

**Older Adult Falls in a Southwest American Indian Community:
The Problem and Potential Interventions**

Author: Zachary Hargis, REHS, MS, Indian Health Service

Mentor: Vincent Garcia, REHS, MPH, Indian Health Service

Abstract

Unintentional falls are the leading cause of fatal and non-fatal injuries for older adults aged 55 and above. American Indian/Alaskan Native (AI/AN) people aged 75 years and older have had the highest fall injury and death rates at an average of 1.4 to 2 times the rate of Whites since the 1990s. There is an urgent need to utilize current AI/AN cultural perspectives and traditions for implementing effective interventions. In this study, a community approach was used to assess the general older adult population (aged >55) of a selected southwest American Indian tribal community via survey and focus group to determine community fall risk factors, demographics in relation to falls, and fall intervention strategies that have the most support. Eighty-six (86) respondents completed the survey out of the estimated target population of 350 older adults (aged >55) within the tribal community. Approximately half of respondents (51%, n=44) reported falling within the last 12 months. Males reported the highest rate of falls within the last 12 months at (57.1%, n=16). Respondents that reported falling within the last 12 months had an average of 6.4 risk factors, while respondents that reported not falling within the last 12 months had an average of 2.9 risk factors using the Centers for Disease Control and Prevention (CDC)'s *STEADI* Tool. The focus group identified the lack of a multifaceted approach to fall prevention strategies within the community, which presently focus on home modification. There have been no exercise-based or clinical strategies successfully implemented and sustained within the selected community. The next steps for this community based approach to fall prevention includes: increasing collaboration among program managers, utilizing the cultural resources and knowledge from the tribal community, and establishing an older adult falls prevention coalition.

Background

In the United States (US), unintentional falls are the leading cause of fatal and non-fatal injuries for older adults aged 55 and above, and account for more than double that of the next leading cause, motor vehicle crashes (Finke, et al., 2013; CDC WISQARS 2001-2018). An estimated 30% of older adults report falling within the last year, including 25% of falls being moderate or serious in nature requiring immediate medical attention, hospitalization, and/or result in death (Sterling, et al., 2001). After an older adult falls once, the chance of falling again doubles, leading to more falls and increased risk of serious negative health outcomes (CDC, 2017b; Vellas, et al., 1997). Older adult fall rates have increased by 30% since 2007, and every year there are over 3 million older adults treated in emergency departments costing over \$50 billion per year with \$31 billion paid by the Centers for Medicare Medicaid Services (CMS) (CDC, 2017b; Florence, 2018; Bergen, 2016). Fall injury and death trends are expected to increase as many of the risk factors of falls are increasing, such as: use of four or more prescription drugs, chronic disease prevalence, behavioral health disorders, and longer life expectancy with an estimated 55% growth in older adult population by 2030 (Lancet, 2014; Bergen, 2016). The US can expect over 150 older adult fall deaths per day by the year 2030 if current trends continue (CDC, 2017b).

Since the 1990s, unintentional fall death rates have increased for all Americans, but American Indian/Alaskan Native (AI/AN) people aged 75 years and older had the highest fall injury and death rates at an average of 1.4 to 2 times the rate of Whites (CDC, 2014; Murphy, et al., 2014). Additionally, between 1991 and 2007, unintentional fall death rates for AI/AN adults 65 and older rose over 50%, resulting in AI/AN people having the highest fall rate of any other race (Finke et al., 2013; Stevens et al., 2008). American Indians/Alaska Natives suffer poorer health including: type II diabetes, obesity, heart disease, and substance abuse which all correlate with fall risk factors (Lancet, 2014; Berger, et al., 2013). Persons with diabetes, especially older adults and individuals with longstanding diabetes, are at higher

risk of falls and fall injuries (Berger, et al., 2013). Overall, AI/AN adults have a 2.3 times higher prevalence of diabetes compared to White adults, and in some AI/AN communities, diabetes rates exceed 60% (Berger, et al., 2013). While comprehensive data specific to older adult AI/AN people is imperfect, available data suggest that fall injuries and death pose a great threat to tribal communities (Finke et al., 2013).

There are many science-based older adult fall prevention interventions that are effective in reducing fall risk factors. The interventions supported by the CDC are available in the *CDC's Compendium of Effective Community based Interventions from Around the World 2015* (CDC, 2015). This compendium includes four different types of interventions broken into exercise, home modification, clinical, and multifaceted approaches. Types of exercise-based interventions include tai chi balance classes, incorporating exercise into daily life activities, and the use of personal trainers or physical therapists with expertise in muscular-skeletal development. Home modification interventions focus on assessment of the home environment by occupational therapists and public health officials in an effort to educate the owner on recommended modifications, awareness, and structural changes for the home. The clinical interventions encapsulate the physical and mental wellness of older adults through health monitoring, treatment, and supplementation such as vitamin D. Finally, the multifaceted approaches combine two or more of the approaches together in an effort to amplify positive health outcomes. Determining which types of interventions are best for a community is challenging, but critical for long-term impact.

