



A Qualitative Study about Creating Smoke-free Home Rules in American Indian and Alaska Native Households

Michelle C. Kegler^{1,6} · Katherine Anderson¹ · Lucja T. Bundy¹ · Deana Knauf² · June Halfacre³ · Cam Escoffery¹ · Andre Cramblit⁴ · Patricia Henderson⁵

Published online: 25 April 2019
© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

Smoke-free homes can reduce exposure to secondhand smoke (SHS) and support smoking cessation. The current study seeks to understand perspectives, including barriers and facilitators, on smoke-free homes among five American Indian/Alaska Native (AI/AN) communities. Guided by a national work group of tribal partners, ten focus groups were conducted with AI/AN adult smokers and nonsmokers (n = 95) in Alaska, California, Michigan and Oklahoma, stratified by smoking status. The majority of participants lived in single unit detached homes (70.5%). Most of the nonsmokers had a smoke-free home rule (92.9%) and a majority of smokers did as well (64.7%). The most common reasons for smoke-free home rules were protecting children and grandchildren, including children with health problems. Challenges to a smoke-free home included weather and visitors who smoked, along with the inconvenience of going outside, the habit of smoking inside, the need to watch a young child, safety concerns, and smokers who break the rules. Respecting rules and respecting elders emerged as important themes. Traditional use of tobacco in the home was viewed as quite distinct from recreational or everyday use. Over half (58.2%) reported never using tobacco for ceremonial, prayer or traditional reasons in their homes. Given unique considerations for the adoption of smoke-free homes in AI/AN communities, particularly regarding the use of sacred tobacco for traditional, ceremonial, or medicinal purposes, it is important to learn which barriers and facilitators are similar to the general population and which may be unique to tribal communities in the U.S.

Keywords American Indian · Alaska native · Tobacco · Smoke-free homes · Secondhand smoke exposure

Introduction

Secondhand smoke (SHS) is responsible for more than 41,000 deaths each year among nonsmokers in the U.S. [1, 2]. It causes heart disease, stroke, and lung cancer, increases the severity of asthma, and causes acute respiratory infections, middle ear infections, and sudden infant death syndrome in children [1, 2]. Despite the conclusion of the U.S. Surgeon General that there is no risk-free level of SHS exposure, many adults and children are still exposed to SHS, often at home [1, 3]. With the exception of conventional public housing under the authority of the U.S. Department of Housing and Urban Development (HUD) [4] and a few municipalities in California [5], policies that limit smoking in the home are generally voluntary at the household-level, or in the case of multi-unit housing, sometimes at the property-level. Developing interventions that encourage smoke-free homes is a high priority for tobacco control.

✉ Michelle C. Kegler
mkegler@emory.edu

¹ Behavioral Sciences and Health Education, Rollins School of Public Health, Emory University, 1518 Clifton Road NE, Atlanta, GA 30322, USA

² Sault Ste Marie, USA

³ Cherokee Nation, 17675 S Muskogee, P. O. Box 948, Tahlequah, OK 74464, USA

⁴ United Indian Health Services: Potawat Health Village, 1600 Weeot Way, Arcata, CA 95521, USA

⁵ Black Hills Center for American Indian Health, 701 St. Joseph Street, Suite 204, Rapid City, SD 57701, USA

⁶ Department of Behavioral Sciences and Health Education, Emory Prevention Research Center, Rollins School of Public Health, Emory University, 1518 Clifton Road NE, Atlanta, GA, USA

Nationally, 83.7% of households are smoke-free, with smoke-free homes much more common among nonsmokers (90.8%) than smokers (53.7%) [6]. Although national data on prevalence of smoke-free homes are not available for AI/AN households, prevalence is likely to be lower than national rates given that smoking rates are higher and tribal housing is not covered by the HUD rule [3, 4]. While smoking rates vary considerably by region and tribe, 31.8 percent of AI/AN adults smoked in 2016, in contrast to 15.5% of the general population nationally in the U.S. [3]. Smoking prevalence is relatively high among AI/AN adolescents as well, with 21% of AI/AN youth ages 12–17 smoking relative to 15.2% of Whites in 2013–14 [7–9].

Both national and regional studies have documented that exposure to SHS is higher among AI/AN population relative to the general population [10–12]. For example, a study in Minnesota reported higher levels of SHS exposure in homes among urban AI adults than for other residents of the state [11]. A recent study of SHS exposure in Northern Plains and Southwest AI populations showed high levels of cotinine, particularly among Northern Plains nonsmokers, with exposure in the latter group associated with smoking in the home and having close friends who smoked [12].

