 2015) explored 15 AN community members' reactions to a digital story created by a CHA/P on cancer prevention. Participants found the digital story to be an acceptable, emotionally engaging way to increase their cancer awareness and begin challenging conversations with others to activate health promotion. The importance of relationships was highlighted in both the CHA/P telling and sharing of their stories. Digital storytelling offered a way for the storyteller and the viewer to envision wellness. Digital stories can be shared through Facebook and other social media, enhancing the potential intervention reach through social networks (Cueva et al., 2015).

This work had several important limitations. The first was a relatively low participation rate (36%), potentially resulting in a select sample with respect to health behaviors. While the response rate is comparable

to completion of other web-based surveys reported in the literature (Alaska Native Epidemiology Center, 2016; Cook et al., 2000), this limitation needs to be recognized. The survey response may have been impacted by the time of year when the survey was administered – during summer subsistence activities. We were not able to determine whether respondents differed from non-respondents on socio-demographic variables to assess sample representativeness. Sixty-five percent of YKHC employees are female whereas our sample had a higher proportion of women (77%). Similar to our sample approximately 59% of YKHC employees are AN. Notably, only about one-third of CHA/Ps (46/170) participated, limiting conclusions about CHA/P specific health behaviors and program preferences. CHA/Ps were primarily female, consistent with the gender distribution of CHA/Ps statewide (Cueva et al., 2014; Kuhnley and Cueva, 2011). Second, to reduce response burden and enhance participation, the survey was kept relatively short. Other health behaviors were omitted, such as life vest use, nutrition, alcohol and drug use, sun screen use, or cancer screening. Third, health status and health behaviors were not objectively measured. Future studies may want to assess physical activity level using accelerometers, and biochemically confirm tobacco use. Fourth, employees were not asked about their level of willingness to engage in wellness programs, preferences for incentives (group or individual), or preferred program locations. Fifth, the use of social media platforms for program delivery (e.g., Facebook) was not explored. Finally, we did not assess CHA/Ps' interest to deliver tobacco cessation interventions or to serve as role models for non-tobacco use.

In conclusion, this study provided novel information about tobacco use and interest in wellness programs among employees of a worksite that serves AN people. Our survey could serve as a model for other regional health corporations in Alaska or tribal worksites nationally who wish to develop employee wellness programs. Potentially, these efforts could positively impact patients and the health of AI/AN communities (Allweiss et al., 2014).

## Conflict of interest

The authors declare there is no conflict of interest.

## Funding

This work was funded by internal pilot awards from Mayo Clinic, Office of Health Disparities Research: “Building a Collaborative Initiative with the YKHC to Address Employee Health and Wellness” and “Assessing Tobacco Use and Treatment Preferences among Alaska YKHC Employees.” The survey is available upon request from the first author.

## Acknowledgments

From the Mayo Clinic, we appreciate the assistance of Christina Smith for her role in implementing the study and Ann Harris from the Survey Research Center for assistance with survey design and data management.

The authors would like to acknowledge the contributions of Joseph Klejka, M.D. and William Schreiner, M.P.H. at YKHC in the planning and implementation of this project and contributions to the survey tool. We appreciate the thoughtful feedback on the study findings and discussion of next steps with the YKHC Human Studies Committee and Board of Directors. In addition, we are grateful to the YKHC employees who participated in the survey.

The authors appreciate the helpful feedback on an earlier manuscript draft by Melanie Cueva, Ph.D. at the Alaska Native Tribal Health Consortium, Anchorage, Alaska.

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