For this study, researchers collaborated with a Southwestern US American Indian Tribe to assess older adult fall risk and identify possible interventions. The target population for this study included approximately 350 tribal older adults aged 55 and above who resided within the boundaries of the tribal reservation. The age range of 55 and above was chosen because these members are officially classified as 'elders' and eligible for certain tribal social services. The majority of older adults who participated in this study resided within the rural farming region of the tribal community.

Data in Table 1 compares tribal community and US national data for fall related hospital visits (ED, In-patient, Out-patient) over nine years. Overall, the selected tribal community had a greater chance of a fall-related hospital visit compared to the U.S. population between 2008 and 2016 (IHS RPMS and CDC WISQARS Data, 2008-2016). The selected tribal community had an overall older adult fall rate that is 1.8 times greater than the national average.

Table 1. Frequency Fall Injury 2008-2016 Comparison

Age Group	Tribal Community Fall Injury ¹	Tribal Community Population ²	Tribal Community Crude Rate ³	Tribal Community Age Adjusted Rate ⁴	US National Fall Injury ⁵	US National Population	US National Rate
55-64	91	1,188	765.0	358.7	8251661	344156090	239.8
65-74	62	1,782	347.9	103.0	7251452	217595235	333.3
75-84	60	639	939.0	154.3	8093775	120822162	669.9
85+	25	135	1,851.9	132.1	7646348	52443689	1,458.0
Total	238	3,744	635.7	748.1	31243236	735017176	425.1

While baseline comparison data are invaluable in identifying health disparities in minority communities, they lack community perspective and input. Therefore, to increase participation and community acceptance, it is important to tap into the wealth of cultural perspective and knowledge when shaping future interventions (Teufel-Shone et al., 2018). The focus of this project was to assess community perception of falls, fall risk factors, and to learn which fall prevention interventions would be embraced by a Southwest AI/AN community.

¹ 2008-2016 IHS Resource and Patient Management System (RPMS). Hospital Visit (ED, In-patient, Out-patient)

² Populations derived from Tribal Enrollment Office and aggregated for nine years

³ Using RPMS data, rate per 10,000

⁴ Age adjusted using direct method to the US National Rate using population data for 2008-2016 from CDC WISQARS Data Visualization

⁵ 2008-2016 CDC WISQARS Data Visualization for unintentional, nonfatal fall emergency department visits, regardless of whether they led to hospitalization (Disposition: All Cases, as opposed to Disposition: Hospitalization), Rates per 10,000

Methods

Prior to beginning this study, several research approvals were needed. The approval process took approximately 90 days. The first stage in the tribal approval process was presenting the project idea to the tribal health board for initial feedback. This board consists of tribal health representatives who review health management topics, and makes recommendations directly to council for consideration, therefore their understanding of the project purpose and provision of feedback was imperative. Following the health board meeting, an official application was submitted to the tribal community ethics review board. This board is led by the tribal attorney general's office and reviews potential research studies, as would a standard IRB, within the context of a tribal lens. After meeting with the ethics review board to explain the project and answer questions, the board recommended the tribal council approve the study.

The ethnographic design used for this study involved two separate data collection activities including an older adult survey and older adult focus group. This sequenced approach was chosen to best capture perceptions, and to increase community participation in future programs and interventions. This design was used to identify effective and community-supported fall prevention interventions. Data collection methods for each activity are described in the next section.

Data Collection

Older Adult Survey

The goal of the older adult survey was to assess the community perception of falls, common fall risk factors, and to serve as the basis for understanding the acceptance of fall prevention interventions. The survey consisted of 21 questions broken into three sections and a space for written comments at the end. First, the demographic information section included Age, Gender, Housing Type, and Household Size, as this information may determine eligibility of program services that can be provided. The second section consisted of only yes and no questions that explored specific personal fall risk factors of the

participant based on the CDC's *Stopping Elderly Accidents, Deaths, and Injuries (STEADI) Stay Independent Fall Risk Self Screening Tool*, which uses a set of 12 yes or no questions to quantify fall risk (CDC, 2017 a). Any respondent that answers yes to four or more risk factors may be at a higher risk of falling. The final section of the survey listed 11 potential intervention types based on the *CDC Compendium of Effective Community based Interventions from Around the World, 3rd Ed (2015)*. Intervention types included education, exercise, home visits, home modification programs, health monitoring, and social support. Respondents marked those that they thought would be helpful to older adults in their community. This section assessed community interest in different science-based intervention strategy types and provided an opportunity to write-in additional interventions not listed. A copy of the survey used in this study can be found in Appendix A.

