



HBRFSS

Survey Shows...

**The Hawaii Behavioral Risk Factor Surveillance System
Special Report**

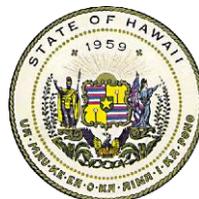
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**Disparity in awareness of interventions to
reduce adult accidental falls:
Findings from Hawaii Behavioral Risk
Factor Surveillance System Survey 2011**

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State of Hawaii



Disparity in awareness of interventions to reduce adult accidental falls: Findings from Hawaii Behavioral Risk Factor Surveillance System Survey 2011

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About the Hawaii Behavioral Risk Factor Surveillance System (HBRFSS)

The HBRFSS is an ongoing random telephone survey of randomly selected adult residents 18 years and older on behaviors that affect health directly and indirectly. The HBRFSS is funded by the Centers for Disease Control and Prevention (CDC) as part of the national Behavioral Risk Factor Surveillance System (BRFSS). The HBRFSS has been in operation since 1986. For more information about HBRFSS results, please visit the following website: <http://health.hawaii.gov/brfss/>.

If the information you are looking for is not on the website, you may contact the state BRFSS coordinator via e-mail at brfsshi@doh.hawaii.gov or via phone at 808-586-8051.

**Disparity in awareness of interventions to reduce adult accidental falls:
Findings from Hawaii Behavioral Risk Factor Surveillance System Survey 2011**

by Dailin Ye and Florentina R. Salvail

According to the Hawaii Behavioral Risk Factor Surveillance System (HBRFSS) survey year 2010, over 65,000 Hawaii adults aged 45 years and older have fallen unintentionally and nearly 23,000 (35%) of them were injured at least once as a result of the fall. Unintentional falls affect the health and independence of a person, particularly an older adult. Fall may result in temporary or permanent disability which in turn may lead to chronic condition or exacerbate existing chronic condition(s). While prevention of falls may be an ordinary activity for some, it may be a challenge to others. It is important to gauge the fall prevention awareness of the men and women in the State to determine the best way to educate adults in minimizing the likelihood of falling. Acting on this import, HBRFSS survey year 2011 asked survey participants the fall prevention intervention awareness question shown in Table 1. Although the original intent was to record up to three answers, all answers were recorded. The question was funded by the Preventive Health and Health Services Block Grant (PHHSBG).

Table 1. “What things can Hawaii adults do to help reduce the risk that an older adult will fall and be injured?” You can select up to three answers.

01. have their vision regularly checked	07. ensure adequate lighting in and outside their home
02. wear safe footwear	08. install home safety features such as shower grab bars, hand rails, etc.
03. exercise regularly/maintain good physical condition	Do not read
04. review/change their prescription medicines with guidance from their doctor or pharmacist	88. nothing/falls cannot be prevented
05. consult their physicians for general fall prevention advice	09. other (specify)
06. reduce clutter/tripping and slipping hazards in and outside their home	77. do not know
	99. refused

Data and Methods

The year 2011 Hawaii BRFSS survey has a response rate of 44.8% (see http://health.hawaii.gov/brfss/files/2013/11/HBRFSS_2011results.pdf), and a total survey sample of 7,606 respondents participated completely or partially. The number of respondents that answered the fall prevention intervention awareness question was 7,179, and 17 of them answered 'refused' and were excluded in the statistical analysis.

The fall intervention question is a multiple response type question; meaning more than one answer may be accepted from a respondent. This implies that the sum of the survey participants that selected any of the twelve possible item responses will not equal the total number of respondents (7,162) and the percent of adults mentioning possible interventions will not sum to 100%. In more specific terms, the respondents were counted once or more than once when the response(s) were the following "01", "02", "03", "04", "05", "06", "07", and "08" either alone or a combination of these responses (described in Table 1). These responses were called "specific interventions". The responses that were termed as non-specific interventions are the following: (a) the respondents that answered code '88 nothing/falls cannot be prevented', and also answered with code '09 other' or also answered with code '77 do not know' were counted only once as 'nothing/falls cannot be prevented', (b) the respondents that answered code '77 do not know' and also answered with code '09 other' were counted only once as 'don't know', and (c) the respondents that answered code '09 other' by itself were counted once as "Other". Using SAS version 9.3 and SUDAAN release 11.0.0, stratification analysis was performed to assess the prevalence of responses by selected demographic characteristics, namely: gender, age group, ethnic group, education level, and annual household income level. Specifically, gender refers to 'Men' and 'Women'. The age groups used are 18-44, 45-54, 55-64, 64-74 and 75 years and