Interventions that target the creation of smoke-free home rules can reduce exposure to SHS [13–16]. Yet, relatively few studies have evaluated smoke-free home (SFH) programs outside the context of protecting young children from SHS and none have focused on AI/AN families in the U.S. [17, 18]. Moreover, while many studies have examined factors associated with SFH rules which may inform intervention development, only a handful have done so in AI/AN communities [19–24]. A recent cross-sectional analysis of Cherokee Nation households found that younger age, being female, higher household income, higher education attainment, respondent nonsmoking status, awareness of the harms of SHS, good health, a recent healthcare provider visit, and presence of children in the home were associated with complete household smoking bans [23]. An earlier study of smoke-free homes among rural AI households in Oklahoma found smokers more likely to have a home smoking ban if they smoked fewer cigarettes per day, had attempted to quit in the past year, and believed that SHS harms children and infants [22]. Beyond this, few studies have examined determinants specific to AI/AN families. A systematic review identified 15 studies examining smoke-free homes in indigenous populations, with the majority conducted in Australia and New Zealand [17].

Similarly, many studies have identified facilitators of the creation of a SFH including recognition of the harm of SHS exposure, especially to the health of children, perception of benefits of a SFH including a cleaner home and avoidance of the SHS smell, agency to create a SFH within household dynamics, community norms for smoke-free places, and

influence of a nonsmoker [20, 25–27]. Barriers to creation of a SFH, include poor awareness and knowledge of risk, denial of risk of SHS, lack of knowledge of effective strategies to reduce SHS exposure, lack of agency to negotiate a SFH within household relationships, perception of benefits of smoking, habit of smoking indoors, inconvenience of going outside, weather and social gatherings [17, 25–29]. To our knowledge, however, no studies have examined facilitators and barriers to SFH creation for AI/AN populations.

Given the possibility of unique considerations for the adoption of SFH rules in AI/AN communities, stemming from the use of sacred tobacco for traditional, ceremonial, or medicinal purposes, it is important to learn which barriers and facilitators are similar to the general population and which may be unique to tribal communities in the U.S. Blurring of the lines between traditional and commercial tobacco, specifically the use of commercial tobacco for traditional purposes, adds complexity to tobacco control programming that is culturally appropriate, and highlights the importance of AI/AN-specific programs [30–33]. A deeper understanding of the process, barriers and facilitators to creating smoke-free home rules in AI/AN families and communities will aid in the development of interventions to assist AI/AN families in establishing SFHs. The current study seeks to understand perspectives, including facilitators and barriers, to establishing and maintaining a SFH among five AI/AN communities.

Methods

This research was guided by a work group that included tribal partners in diverse geographic settings across the U.S., including Michigan, Oklahoma, South Dakota, California, and Alaska. Work group members provided input into all phases of the research including study design, development of a focus group guide, data collection, and review of preliminary results. Members played an important role in ensuring appropriate cultural relevance and sensitivity to working with AI/AN communities.

Four work group members managed recruitment and took responsibility for coordinating the logistics of the focus groups (e.g. finding a location, setting the time, etc.). Approval from tribal governments was sought prior to starting any recruitment efforts when required and local tobacco control staff from tribal governments and tribal clinics also assisted with logistics. Flyers, social media outreach, and word-of-mouth served as primary methods of recruitment. A total of 95 participants (5–15 per group) attended focus group discussions and were consented to participate. Participants were eligible if they were 18 years of age or older and self-identified as American Indian/Alaska Native. Each site hosted 2–4 focus groups, for

a total of 10 focus groups, stratified by smoking status. Focus groups lasted approximately 90 min and participants were compensated with a \$40 gift card. The moderator was an experienced, non-Native qualitative researcher from Emory University who had experience collaborating with tribes.

Focus Group Guide

The focus group guide covered personal experiences with SFH rules, including negotiation, establishment, and/or enforcement of SFH rules, barriers and facilitators to establishment of SFH rules, exceptions to home smoking bans, and knowledge/awareness of thirdhand smoke and electronic cigarette harm. The guide also explored potentially unique aspects of AI/AN culture that may influence home smoking bans (e.g. respect for elders) and when appropriate, the use of traditional tobacco for medicinal or ceremonial purposes and its potential impact on SFH rules.

At the conclusion of the focus group, participants were asked to complete a short survey. Participants were asked about their tobacco use history, smoking rules in the home and vehicles, beliefs about secondhand and thirdhand smoke harms, secondhand smoke reduction behaviors, ceremonial tobacco use, and demographics such as gender, education, and income.

Data Analysis

All focus groups were audio recorded and transcribed by an independent transcription service. Transcriptions were then checked for accuracy against the audio recordings. Two members of the research team, both trained in qualitative methods, systematically analyzed the transcripts to identify both deductive themes based on the focus group guide and inductive themes that emerged during coding [34, 35]. Transcripts were first coded by hand independently by each analyst, then coding was compared with discrepancies resolved through discussion to enhance reliability of the findings. Finalized codes, entered into NVivo qualitative analysis software, were used to generate reports. Preliminary themes were then assessed for saliency across focus groups and by smoking status through use of data matrices [35]. Additionally, sub-themes were identified and organized within primary themes. Representative quotes were identified and used to illustrate themes in the words of participants. Preliminary qualitative findings were presented to the AI/AN work group for input and assistance in interpretation.

Survey data were entered into SPSS Statistical Analysis Software, then analyzed descriptively by smoking status.