Several locations were targeted to deploy the survey, including senior center visits, door-to-door, and place of business visits. Tribal Community Health Representatives (CHR) were solicited to assist the researcher in door-to-door collection. Actively engaged and well-connected in the community in which they serve, CHRs provide home health visits as a part of their normal work duties. Some may be enrolled members of the tribe themselves, affording them a unique advantage when reaching out to members of a tribal community. Partnership with local CHRs for this type of data collection was invaluable as they served as the link to community members and maintained records on where older adults lived within the community. All surveys were completed by participants in the presence of the main researcher. No surveys were left at community locations, mailed, or conducted by phone in an attempt to avoid participant duplications.

Older Adult Focus Group

The goal for the focus groups was to learn about and discuss results from the older adult survey, and to inform subsequent program manager key informant interviews. The inclusion criteria for focus group participants were: Ages 55 or above; and a tribal member who lives within the boundaries of the

tribal reservation. Focus group participants were selected based on varied age ranges (55 and older) and evenly split between genders. The focus group session was held in the senior center after the lunch meal was completed. A total of six people participated in the session. Focus group dynamics were facilitated to ensure speaking from all participants. The main researcher welcomed the participants and after introductions, provided an overview of the process to the group. The main researcher was also accompanied by a colleague who assisted with taking notes. Additionally, the group granted permission for the session to be recorded.

The focus group followed a structured outline (Appendix B) to ensure pertinent information could be gathered within time constraints. It consisted of three main topics: 1) a review of the tabulated older adult survey results, 2) review of intervention strategies and comments made by survey respondents, and 3) a guided discussion on strengths and weaknesses of particular interventions. The focus group facilitator requested closing comments from each participant, then compiled for further analysis.

Data Analysis

Data from the older adult survey was tabulated into frequencies for each question and stratified by respondent's answer to "Have you fallen within the last 12 months?". Mean differences between groups were tested using ANOVA and linear regression, and stratified into subgroups by using Epi Info and Excel. Responses to the survey sections regarding fall intervention types and qualitative comments were coded to show frequencies. The live recording and notes taken of the focus group were transcribed into Word and then thematically coded using Excel to show frequencies.

Results

Older Adult Survey

Eighty-six (86) respondents completed the older adult survey out of the estimated target population of 350 older adults within the tribal community (Table 2). All age groups had similar survey completion rates, with an average of 23.4%. Data from a small sample (n=4) of disabled adults between the ages of 50-54 were also included in the target population because they are included in and have access to the same social services and programs as 55+ older adults within the community. The majority of respondents were aged 65 to 74 (45.3%, n=39) for both sexes. Females aged 65 to 74 (24.4%, n=21) had the highest number of respondents among sexes followed by females aged 55 to 64 (19.8%, n=17). The majority of male respondents were aged 65 to 74 (17.4%, n=15), and there were no males aged 85+.

Table 2. Older Adult Survey Response Rate Summary (n=86).

Demographic	N	Proportion of participating (%) ⁶	Target Population ⁷	Response Rate (%)
Age Group: 50-54	4 ⁸	4.7%	--	--
Age Group: 55-64	26	30.2%	26 of 110	23.6%
Age Group: 65-74	39	45.3%	39 of 165	23.6%
Age Group: 75-84	14	16.3%	14 of 59	23.7%
Age Group: ≥85	3	3.5%	3 of 16	18.8%
Sex: Female	53	61.6%	--	--
Sex: Male	28	32.6%	--	--
Sex: Other	5	5.8%	--	--
Total	86	100%	82 of 350	23.4%

Approximately half of respondents (51%, n=44) reported falling within the last 12 months (Table 3). Males reported the highest rate of falls within the last 12 months at (57.1%, n=16). The majority of respondents lived within a home that they owned (73.3%, n=63). Respondents living in Tribal housing had the highest rate of reported falls within the last 12 months (71.4%, n=5). The majority of respondents did not live alone (73.3%, n=63) and respondents who did live alone reported a lower rate

⁶ Percent (%) of estimated 350 older adult (55+) population within tribal community.

⁷ Population figures are estimated for those Tribal members living in reservation areas.

⁸ Disabled adults between the ages 50-54, who receive tribal social services.

of falling within the last 12 months (43.5%, n=10) compared to respondents living within others (54.6%, n=36). Most older adult respondents (76.7, n=66) believed that falls were a problem within the community. Among those who have fallen in the last 12 months, only 54.6% believed falling was a problem in the community. All (n=3) older adults aged 85+ reported falling within the last 12 months. Higher self-reported exercise days per week was not associated with a decrease in fall risk in this survey.