older. Ethnic group are based from self-reported best ethnicity, or combined best ethnicities either due to similarity of the prevalence of fall prevention responses by individual ethnicity or small number of respondents. The ethnic groups used are Hawaiians/PIs (Pacific Islanders), Chinese/Japanese, Filipinos/Other Asians, Whites and Others (Others were aggregates of several small number of ethnicities). Education level refers to the highest grade completed, grouped into three categories, as high school or below, some college and college and above. Annual household income levels refers to annual household income from all sources categorized into four groups, as below \$35,000, \$35,000 - \$74,999, \$75,000 and above and 'Unknown'. The 'Unknown' category was included in the analysis because the number of respondents that answered the income question as "do not know" or "refused" was 625 or 8.7% of the 7,162 respondents included in the analysis. All of the percentages presented in the results section were weighted to the adult population of the state 18 years and older. For all of the comparative analyses, an alpha (α) of 0.05 was used to test the significance of prevalence differences.

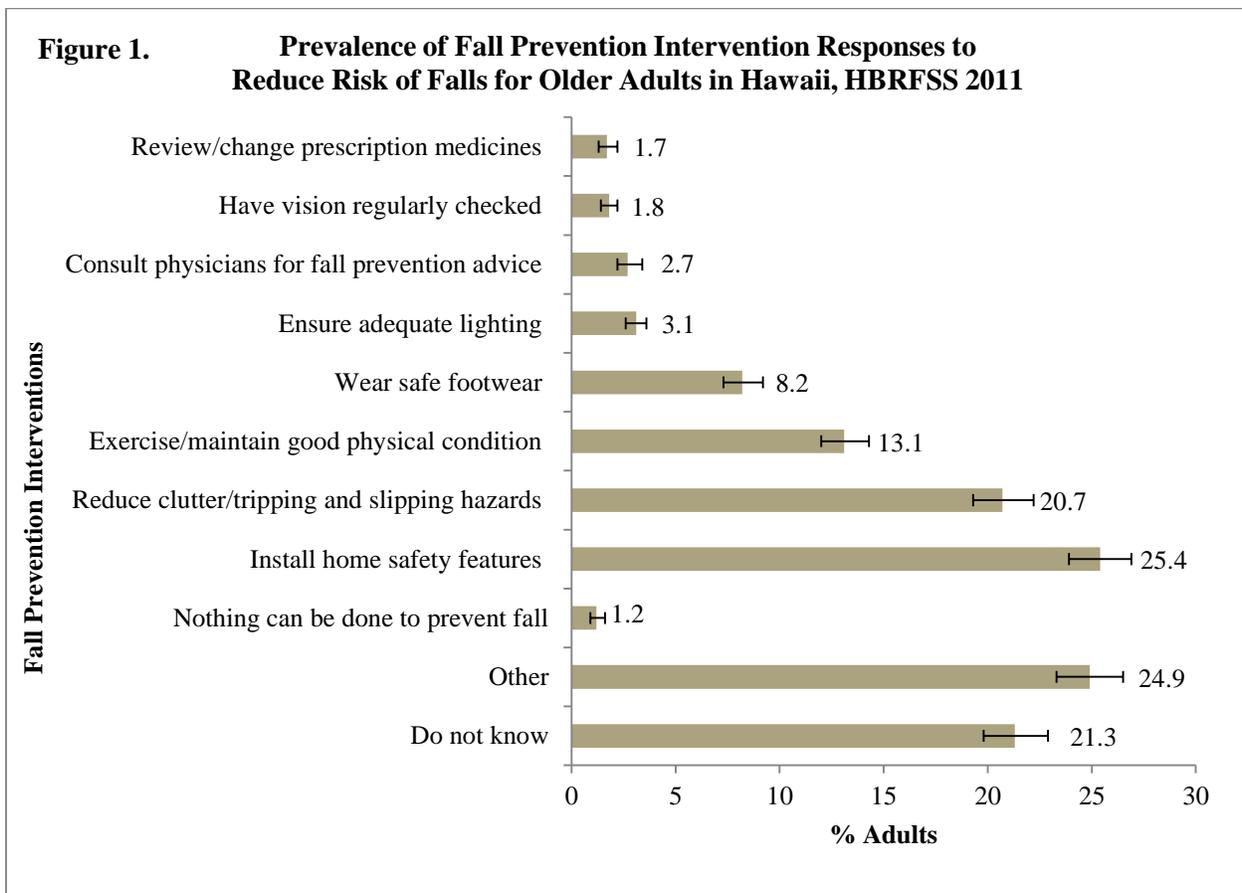
Results

The results indicated that nearly one in five adults (21.3%) do not know what to do to prevent falls and nearly one in four adults (24.9%) think that there are other ways to prevent falls for older adults but did not specify what those 'others' are (Figure 1, Table 2). Thus, the 'other' category can be construed as also 'do not know' response. In addition, about one in one hundred adults (1.2%) believe that nothing can be done to prevent falls. These 3 percentages sum to 47.4%, and translate to about 464,000 adults. On the other hand, 52.6% of adults representing nearly 515,000 adults gave at least one specific response on what can be done to reduce the risk of falls among older adults. As few as 1.7% adults stated "Review/change their prescription medicines with guidance from their doctor or pharmacist" to as many as 25.4% adults stated "install home safety features such as shower grab bars, hand rails, etc." (Figure 1, Table 2).