Results

Description of Participants

Table 1 describes study participants. Most, but not all identified as AI/AN (88.2%). Anecdotally, the others described themselves as part of an AI/AN family. The majority were female (78.9%), with a mean age of 43.8, and an annual household income between \$25,000 and \$50,000. Living in a single unit detached home (70.5%) was most common, with an average household size of 3.1. Among the nonsmokers, 92.9% reported a full smoking ban; among smokers, 64.7% had a full smoking ban. Smoke-free vehicles were common among the nonsmokers (97.4%), whereas just 44.9% of the smokers had a smoke-free vehicle.

Almost half of the participants had used tobacco for ceremonial, prayer or traditional reasons (46.2%) (Table 2). When asked about the type of tobacco used for ceremonial, prayer or traditional reasons, 47.1% reported Native tobacco and 28.6% reported commercial tobacco. Approximately 15.4% reported that tobacco was used very often or often for ceremonial, prayer or traditional reasons in their home, while over half reported never using tobacco for ceremonial, prayer or traditional purposes in their homes (58.2%).

Reasons for Rules

After describing their own SFH rules, those with rules were asked why they had implemented their rules. In all of the focus groups with both smokers and nonsmokers, children or grandchildren were cited as motivation for implementing rules. Additionally, smokers discussed children with health problems, specifically, as a reason for their home smoking rules. Some further shared that they used this as a justification for telling others they could not smoke in their home.

We had a premature grandson, and he was born with breathing problems, and we went home and scrubbed the walls, the floors, everything. Wanted it to be as smoke free as possible, because I mean, it is his little health. (Oklahoma Smoker)

Disliking the smell of SHS in the home and on clothes was mentioned frequently by both smokers and nonsmokers, with a couple mentioning not wanting to send children to school smelling of smoke. A desire for a clean home was also mentioned by both smokers and nonsmokers as a reason for a SFH.

Talking about the smell, my mom kept a very clean house other than the fact that she was a smoker and you had that smell. She was mortified when one of my cousins came to town with his kids, and they were all

Table 1 Description of focus group participants

Characteristic	Total N = 95	Smokers N = 53	Non-smokers N = 42
Race, N (%)			
White	1 (1.2%)	0 (0%)	1 (2.7%)
Asian/Pacific Islander/Native Hawaiian	2 (2.4%)	1 (2.1%)	1 (2.7%)
American Indian or Alaska Native	75 (88.2%)	44 (91.7%)	31 (83.8%)
Multi-race/mixed	6 (7.1%)	2 (4.2%)	4 (10.8%)
Other	1 (1.2%)	1 (2.1%)	0 (0%)
Female, N (%)			
	75 (78.9%)	39 (73.6%)	36 (85.7%)
Age, N (SD)			
	43.8 (14.1)	44.0 (12.8)	43.4 (15.9)
Marital status (%)			
Married or living with someone, N	46 (49.4%)	29 (54.7%)	17 (42.5%)
Widowed, divorced or separated, N	17 (18.3%)	8 (15.1%)	9 (22.5%)
Single, N	30 (32.3%)	16 (30.2%)	14 (35.0%)
Annual Household Income, N (%)			
< \$10,000	7 (7.8%)	3 (6.0%)	4 (10.0%)
\$10,001–\$25,000	27 (30.0%)	19 (38.0%)	8 (20.0%)
\$25,001–\$50,000	41 (45.6%)	22 (44.0%)	19 (47.5%)
\$50,001–\$75,000	9 (10.0%)	5 (10.0%)	4 (10.0%)
\$75,001 or more	6 (6.7%)	1 (2.0%)	5 (12.5%)
Education, N (%)			
Some high school or less	4 (4.5%)	2 (4.1%)	2 (5.2%)
High school graduate or GED	16 (18.2%)	10 (20.4%)	6 (15.4%)
Vocational, technical school, or some college	42 (47.7%)	25 (51.0%)	17 (43.6%)
College graduate or higher	26 (29.5%)	12 (24.5%)	14 (35.9%)
Housing, N (%)			
Single unit/detached home	67 (70.5%)	39 (73.6%)	28 (66.7%)
Townhouse/duplex/apartment/condo/multi-unit complex	18 (18.9%)	9 (17.0%)	9 (21.4%)
Other	10 (10.5%)	5 (9.4%)	5 (11.9%)
Smoking history, N (SD)			
Average number of cigarettes per day	–	11.9 (6.7)	–
Number of years as a smoker	–	23.9 (12.6)	–
Number of quit attempts in past 12 months	–	1.6 (2.9)	–
Household composition, N (SD)			
Household size	3.1 (1.5)	3.2 (1.4)	3.0 (1.5)
Number of children	1.1 (1.4)	1.2 (1.2)	1.0 (1.6)
Number of smokers	1.3 (1.0)	1.4 (1.1)	0.9 (0.4)
Home smoking rules			
No rules, N (%)	4 (4.3%)	4 (7.8%)	0 (0.0%)
Allowed anywhere, N (%)	3 (3.2%)	3 (5.9%)	0 (0.0%)
Allowed some places or sometimes, N (%)	13 (14.0%)	10 (19.6%)	3 (7.1%)
Not allowed anywhere, N (%)	72 (77.4%)	33 (64.7%)	39 (92.9%)
Don't know/No Answer, N (%)	1 (1.1%)	1 (2.0%)	0 (0.0%)
Vehicle smoking rules			
Smoking allowed, N (%)	28 (31.8%)	27 (55.1%)	1 (2.6%)
Smoking not allowed, N (%)	60 (68.2%)	22 (44.9%)	38 (97.4%)