Table 3. Older Adult Survey Respondent Demographics, Community Beliefs, and Falls within the last 12 months (n=86).

Demographic	N	%	Number Fallen within last 12 months	% Fallen within last 12 months
Sex: Female	53	61.6%	26	49.1%
Sex: Male	28	32.6%	16	57.1%
Sex: Other ⁹	5	5.8%*	2	40.0% ^a
Housing Type: Self-Owned	63	73.3%	32	50.8%
Housing Type: Tribal	7	8.1%	5	71.4% ^a
Housing Type: Family Owned	7	8.1%	4	57.1% ^a
Housing Type: Rented	4	4.7%*	1	25.0% ^a
Housing Type: Other	5	5.8%*	2	40.0% ^a
Live Alone: Yes	23	26.7%	10	43.5%
Live Alone: No	63	73.3%	34	54.0%
Believe older adult falls are a problem for the community: Yes	66	76.7%	36	54.6%
Believe older adult falls are a problem for the community: No	4	4.7%*	3	75.0% ^a
Believe older adult falls are a problem for the community: Not Sure	16	18.6%	5	31.3% ^a
Age Group: 50-54	4	4.7%*	2	--
Age Group: 55-64	26	30.2%	13	50.0%
Age Group: 65-74	39	45.3%	18	46.2%
Age Group: 75-84	14	16.3%	8	57.1%
Age Group: >85	3	3.5%*	3	100%*
Total Age Groups	86	100%	44	51.2%
Exercise: 0 days per week	28	32.6%	13	46.4%
Exercise: 1 or more days per week	58	67.4%	31	53.4%

* Proportions based on a cell sample size of 5 or less are not stable.

⁹ Preferred not to answer

Most respondents (65%, n=56) self-reported four or more fall risks on the Older Adult Survey (Table 4). The most common self-identified risk factors were ‘sometimes feeling unsteady when walking’ (73%, n=63), ‘worried about falls’ (64%, n=55), and ‘must push on objects to stand’ (62%, n=53). The least common risk factors were ‘often feeling sad or depressed’ (23%, n=20), ‘loss of feeling in feet’ (21%, n=18), and ‘use of prescription medication for mood or sleep’ (9%, n=8). These least common risk factors and ‘taking prescription medicine that causes lightheadedness’ were present for 75% of those who fell in the last 12 months (Table 4).

Table 4. Rank-Ordered Frequency of Survey Risk Factors (n=86).

<i>Risk Factors</i>	Total (desc.) N (%)	Reported Falling within last 12 months N (%)
<i>RF1 - Sometimes feel unsteady when walking</i>	63 (73.3%)	41 (65.1%)
<i>RF8 - Worried about falls</i>	55 (64.0%)	37 (67.3%)
<i>RF3 - Must push on objects to stand from seated</i>	53 (61.6%)	36 (67.9%)
<i>RF6 - Trouble stepping up to a curb</i>	50 (58.1%)	33 (66.0%)
<i>RF7 - Often rush to bathroom</i>	47 (54.7%)	30 (63.8%)
<i>RF2 - Holds onto furniture when walking inside</i>	41 (47.7%)	29 (70.7%)
<i>RF4 - Advised to use a cane or walker</i>	27 (31.4%)	20 (74.1%)
<i>RF10 - Prescription meds that cause light headedness</i>	22 (25.6%)	18 (81.8%)
<i>RF9 - Often sad or depressed</i>	20 (23.3%)	16 (80.0%)
<i>RF5 - Loss of feeling in feet</i>	18 (20.9%)	14 (77.8%)
<i>RF11 - Prescription meds for mood or sleep</i>	8 (9.3%)	7 (87.5%)

Respondents that reported falling within the last 12 months had an average of 6.4 risk factors, while respondents that reported not falling within the last 12 months had an average of 2.9 risk factors. The mean total fall risk factors (out of 11) were calculated for select demographic characteristics and compared to those respondents who have fallen within the last 12 months (Table 5). The mean risk factors of all age groups was 4.7, and the highest mean risk factors was in the 85+ age group at 9.7. Respondents who lived alone reported lower total risk factors (3.9) than those respondents who lived within others (5.0). Males reported an average of 5.0 total risk factors, while females reported 4.5. Both males and females reported the same number of total risk factors (6.5) when also reporting a fall within

the last year. ANOVA analysis for the risk factor score and falling within the last 12 months indicated a significant difference (p value <0.05) for three age groups (i.e., 55 - 64, 65 - 74, 75 - 84) with higher risk scores for those who fell. There was no significant difference between sex or living alone, and the risk factor score, by falling in the last 12 months.