Table 2. Prevalence of fall prevention interventions responses to reduce risk of falls, HBRFSS 2011

Answers	% Adults (95% CI)
Review/change their prescription medicines with guidance from their doctor or pharmacist	1.7 (1.3-2.2)
Have their vision regularly checked	1.8 (1.4-2.2)
Consult their physicians for general fall prevention advice	2.7 (2.2-3.4)
Ensure adequate lighting in and outside their home	3.1 (2.6-3.6)
Wear safe footwear	8.2 (7.3-9.2)
Exercise regularly/maintain good physical condition	13.1 (12.0-14.3)
Reduce clutter/tripping and slipping hazards in and outside their home	20.7 (19.3-22.2)
Install home safety features such as shower grab bars, hand rails, etc.	25.4 (23.9-26.9)
Nothing can be done to prevent fall	1.2 (0.9-1.6)
Other	24.9 (23.3-26.5)
Do not know	21.3 (19.8-22.9)
No specific interventions	47.4 (45.6-49.2)

CI = confidence interval



There were differences in responses by gender. Women were significantly more likely than men to choose the following interventions: “have their vision regularly checked”, “wear

safe footwear”, and “reduce clutter/tripping and slipping hazards in and outside their home” to reduce risk of falls for older adults (Figure 2, Table 3). Men stated ‘other’ intervention more frequently (25.9%) over “reduce clutter/tripping and slipping hazards in and outside their home” (16.5%). Women, on the other hand, have nearly identical percentages that stated ‘other’ (23.8%) and reduce clutter (25%). Men were more likely to not suggest any specific intervention for fall prevention with nearly 23% of them answering “do not know” versus women’s 19.4%. In addition, men were likely to believe nothing can be done to prevent falls (1.5%) than women (0.9%). However, nearly a quarter of men and women said installation of home safety features such as grab bars can reduce fall among older adults.