Total responses vary widely by item due to missing data

coming over for something, and he's like God, does everyone's house in this family smell like this? She was mortified that her house stunk, because she didn't

Table 2 Traditional and Ceremonial Tobacco Use

	Total, N = 94	Smoker, N = 52	Non-Smoker, N = 42
Use of tobacco for ceremonial, prayer or traditional reason, % yes	43 (46.2%)	22 (42.3%)	21 (51.2%)
Type of tobacco used for ceremonial, prayer or traditional reasons, % yes			
Native tobacco	33 (47.1%)	16 (37.2%)	17 (63.0%)
Commercial tobacco	20 (28.6%)	14 (32.6%)	6 (22.2%)
Don't know/not sure	22 (31.4%)	14 (32.6%)	8 (29.6%)
Frequency of using tobacco for ceremonial, prayer, or traditional reasons in their home			
Very often/often	14 (15.4%)	10 (19.6%)	4 (10.0%)
Sometimes	11 (12.1%)	5 (9.8%)	6 (15.0%)
Rarely	13 (14.3%)	7 (13.7%)	6 (15.0%)
Never	53 (58.2%)	29 (56.9%)	24 (60.0%)

Total responses vary widely by item due to missing data

think it did, because she thought she was keeping it clean. (Michigan Nonsmoker)

Although most common among nonsmokers, both smokers and nonsmokers discussed the health-related harms of exposure to SHS, both in regard to their own health and the health of others.

[It was] seeing how bad it can be. Kids, grandkids. There's a lot of things that influenced my decision to go outside. The more information you got about second handsmoke, how devastating that can be and has been, and so just people saying that and talking about it as they're seeing it. (Oklahoma Smoker)

Nonsmoking adults were mentioned, most commonly among smokers, as reasons for establishing smoke-free home rules.

Our house, we have the choice in our lease agreement to smoke in the home if we want, but we were agreeing no smoking around the kids. No smoking in the house. It just doesn't—It's not pleasant when you come into a house when you're a nonsmoker to smell that smoke." (Alaska Smoker)

Landlord requirements for a smoke-free home were another reason for home smoking rules, again more commonly mentioned by the smokers.

The facility I stay in, there's no smoking. A lot of buildings around here say no smoking. (Alaska Smoker)

Among nonsmokers, growing up with smoking in the household was frequently described as a reason for their current home smoking rules.

I grew up in a home where my dad didn't smoke. My mom did, and she smoked in the home. I couldn't stand it either, and I've never smoked, so when I moved out,

there was no smoking in my house ever. (Michigan Nonsmoker)

Moving to a new home was another reason for having home smoking rules. This was more common among smokers than nonsmokers.

I did used to smoke in my house, but we moved within the past year, so it's been a smoke free house. (Michigan Smoker)

A few of the participants brought up wanting to avoid forcing others to be exposed to SHS. This was specifically in reference to others not having a choice in the matter.

...if I'm in public smoking, I will walk 100 yards away from everyone to smoke, because as a nonsmoker, I did not like it one bit, and I always felt like when smoking was allowed right outside doorways as a nonsmoker, I hated that, because I'm like you're choking me here. Why are you allowed to choke me when I'm walking through here? Why can you be respectful and move away from the door? It's your choice to smoke, not mine. (Oklahoma Smoker)

Finally, respect for others was a reason for home smoking rules.

She comes over quite often, so she's always I don't want to smell like smoke and so it's kind of how the conversation come up in the house, so we started going outside more often for that particular reason out of respect for you know, company coming into the house. (Michigan Smoker)

Challenges to Maintaining a SFH

Participants were asked to discuss exceptions to their home smoking rules and what makes it difficult to keep rules in place. Weather emerged as a major theme across groups. In

nearly every focus group, weather was brought up as a challenge to implementing or maintaining SFH rules.

I own my own home, and I still go outside, but when it is cold, really cold, I will go into my garage. (Oklahoma Smoker)

Many participants also shared some solutions to weather-related challenges.

In the cold winter I know like the partners I've been with, like they would get in their car and go for a ride. Smoke in their car. (Michigan Nonsmoker)

My dad has like a full body snow suit. He goes outside and he'll find something to do. He'll start shoveling something or snow blowing. That's his reason to go out to smoke and whatever. (Michigan Nonsmoker)

Nonsmokers discussed how certain visitors, particularly elders, could be a barrier to establishing or maintaining SFH rules.