Table 5. Fall Risk Factor Means by Demographics.

Demographic	Total n (n=86) Mean (SD)	Respondent Fell Within Last 12 Months: Yes (n=44) Mean (SD)	Respondent Fell Within Last 12 Months: No (n=42) Mean (SD)
Age Group: <55	5.5 (1.7)	6.0 (0)	5.0 (2.8)
Age Group: 55 - 64	4.1 (3.2)	6.2 (2.9)*	2.0 (1.8)**
Age Group: 65 - 74	4.2 (2.7)	5.3 (2.2)**	3.2 (2.6)*
Age Group: 75 - 84	5.9 (3.3)	7.9 (1.6)*	3.2 (3.2)**
Age Group: 85+	9.7 (1.2)	9.7 (1.2)	– –
Sex: Female	4.5 (3.2)	6.5 (2.7)	2.7 (2.4)
Sex: Male	5.0 (3.1)	6.5 (2.4)	3.1 (2.8)
Sex: Other ¹⁰	4.4 (1.8)	4.5 (0.7)	4.3 (2.5)
Living Alone: Yes	3.9 (6.3)	4.5 (2.8)	3.4 (2.1)
Living Alone: No	5.0 (3.2)	6.9 (2.2)	2.7 (2.7)
Total Risk Factors	4.7 (3.1)	6.4 (2.5)	2.9 (2.5)

* p < 0.05

** p ≤ 0.01

The fall intervention section of the survey was completed by 83 of the 86 respondents who identified Home and bathroom modifications, Presentations at the Senior Center, Talking about falls with your doctor, Informational Flyer or Brochure, and Exercise groups at Senior Center as the top five intervention types (range 63 to 87%) (Table 6). The least common was online informational posts (35%).

¹⁰ Preferred not to answer

Table 6. Respondent Frequency and Proportion of Fall Interventions Believed to be Helpful (n=83).

Intervention Type	<i>Interventions Believed to be Helpful n</i>	<i>Interventions Believed to be Helpful %</i>	<i>Respondent Fell Within Last 12 Months n</i>	<i>Respondent Fell Within Last 12 Months %</i>
Home and bathroom modifications	72	86.7%	36	50.0%
Presentations at the Senior Center	60	72.3%	30	50.0%
Talking about falls with your doctor	56	67.5%	32	57.1%
Informational Flyer or Brochure	54	65.1%	28	52.0%
Exercise groups at Senior Center	52	62.7%	24	46.1%
Exercise groups at SDPI/Gym	49	59.0%	23	47.0%
Home visits by CHR	43	51.8%	26	36.1%
Newspaper or magazine articles	43	51.8%	24	56.0%
Home visits by IHS	39	47.0%	19	48.7%
Support Group Sessions	39	47.0%	20	51.3%
Facebook/Online informational posts	29	34.9%	14	48.3%

The comment section of the survey, where participants provided suggestions on fall prevention programs, was completed by (55%, 47) of respondents and summarized (Table 7). The fall prevention programs suggested more frequently by respondents included ‘home visits from public health officials’; ‘construction of accessible walkways and ramps for both home and public spaces’; and ‘educational resources regarding falls and fall awareness in the community’ (range 12.7% to 17.0%). Other unique responses were noted by survey respondents, discussed during the focus group, including: ‘Unable to contact emergency services in remote areas of the community (No internet or phone service)’, ‘Expansion of bathroom/home modification programs’, and ‘Pride as a barrier to accessing services’.

Table 7. Comment Section Summary Older Adult Survey (n=47)

Survey comment section	n	%
Home visits needed more frequently, especially after medical events	8	17.0%
Accessible ramp installation for home and all public areas needed	7	14.9%
More education needed in the community (Presentations, Flyers	6	12.7%
Community accessibility (walkways, exercise areas, outdoor lighting	3	6.4%
More family support groups to connect people sharing similar circumstances	3	6.4%
Outdoor home maintenance needed for elders	3	6.4%
Install Life Alert Systems	3	6.4%
Address Poor Transportation	3	6.4%
SDPI application makes applying difficult and turns people away	3	6.4%
Elder Group exercises	3	6.4%
Expansion of IHS Physical Therapy services	2	4.3%
Expansion of bathroom/home modification programs needed	1	2.1%
Unable to contact emergency services in remote areas of the community	1	2.1%
Pride prevents elders from accessing services	1	2.1%

Older Adult Focus Group

The focus group for this study consisted of 6 participants, 3 female, 3 male. The original 1-hour time for discussion extended an additional 45 minutes due to participant interest and engagement in the discussion. The overall themes of the discussion included ‘a general lack of representation within the community’ and ‘removing barriers to older adult services’. The group expressed an interest in interventions including: improved accessibility at home and in public spaces; having home visits/checks for older adults who recently experienced a medical emergency or surgery; and improvements to the Housing Improvement Program (HIP).