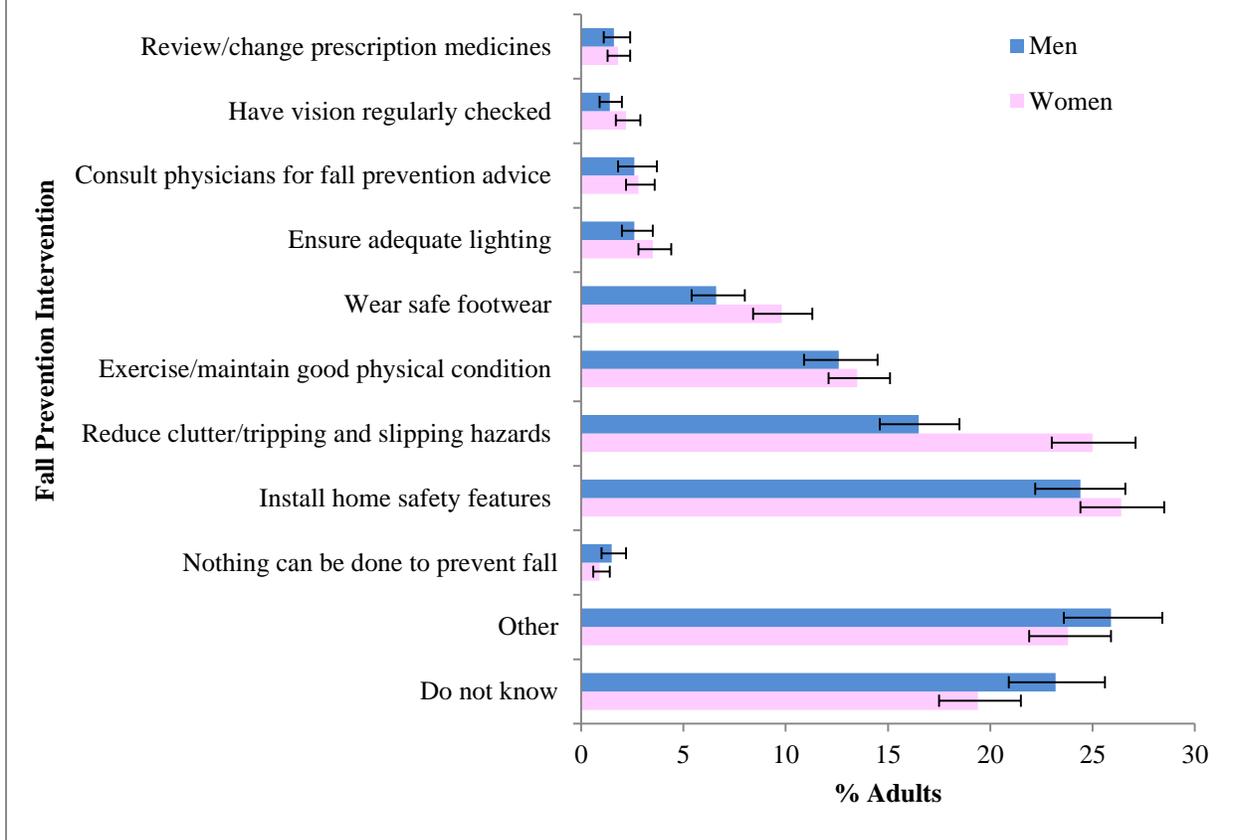
Table 3. Prevalence of Fall Prevention Intervention Responses by Gender, HBRFSS 2011

Fall Intervention responses	%Men	95%CI	%Women	95%CI
Review/change prescription medicines	1.6	1.1-2.4	1.8	1.3-2.4
Have vision regularly checked	1.4	0.9-2.0	2.2	1.7-2.9
Consult physicians for fall prevention advice	2.6	1.8-3.7	2.8	2.2-3.6
Ensure adequate lighting	2.6	2.0-3.5	3.5	2.8-4.4
Wear safe footwear	6.6	5.4-8.0	9.8	8.4-11.3
Exercise/maintain good physical condition	12.6	10.9-14.5	13.5	12.1-15.1
Reduce clutter/tripping and slipping hazards	16.5	14.6-18.5	25.0	23.0-27.1
Install home safety features	24.4	22.2-26.6	26.4	24.4-28.5
Nothing can be done to prevent fall	1.5	1.0-2.2	0.9	0.6-1.4
Do not know	23.2	20.9-25.6	19.4	17.5-21.5
Other	25.9	23.6-28.4	23.8	21.9-25.9
No specific interventions	50.6	47.9-53.3	44.2	41.8-46.6

CI = Confidence Interval

Bolded numbers indicated significant differences by gender.

Figure 2. Prevalence of Fall Prevention Intervention Responses to Reduce Risk of Falls for Older Adults in Hawaii by Gender, HBRFSS 2011