I know [name] had had a very grueling conversation with their in-laws about smoking inside the home, and it was kind of a horrible blow up. It really was. When it was all beginning and the daughter-in-law stuck to her guns and we all thought she was kind of horrible for it, but really it was important. And it was effective, and it really was, because I never had to ask him not to smoke in my home, and I would have never asked them not to smoke in my home. I wouldn't have. I would have respected—Because they were our elders, you know? I would have respected that, you know? (Michigan Nonsmoker)

Having visitors during bad weather was another reason for allowing people to smoke in the home.

Well, if we're sitting there in the middle of winter and we have people over, I'm like listen, if you want to go away from us from smoking, because they will, that is the norm. You don't go outside. Just go in the living room or in the kitchen, and then my house is very large, and by now we just already know the problem. (Michigan Nonsmoker)

Elders were sometimes allowed exceptions to home smoking rules.

I know I wouldn't have asked my elder—And I didn't. They were living with us, and I didn't ask them to go out. (Michigan Nonsmoker)

...my mom wouldn't come to my house if she couldn't smoke in my house. (Michigan Nonsmoker)

Smokers brought up additional challenges to SFH, including lapses, difficulty breaking the habit of smoking inside,

the convenience of smoking inside, stressful events, the need to watch over young children, safety concerns, and having a household member refuse to comply.

Habit or lapses

...when I'm on the phone... I'll just ... fire up and... they'll tell me you know, go outside and I wouldn't even have thought about it, you know? That kind of thing, that happens. It's more of a subconscious thing I think. I don't really make the decision, that's just part of my habit. (Oklahoma Smoker)

Stressful event

I have got bad news or something and not realized it and just fire up. (Oklahoma Smoker)

Caring for young child

[I] pretty much smoke at work or at night when [my son's] asleep mostly, but when he's awake it's when he's playing or content and when I can look at him through the living room window. (California Smoker)

Conversations about Smoking in the Home

Participants were asked whether there had ever been discussions or arguments about smoking in their homes. Participants in the majority of groups shared some sort of conversation they had with household members about smoking rules.

He had different opinions about smoking, you know ... and sees nothing wrong with it, and to me it has a lot of health effects, and it stinks, and if it's going to stain the walls... So we have had—we've had arguments about it because I don't agree with smoking and he doesn't see anything wrong with it. (Alaska Nonsmoker)

Nonsmokers in almost half of the groups brought up conversations that were prompted by moving to a new home.

... when we moved in together, there was maybe one conversation where I said you're not smoking in the house, because I'm a nonsmoker and always have been, and that's just how it's always been. So then I think it was reiterated when we moved to our new house. I again said you're not smoking in the house and so he's always smoked outside. And then especially he made a lot more effort as far as staying away—Like completely out of the garage and everything after we had our son, but we didn't really have to talk about it. (Michigan Nonsmoker)

Discussions of home smoking rules also took place in the context of visiting. This included having visitors at the participant's home or visiting the homes of others. At least one participant in almost all of the nonsmoking focus groups

discussed not visiting homes with smoking allowed, visitors not coming to their home due to their rules, or not inviting visitors who disagreed with the participant's home smoking rules.

...his mom's house, we'll go there, and she built a fan in the wall purposefully so she could smoke in the house when her grandkids were there, and I still am so against—Like she usually respects it and doesn't smoke when I have the kids over, but if she does, I'm like we're going outside. (Michigan Nonsmoker)

The Role of Respect in Managing Smoke-Free Homes

The theme of respect emerged in all of the focus groups, in terms of the respectful behaviors of others in relation to the smoking rules of the participant, as well as the participant's respectful behavior in response to the rules of others.

I live really with my father and my step-daughter. So my father used to smoke, but he quit years and years and years ago, and so he's made his house a non-smoking house, so I out of respect step outside and smoke cigarettes. (Alaska Smoker)

Shifting Norms for Smoke-Free Environments

The concept of “shifting norms”, which represents changes in their environments that influenced home smoking rules, was common.

All of my children smoke when they come over, but they never do it inside, and I don't think I have had a person in my home in the last 10 years that just lit up. They would always go outside. It's really been a great turnover actually. People are very much more respectful, and I think it comes with education. (Michigan Nonsmoker)

Impact of Smoke-Free Homes on Smokers

In response to being asked about the impact of a SFH on smokers, many participants described where smoking occurred including porches, decks, garages and yards.

We have a porch, just the main porch that we use, but it's the—there's a porch going into our house and then a few feet over there's a porch going into the store room. So he steps out. Sometimes he'll be on the porch right outside the door, depending you know, sometimes he goes over to the store room and he smokes over there. (Alaska Nonsmoker)

My husband usually goes on our back deck. At the very, very coldest parts of winter he might be in our garage on a—there's a spare couch in the garage. Nobody goes in the garage. ...we have a patio set out on the back deck, so he'll sit away from the house and then throws the cigarette butts in the fire pit, so— (Michigan Nonsmoker)

Smokers also described changes in the patterns of smoking as a result of the home smoking rule—smoking faster, the frequency of smoke breaks, and the overall number of cigarettes consumed.