Participants reported limited exposure to fall intervention programs in the past. Participants reported that some fall prevention programs that were started did not follow through and/or were abandoned due to low participation. Several challenges for implementing fall prevention interventions were identified during the focus group. These challenges included: poor health care provider continuity; lack of transportation to Special Diabetes Program (SDPI) gym; limited access to healthy foods; lack of

internet/phone service in rural areas; poor community safety and security; and low community morale. Exercise-based interventions were specifically examined to determine interest and impact during the focus group. Participants expressed interest in additional exercise-based intervention options including tai-chi, Zumba, and SDPI balance exercise groups while noting that transportation to the fitness center classes is a limiting factor.

The group was resolute that the session was not the last time these issues would be discussed, and they wanted their concerns put into action. Several new intervention ideas were suggested by the group to address older adult falls. The first new intervention suggested was building a local nursing home to allow older adults to live close to family members on tribal lands. The second intervention suggested was to establish an emergency button/life alert-style system for older adults who live alone, especially in rural areas. In addition, the group decided to create an elder advisory committee for the community to better express the needs of this vulnerable population to key stakeholders such as the tribal council or health board. The group furthermore stated that they did not feel valued as older adults in their community, but rather sometimes used for financial resources or political gain. This candid conversation is what led to the group's support of creating an elder advisory committee.

Discussion

Nationally, 30% of older adults reported falling within the last year, compared to 51.2% of the target tribal community. This rate is 1.7 times higher than the national average, which is consistent with the national AI/AN population disparity estimations of 1.4 to 2 times that of Whites (Sterling, et al., 2001; Table 2.; Murphy, et al, 2014; CDC, 2014). Since there is a disparity in older adult falls, there is an urgent need to utilize current AI/AN cultural perspectives and traditions for implementing effective interventions (Teufel-Shone et al., 2018). Since each AI/AN tribal community is geographically and culturally unique, it was important to assess the interest of each tribal community to identify appropriate fall interventions. Involving the community to solve problems is a good way to plan

interventions. Approximately 25% of falls result in a moderate or serious in nature requiring immediate medical attention, hospitalization, and/or result in death (Sterling, et al., 2001). Primary prevention of falls will help reduce mortality and mobility from falling. In addition, best practices suggest focusing interventions by targeting those with non-injurious falls for interventions, who are at high risk of falling in the future (CDC, 2017; Vellas, et al., 1997).

The majority of older adults in this community do not live in tribal or rented properties, but rather, own their homes (Table 3.) This understanding determines which programs would be involved for home modifications, which was selected by survey respondents as the most helpful intervention (86.7%, 72) (Table 6.). Those who do live in tribal housing reported a higher fall rate of falling within the last 12 months (71.4%, 5), compared to those who owned their home (50.8%, 32). There may be other factors affecting fall rates, such as family size and dynamics that were not measured (Table 3.). Since the majority of older adults live in private homes, but the rates of falls in tribal homes are higher, programs that serve both would need to be involved in future interventions.

The focus group discussion led to a deeper understanding of the barriers behind implementation and sustainability of past interventions, as well as feeling a general lack of community representation and advocacy. The BIA Housing Improvement Program (HIP) was identified as a key resource to the older adult community that should be expanded and services simplified for better support to the community. Developing a relationship between the BIA HIP program and older adults may also be beneficial to those in need of services such as the installation of bathroom safety fixtures and accessibility ramps. One unintended but positive result of the focus group was new found interest in establishing an elder advisory committee that would be able to represent the needs of the older adult population within the tribal community to programs like BIA HIP and health care providers like IHS. No prior advisory committee has existed in the community.

During the focus group, it also became apparent that only some of the four categories of fall prevention strategies, based on the CDC's *Compendium of Effective Community based Interventions from Around the World*, are currently being utilized (i.e., exercise-based, home modifications, clinical, and multifaceted) (CDC, 2015). While there currently is a BIA HIP and Tribal Housing program that can assist with home modifications for those that know about the programs, there are little to no active exercise-based or clinical strategies being used at this time. The programs and resources to implement other intervention methods are present in the community, but these programs are currently not working together or focusing on this important topic in a multifaceted approach.