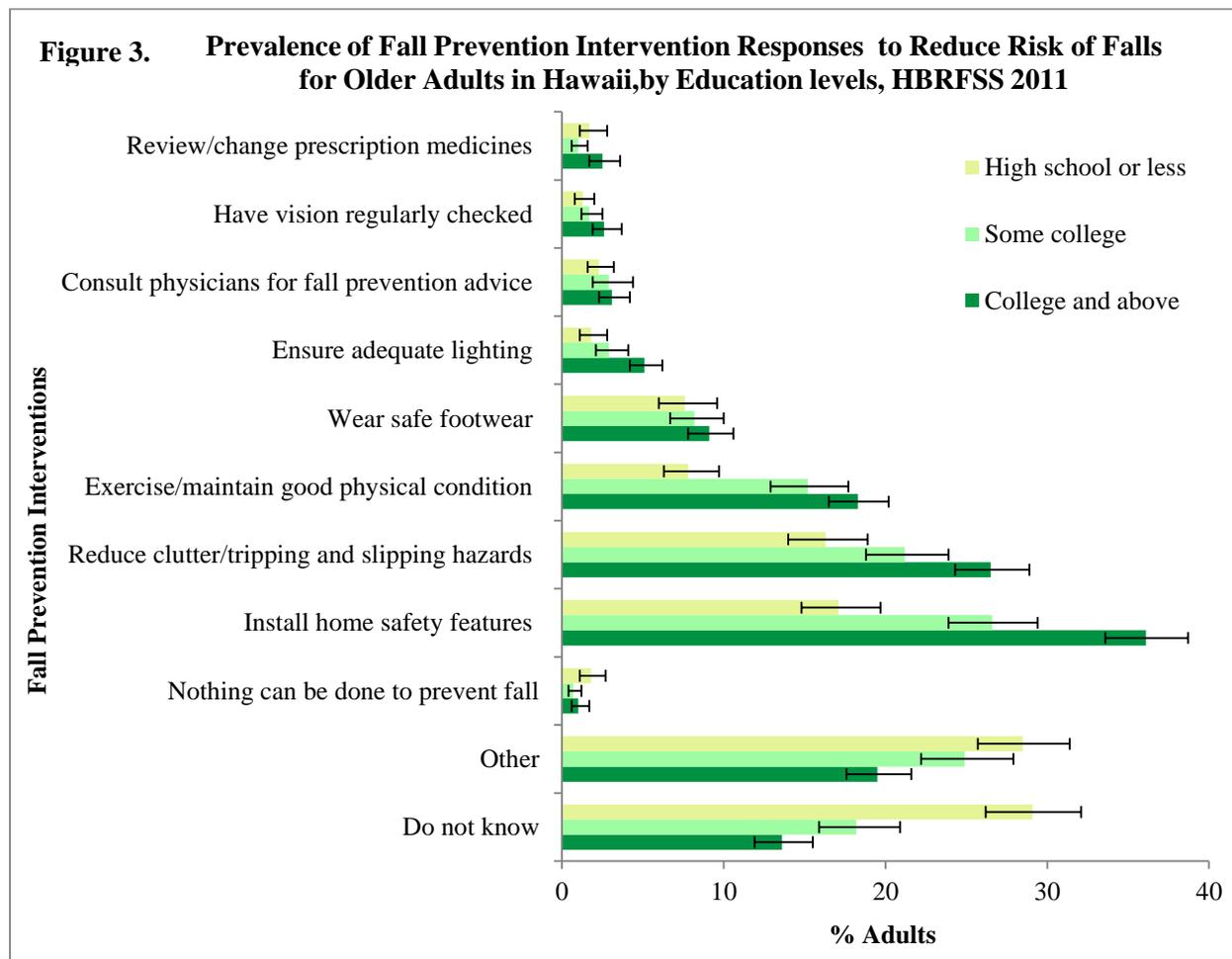


The prevalence of fall prevention intervention responses to reduce risk of falls for older adults varied significantly by age groups (Table 4). In general, adults aged 45-54, 55-64, or 65-74 were more likely to suggest many specific interventions than those aged 18-44 or 75 and older. Adults aged 18-44 or 75 and older had higher responses for “other” and “do not know” than the rest of the age groups. In addition, the prevalence of ‘nothing can be done to prevent falls’ was highest among 75 years and older, and the prevalence of clutter reduction and installation of home safety features were the lowest compared to other age groups.

Similarly, the prevalence of fall prevention interventions varied significantly by ethnic group (Table 5). Whites were more likely to suggest specific interventions than were adults of other ethnic groups. In addition, Whites were less likely to respond with “other” and “do not know” than the other ethnic groups. The Filipinos/other Asians were equally likely to answer

‘Other’ (30.4%) and ‘Do not know’ (29.1%) and had the highest percentage of ‘Do not know’ responses than any other ethnic groups. In addition, the Filipinos/other Asians group has the lowest response for ‘reduce clutter’ (12.4%) and ‘install home safety features’ (17.7%) than any other ethnic group.