It seemed like I cut down a lot, but then when I did go outside, I'd smoke maybe two instead of that one, you know, in the house or it's—So it was kind of like a double edged sword, you know? Even though I didn't smoke in the house, I smoked more when I did go outside, you know? (Oklahoma Smoker)

Hindsight, looking at it, you know, in cold weather, you don't smoke the entire cigarette. You only smoke—...You tend to smoke less, I think. (Michigan Smoker)

Traditional Use of Tobacco in the Home

Two primary themes emerged with respect to traditional use of tobacco in the home. The first related to use of tobacco as medicine and the second related to smudging, the latter often done with sage rather than tobacco.

...if you are going to have a ceremony or something, say an elder or somebody is sick, you're not going to want to discourage them from bringing tobacco into the home for that ceremony, for that prayer... (California Smoker)

Discussion

This study is the first to qualitatively explore SFH rules in AI/AN households. The findings are largely consistent with qualitative research exploring similar topics in other racial/ethnic groups, qualitative research with indigenous populations outside of the U.S., and with prior quantitative research identifying correlates of SFH rules in AI families [17, 22–24, 26–28]. Protecting children, including children with a health problem such as asthma, was the strongest theme related to reasons for a SFH. An especially interesting finding was the importance of grandchildren in the establishment of SFH rules. This has not been highlighted in prior research, perhaps because most studies have been done with parents. Alternatively, this may be a more prominent theme

in AI/AN communities given the importance of extended families and maintaining close relationships with elders.

Concern over the smell, home cleanliness, and dislike of growing up in a home with SHS have been identified in other studies [27, 28], as has the importance of moving to a new home for triggering a SFH [27]. One particularly interesting comment in the current study was not wanting to send a child to school smelling of SHS. Respect for others has not consistently emerged as a theme in prior research, but was a prominent theme in a recent study with Mexican Americans in California and Texas [28]. In that study and the current study, respect manifested itself in two ways. In the current study, respect for nonsmokers and household rules established by family and friends was discussed, as was respect for elders and a deference to their smoking behaviors. The latter was much less common than we anticipated however, with many participants feeling that protecting children trumped anyone's desires to smoke inside the home, even elders.

The importance of landlord rules that restricted smoking in the home will likely become a more common reason for a SFH given recent rules established by the U.S. Housing and Urban Development (HUD) agency. While tribal housing is exempt from the rule, some tribes have adopted or are exploring adoption of similar policies (<http://keepitsacred.itcmi.org/>).

Discussion of how rules were implemented and how they affected smokers revealed that many smoked on a porch attached to the home. In cold weather, smoking also occurred in garages. Smoking on verandahs and creating outdoor smoking spaces has been noted in other studies [17]. One consideration for SFH messaging is how much to emphasize the importance of smoking away from doors and windows. Smoking further away from the home would decrease penetration of SHS into the home, but may also cause challenges for caretakers watching children through windows and doorways and perhaps make compliance with the rule more challenging especially at night or in bad weather.

Participants discussed challenges of SFH associated with visiting homes of families and friends who still allowed smoking inside. This has been documented in studies with indigenous mothers in Australia and New Zealand [17, 36].

The awareness of changing community norms and increased expectations for smoke-free environments was also interesting. Participants shared stories about how smoke-free norms had shifted over the years and the influence of this on smoke-free home rules. National studies have shown increases in smoke-free home prevalence following adoption of comprehensive smoke-free air legislation [37–39].

We also explored ceremonial and traditional use of tobacco and potential impact on smoke-free homes messaging. The richest discussions centered on the burning of sage

in the home rather than tobacco per se. The dominant view across focus groups was that the burning of sage and tobacco for traditional purposes had little to do with SFH.

Limitations

Findings from this study should be considered within the context of our convenience sampling approach with broad eligibility criteria and participants from five different tribal communities. Stratification by ban status and a larger number of focus groups per tribal community would have allowed a more nuanced and in-depth examination of smoking in the home within each of the participating tribal communities. Selection and social desirability biases are additional possible limitations. Recruitment fliers stated the purpose of the focus groups was to gather opinions about smoke-free homes and a potential program to promote smoke-free homes in AI/AN families. Thus, community members interested in participating may have had favorable opinions about smoke-free homes or have answered questions in a socially desirable way. However, at least some of the smokers admitted to smoking inside the home suggesting that responses covered a continuum of home smoking practices. We also had a higher proportion of women than men participating, which may have influenced the results in some way. Saturation of themes was achieved for the primary research questions such as reasons to establish a smoke-free home and challenges, but not for topics such as ceremonial use of tobacco in the home as the moderator did not consistently probe on these topics depending on the flow of the group discussion and potential sensitivity of the topic. The survey provided some information on the frequency of these practices and type of tobacco typically used. Lastly, the focus groups were conducted in largely rural areas, therefore the perspectives of urban American Indians are not included.