There were several limitations to the study design and data collection. Respondents for the survey were not randomly selected, but rather a convenience sample of older adults who utilize the local senior center or social services was used. However, this approach was selected to complete the survey in a door-to-door campaign over a two-week period in an attempt to include all older adults living within the community. Results should be considered exploratory due to the limited response rate of 23%. Additionally, severity of fall was not assessed, nor was whether the fall required hospitalization or resulted in no injury. This information might provide a better understanding of falls, which could be part of future studies. For the focus group, only those older adults who utilized the local senior center participated, which may not be representative of the entire community. This location was chosen due to it being the only meeting place where older adults are provided transportation. Finally, a separate data collection effort, which was to include interviews with key informant program managers, could not be conducted due to the COVID-19 pandemic. Completing these interviews will be a priority next step to continue this project, along with the formation of an older adult fall prevention coalition.

Determining the extent of older adult falls in a community, and intervention approaches favored by target audience members, is just the first step. Getting leaders to act on such information and generate advocacy to support implementation of proven intervention initiatives is what leads to long

term successes. Interviewing and gathering the support of each program manager will increase understanding about the problem (e.g., fall risk factors), potential solutions (i.e., intervention strategies), and hopefully obtain commitments to join with a coalition of elders to initiate change within this community.

The next steps for this project would be to conduct interviews with select tribal and federal health program managers that directly provide older adult health services to tribal members or other programs that may relate to fall prevention strategies. Given the intervention strategies available to address older adult falls, program managers responsible for older adult health might include Indian Health Service (IHS) direct patient care, public health nursing, physical therapy, pharmacy, behavioral health, and environmental health. Additionally, tribal programs that directly relate to fall prevention strategies might include community health representatives (CHR), tribal health departments, tribal housing departments, senior centers, Special Diabetes Program (SDPI) or other exercise and healthy eating programs, and tribal social services. Key informant interviews will follow the guide in Appendix C. The interviews with program managers will introduce the importance of addressing older adult falls within the community. In addition, a coalition is recommended to support positive change with input from the entire community.

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Appendices

- A. Older Adult Community Survey**
- B. Older Adult Focus Group Guide**

Elder Fall Prevention Community Survey

Background: Thank you for your interest in providing your feedback for the *Elder Fall Prevention Community Survey*. We are collecting information about health and injuries among adults living within the boundaries of the Tribal Community. This survey is completely voluntary and confidential. Your name is not on this survey and your answers will not be linked to you in any way. The information will be used to help improve health and injury services of the community.

Please answer the questions by filling in the blank or marking a box to show your answer. There will be space to write additional comments at the end. If you have any questions, you can ask the person who handed this to you. Your opinions are greatly valued!

I understand my participation in this survey is voluntary.

Yes No

Method: Self-administered Face-to-face interview

Location: _____

Date: ___/___/2020

Directions:

This survey will be referring to *falls*. A fall is when one unintentionally loses balance and collapses to the ground. Answer each question with the answer that best describes you and your opinions.

1. Age:

- Younger than 55
- 55 – 64
- 65 – 74
- 75 – 84
- 85+

2. Sex:

- Male
- Female
- Prefer not to answer

2. Which of the following apply to you?

- I own my home
- I live in Tribal Housing
- I live with a family member who owns the home
- Other: _____

3. Do you live alone?

- Yes
- No

4. Do you believe falling is a problem for people in your community?

- Yes
- No
- I am not sure

Elder Fall Prevention - Community Survey

6. True or False: Sometimes I feel unsteady when I am walking.
- True
 - False
7. True or False: I steady myself by holding on to furniture when walking at home.
- True
 - False
8. True or False: I need to push with my hands to stand up from a chair.
- True
 - False
9. True or False: I use or have been advised to use a cane or walker to get around safely.
- True
 - False
10. True or False: I have lost some feeling in my feet.
- True
 - False

Elder Fall Prevention - Community Survey

11. True or False: I have some trouble stepping up onto a curb.

- True
- False

12. True or False: I often have to rush to the bathroom.

- True
- False

13. True or False: I am worried about falling.

- True
- False

14. True or False: I often feel sad or depressed.

- True
- False

15. True or False: I take medicine that makes me feel light-headed or more tired than usual.

- True
- False

16. True or False: I take medicine to help me sleep or improve my mood.

- True
- False

Elder Fall Prevention - Community Survey

17. How many days each week do you exercise?
(By exercise, we mean physical activity that is strenuous enough to cause an increase in breathing, heart rate, or perspiration).
- 0 days a week
 - 1-2 days a week
 - 3-4 days a week
 - 5+ days a week
18. Have you fallen within the last year?
- Yes
 - No (continue to question 21)
19. If you answered yes on 18, did you report your fall to anyone (caregiver, family member, doctor, nurse)?
- Yes
 - No
20. If you answered yes on 18, where did you fall?
- Bathroom
 - At home, but NOT in the bathroom
 - Not at home

Elder Fall Prevention - Community Survey

21. Do you think any of the following Fall Prevention Strategies would be Helpful in your community? Check all that apply.