In general, adults with higher education levels were more likely to suggest specific prevention interventions to reduce risk of falls for older adults (Figure 3, Table 6). Adults



with college or higher education were significantly more likely than those with some college and those with high school or less education to choose “install home safety features such as shower grab bars, hand rails, etc.”, “reduce clutter/tripping and slipping hazards in and outside their

home” and “exercise regularly/maintain good physical condition”. Similarly, Hawaii adults with some college education were significantly more likely than those with high school or less education to choose “install home safety features such as shower grab bars, hand rails, etc.”, “reduce clutter/tripping and slipping hazards in and outside their home” and “exercise regularly/maintain good physical condition”. Hawaii adults with college or higher education were also significantly more likely than those with high school or less education to choose

Table 6. Prevalence of Fall Prevention Intervention Responses by Education levels, HBRFSS 2011.

Fall Interventions	High school or below	95%CI	Some college	95%CI	College & above	95%CI
Review/change prescription medicines	1.7	1.1-2.8	1.0	0.6-1.6	2.5	1.7-3.6
Have vision regularly checked	1.3	0.8-2	1.7	1.2-2.5	2.6	1.9-3.7
Consult physicians for fall prevention advice	2.3	1.6-3.2	2.9	1.9-4.4	3.1	2.3-4.2
Ensure adequate lighting	1.8	1.1-2.8	2.9	2.1-4.1	5.1	4.2-6.2
Wear safe footwear	7.6	6-9.6	8.2	6.7-10	9.1	7.8-10.6
Exercise/maintain good physical condition	7.8	6.3-9.7	15.2	12.9-17.7	18.3	16.5-20.2
Reduce clutter/tripping and slipping hazards	16.3	14-18.9	21.2	18.8-23.9	26.5	24.3-28.9
Install home safety features	17.1	14.8-19.7	26.6	23.9-29.4	36.1	33.6-38.7
Nothing can be done to prevent fall	1.8	1.1-2.7	0.7	0.4-1.2	1.0	0.6-1.7
Other	28.5	25.7-31.4	24.9	22.2-27.9	19.5	17.6-21.6
Do not know	29.1	26.2-32.1	18.2	15.9-20.9	13.6	11.9-15.5
No specific interventions	59.3	56.1-62.4	43.9	40.7-47.1	34.1	31.7-36.6

“ensure adequate lighting in and outside their home” and “have their vision regularly checked ”. In contrast, adults with lower levels of education were significantly more likely to answer “other”, “nothing can be done to prevent fall”, and “do not know”. For instance, the response for categories “other” and “do not know” respectively, were highest at 28.5% and 29.1% among those with high school or less education, 24.9% and 18.2% among those with some college education, and lowest at 19.5% and 13.6% among college educated.

Specific prevention interventions were also positively associated with annual household income (Figure 4, Table 7). Hawaii adults with annual household income \$75,000 or more were significantly more likely than those with lower annual household income levels (ranged from \$35,000 to \$74,999 or less than \$35,000) to choose “reduce clutter/tripping and slipping hazards in and outside their home” and “ensure adequate lighting in and outside their home”. In addition, adults with higher annual household income levels (\$75,000 or more, as well as household incomes from \$35,000 to \$74,999) were significantly more likely than those with annual household income below \$35,000 to choose “install home safety features such as shower grab bars, hand rails, etc.” and “exercise regularly/maintain good physical condition”. On the other hand, adults with annual household income below \$35,000 were significantly more likely to answer “other” and “do not know” than adults with higher annual income. Responses of adults with “unknown” annual household income were nearly identical to those adults with less than \$35,000 annual income.

Figure 4. Prevalence of Fall Prevention Intervention Responses to Reduce Risk of Falls for Older Adults in Hawaii, by Annual Household Income, HBRFSS 2011