Implications for Research and Practice

Intervention research is needed to develop and rigorously test culturally appropriate programs focused on AI/AN-specific challenges and facilitators to creating SFHs. While many of the barriers and facilitators found in this study were the same as those identified for the general U.S. population, attention to the social dynamics within extended families, and particularly with elders, may warrant special attention in AI/AN communities. Additionally, while focus group participants generally felt it was obvious that smoke-free home interventions would not affect sacred uses of tobacco, at least acknowledging traditional or sacred use of tobacco may be important. Partnering with tribes in various geographic areas of the United States to develop programs generalizable to the diverse needs of the AI/AN communities, with room for tailoring to specific tribal cultures, may be a reasonable

way to advance this area of tobacco control and to establish networks for future dissemination efforts.

Acknowledgements Special thanks to Edy Rodewald, Jessica Voeller, and Stone Wallace for assistance with designing and/or conducting this research.

Funding This work was supported by the National Cancer Institute's State and Community Tobacco Control Research Initiative (Grant No. U01CA154282) and the California Tobacco Control Program, California Department of Public Health.

Compliance with Ethical Standards

Conflict of interest No financial disclosures or conflicts of interest were reported by the authors of this paper.

Ethical Approval This study was approved by Emory University Institutional Review Board (IRB) (#IRB00087337) and the Cherokee Nation IRB. Other partners did not have or did not require local IRB approval.

Informed Consent Written informed consent was obtained prior to the focus group discussions.

References

- U.S. Department of Health and Human Services. (2006). The health consequences of involuntary exposure to tobacco smoke: A report of the surgeon general. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: Atlanta.
- U.S. Department of Health and Human Services. (2014). The health consequences of smoking—50 years of progress: A report of the surgeon general. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: Atlanta.
- Jamal, A., Phillips, E., Gentzke, A. S., et al. (2018). Current cigarette smoking among adults—United States, 2016. *Morbidity and Mortality Weekly Report*, *67*, 53–59.
- United States Department of Housing and Urban Development. (2016). *Instituting smoke-free public housing* (pp. 87430–87444). Washington: United States Department of Housing and Urban Development.
- Yerger, V. B., Battle, R. S., & Moore, R. S. (2014). Evaluating the implementation process of a citywide smoke-free multiunit housing ordinance: Insights from community stakeholders. *American Journal of Public Health*, *104*(10), 1889–1891.
- Kruger, J., Jama, A., Homa, D. M., Babb, S. D., & King, B. A. (2015). Smoke-free home and vehicle rules by tobacco use status among US adults. *Preventive Medicine*, *78*, 9–13.
- Yu, M., & Whitbeck, L. B. (2016). A prospective, longitudinal study of cigarette smoking status among North American Indigenous adolescents. *Addictive Behaviors*, *58*, 35–41.
- Ward, B. W., & Ridolfo, H. (2011). Alcohol, tobacco, and illicit drug use among native American college students: An exploratory quantitative analysis. *Substance Use and Misuse*, *46*(11), 1410–1419.
- Kasza, K. A., Ambrose, B. K., Conway, K. P., et al. (2017). Tobacco-product use by adults and youths in the United States in 2013 and 2014. *New England Journal of Medicine*, *376*(4), 342–353.
- Singh, G. K., Siahpush, M., & Kogan, M. D. (2007). Disparities in children's exposure to environmental tobacco smoke in the United States. *Pediatrics*, *126*(1), 4–13.
- Forster, J. P., Poupert, J., Rhodes, K., et al. (2016). Cigarette smoking among urban American Indian adults—Hennepin and Ramsey Counties, Minnesota, 2011. *MMWR. Morbidity and Mortality Weekly Report*, *65*, 534–537.
- Tanner, J. A., Henderson, J. A., Buchwald, D., Howard, B. V., Henderson, P. N., & Tyndale, R. F. (2017). Relationships between smoking behaviors and cotinine levels among two American Indian populations with distinct smoking patterns. *Nicotine & Tobacco Research*, *20*(4), 466–473.
- Kegler, M. C., Bundy, L., Haardorfer, R., et al. (2015). A minimal intervention to promote smoke-free homes among 2-1-1 callers: A randomized controlled trial. *American Journal of Public Health*, *105*(3), 530–537.
- Hovell, M. F., Meltzer, S. B., Zakarian, J. M., et al. (1994). Reduction of environmental tobacco smoke exposure among asthmatic children: A controlled trial. *Chest*, *106*(2), 440–446.
- Hovell, M. F., Zakarian, J. M., Matt, G. E., Hofstetter, C. R., Bernert, J. T., & Pirkle, J. (2000). Effect of counselling mothers on their children's exposure to environmental tobacco smoke: Randomised controlled trial. *BMJ British Medical Journal*, *321*(7257), 337–342.
- Hovell, M. F., Zakarian, J. M., Matt, G. E., et al. (2009). Counseling to reduce children's secondhand smoke exposure and help parents quit smoking: A controlled trial. *Nicotine & Tobacco Research*, *11*(12), 1383–1394.
- Stevenson, L., Campbell, S., Bohanna, I., Gould, G. S., Robertson, J., & Clough, A. R. (2017). Establishing smoke-free homes in the indigenous populations of Australia, New Zealand, Canada and the United States: A systematic literature review. *International Journal of Environmental Research and Public Health*, *14*(11), 1382.
- Johnston, V., Walker, N., Thomas, D. P., et al. (2010). The study protocol for a randomized controlled trial of a family-centred tobacco control program about environmental tobacco smoke (ETS) to reduce respiratory illness in Indigenous infants. *BMC Public Health*, *10*(1), 114.
- Gan, W. Q., Mannino, D. M., & Jemal, A. (2015). Socioeconomic disparities in secondhand smoke exposure among US never-smoking adults: The National Health and Nutrition Examination Survey 1988–2010. *Tobacco Control*, *24*(6), 568.
- Rees, V. W., Keske, R. R., Blaine, K., et al. (2014). Factors influencing adoption of and adherence to indoor smoking bans among health disparity communities. *American Journal of Public Health*, *104*(10), 1928–1934.
- King, B. A., Dube, S. R., & Homa, D. M. (2013). Smoke-free rules and secondhand smoke exposure in homes and vehicles among US adults, 2009–2010. *Preventing Chronic Disease*, *10*, E79.
- Kegler, M. C., & Malcoe, L. H. (2002). Smoking restrictions in the home and car among rural Native American and White families with young children. *Preventive Medicine*, *35*(4), 334–342.
- Comiford, A., Garrouette, E., Barbosa-Leiker, C., Chen, S., & McDonnell, M. (2018). Prevalence and indicators of household smoking bans among American Indians. *Journal of Community Health*, *43*(4), 746–755.
- Berg, C. J., Daley, C. M., Nazir, N., et al. (2012). Smoke-free policies in the workplace and in the home among American Indians. *Journal of Health Disparities Research and Practice*, *5*(2), 81–91.
- Passey, M. E., Longman, J. M., Robinson, J., Wiggers, J., & Jones, L. L. (2016). Smoke-free homes: What are the barriers, motivators