Strategy	Helpful
Presentations at the Senior Center	<input type="checkbox"/>
Home and bathroom modifications (e.g. grab bar installation)	<input type="checkbox"/>
Home visits by IHS	<input type="checkbox"/>
Home visits by CHR	<input type="checkbox"/>
Facebook/Online informational posts	<input type="checkbox"/>
Newspaper or magazine articles	<input type="checkbox"/>
Talking about falls with your doctor	<input type="checkbox"/>
Informational Flyer or Brochure	<input type="checkbox"/>
Exercise groups at Senior Center	<input type="checkbox"/>
Exercise groups at SDPI/Gym	<input type="checkbox"/>
Support Group Sessions	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>

Optional: Please provide any additional comments or suggestions for fall prevention programs you would like to see in your community. Thank you again for your valuable time, information, and opinions!

Elder Fall Prevention Focus Group Guide

Background: Elder falls prevention related injuries may be common and preventable within this community. As a program leader who provides services related to elders and potential fall-prevention, I would like to better understand your role in the community.

Goal: Create a coalition, based on community needs, to bring all elder fall prevention services together under a clear direction.

Privacy: Focus Group participants will not be specifically quoted or identified in any published report. Additionally, no department or director will be reported negatively or lacking services. The goal of this interview is to see what services are currently available, and how everyone can better work together.

NOTE: Focus Group Participants must sign an *Informed Consent Form* (attached) as required by the Tribal Human and Cultural Research Board.

DATE: _____ **TIME:** _____

Elder Fall Prevention Focus Group Sign in Sheet

#	Focus Group Date: ____/____/_____ Time: _____ - _____ Please Print Name	Waiver Signed Initial
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Focus group participant inclusion factors:

- Tribal member living in community
- Elder (55 years and older)

Welcome/Introduction

- <INTRO>
- We are with Indian Health Service (IHS) Division of Environmental Health Services and we work with tribes to prevent severe injuries and deaths. Some of our program priorities include motor vehicle crashes, child passenger safety, and opioid overdose prevention. Today, we are here to discuss elder fall prevention within the Tribal Community.

Factors to consider:

- More than 50% of all non-fatal unintentional injuries for adults ages 55+ are caused by falls (CDC WISQARS US National Data 2008-2016).
- A community survey has collected opinions of adults aged 55+ on falls and fall prevention within the Tribal Community. These results are now available and will be the focus of this discussion.
- Your participation is very important in helping us learn about what people think about these issues.

Instructions

Our meeting today will work in the following way:

- In the next hour, I am going to be asking a series of questions designed to collect your ideas on elder fall prevention strategies within your community.
- [Insert name] will be taking notes about what we talk about today. No names will be used in our report. All of the comments that you make today will be summarized so that your privacy will be completely protected. No names or other personal identifiers will ever be reported.
- When answering these questions, please speak one at a time.

- Please raise your hand to speak if several people want to speak at the same time.
- Say what you think, not what you think someone wants to hear. Your honest impressions are what is important.
- Remember that there are no right or wrong answers! We are here to gather information and ideas that you're willing to share with us.

Focus Group Questions

1. Do you think elder falls are a problem within the Tribal Community that should be addressed?

- Review Elder Fall Prevention Community Survey Results to Yes/No questions. (Example: XX% of survey participants stated they sometimes feel unsteady when walking).

2. Have you had any exposure to elder fall prevention strategies in the past? These may include:

(b) Which strategies? Read All

- Presentations at the Senior Center
- Home and bathroom modifications (e.g. grab bar installation)
- Home visits by IHS
- Home visits by CHR
- Facebook/Online informational posts
- Newspaper or magazine articles
- Talking about falls with your doctor
- Informational Flyer or Brochure
- Exercise groups at Senior Center
- Exercise groups at SDPI/Gym
- Support Group Sessions

3. What were the strengths of the exercise-specific strategy you were exposed to?

4. What were the weaknesses to the exercise-specific strategy you were exposed to?

(b) strengths

5. What were the weaknesses of any other (non-exercise) strategy you were exposed to?

(b) strengths

6. Community Survey Participants expressed interest in XXXXXX. What would you like to see in the future?

7. Do you believe a coalition between all elder fall prevention related departments would be helpful? This would include programs from IHS, Social Services, and Tribal Housing among others.

8. Final Thoughts/Statements:

Ending:

Thank you all for your participation today. Your comments will be very helpful in our work. As always, if you have any questions or concerns please contact me.

De-briefing after the focus group:

1. How do you think the focus group went?

- Did the moderator elicit all the information desired?
- Was the participation adequate?
- What could have been done differently?

2. What major themes and insights emerged from the session?