- and enablers? A qualitative systematic review and thematic synthesis. *British Medical Journal Open*, 6(3), e010260.
26. Escoffery, C., Kegler, M. C., & Butler, S. (2009). Formative research on creating smoke-free homes in rural communities. *Health Education Research*, 24(1), 76–86.
 27. Kegler, M. C., Escoffery, C., Groff, A., Butler, S., & Foreman, A. (2007). A qualitative study of how families decide to adopt household smoking restrictions. *Family and Community Health*, 30(4), 328–341.
 28. Savas, L. S., Mullen, P. D., Hovell, M. F., et al. (2017). A qualitative study among Mexican Americans to understand factors influencing the adoption and enforcement of home smoking bans. *Nicotine & Tobacco Research*, 19(12), 1465–1472.
 29. Kegler, M. C., Haardorfer, R., Berg, C. J., et al. (2016). Challenges in enforcing home smoking rules in a low-income population: Implications for measurement and intervention design. *Nicotine & Tobacco Research*, 18(5), 976–981.
 30. Unger, J. B., Soto, C., & Baezconde-Garbanati, L. (2006). Perceptions of ceremonial and nonceremonial uses of tobacco by American-Indian adolescents in California. *Journal of Adolescent Health*, 38(4), 443.e9–443.e16.
 31. Nez Henderson, P., Roeseler, A., Moor, G., et al. (2016). Advancing smoke-free policy adoption on the Navajo Nation. *Tobacco Control*, 25(Suppl 1), i26–i31.
 32. Nadeau, M., Blake, N., Poupart, J., Rhodes, K., & Forster, J. L. (2012). Circles of tobacco wisdom: Learning about traditional and commercial tobacco with Native elders. *American Journal of Preventive Medicine*, 43(5, Supplement 3), S222–S228.
 33. Margalit, R., Watanabe-Galloway, S., Kennedy, F., et al. (2013). Lakota elders' views on traditional versus commercial/addictive tobacco use; Oral history depicting a fundamental distinction. *Journal of Community Health*, 38(3), 538–545.
 34. Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods*. London: SAGE Publications Ltd.
 35. Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks: SAGE Publications Inc.
 36. Gould, G. S., Munn, J., Avuri, S., et al. (2013). “Nobody smokes in the house if there’s a new baby in it”: Aboriginal perspectives on tobacco smoking in pregnancy and in the household in regional NSW Australia. *Women and Birth*, 26(4), 246–253.
 37. Gorini, G., Carreras, G., Cortini, B., et al. (2015). Impact of national smoke-free legislation on educational disparities in smoke-free homes: Findings from the SIDRIAT longitudinal study. *International Journal of Environmental Research and Public Health*, 12(8), 8705–8716.
 38. Mons, U., Nagelhout, G. E., Allwright, S., et al. (2013). Impact of national smoke-free legislation on home smoking bans—findings from the international tobacco control (ITC) policy evaluation project europe surveys. *Tobacco Control*, 22, e2–e9.
 39. Nazar, G. P., Lee, J. T., Glantz, S. A., Arora, M., Pearce, N., & Millett, C. (2014). Association between being employed in a smoke-free workplace and living in a smoke-free home: Evidence from 15 low and middle income countries. *Preventive Medicine*, 59(100), 47–53.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.