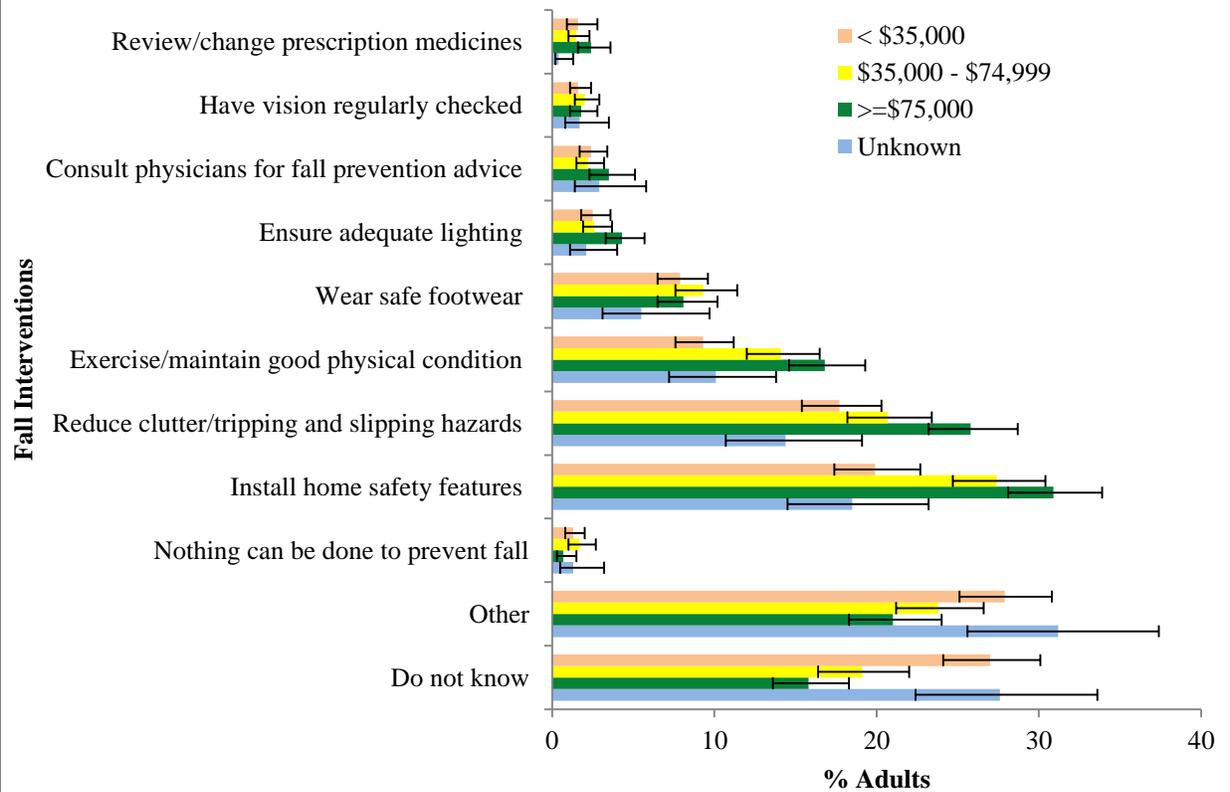


Table 4. Prevalence of Fall Prevention Intervention Responses by Age group, HBRFSS 2011

Fall intervention responses	18-44	95%CI	45-54	95%CI	55-64	95%CI	65-74	95%CI	75 & older	95%CI
Review/change prescription medicines	1.4	0.8-2.3	2.5	1.6-3.9	2.4	1.6-3.7	1.6	0.9-2.6	0.7	0.3-1.3
Have vision regularly checked	1.4	0.8-2.2	1.9	1.2-3	2.2	1.5-3.3	2.9	2.0-4.2	1.6	1.0-2.6
Consult physicians for fall prevention advice	2.0	1.3-3.2	3.6	2.4-5.4	3.4	2.3-5.0	3.3	2.0-5.3	2.6	1.6-4.2
Ensure adequate lighting	2.0	1.4-2.8	4.2	3.0-6.0	4.5	3.3-6.0	4.4	2.8-6.8	2.4	1.4-4.3
Wear safe footwear	8.0	6.5-9.8	8.3	6.5-10.6	9.7	7.6-12.3	8.8	6.8-11.2	5.9	4.3-7.9
Exercise/maintain good physical condition	11.3	9.4-13.4	13.3	11.1-15.9	16.3	14.2-18.7	16.1	13.6-19	12.8	10.3-15.9
Reduce clutter/tripping and slipping hazards	17.1	14.9-19.5	29.5	25.8-33.4	25.5	22.8-28.4	21.7	18.8-25	13.9	11.1-17.1
Install home safety features	24.7	22.2-27.4	27.0	23.6-30.7	31.4	28.4-34.6	25.3	22-28.9	15.7	12.9-18.9
Nothing can be done to prevent fall	0.9	0.5-1.7	0.8	0.5-1.5	0.9	0.5-1.7	1.7	0.9-2.9	3.4	2.1-5.6
Other	26.5	23.8-29.4	22.1	18.9-25.6	22.5	19.9-25.4	23.5	20.4-26.9	27.4	23.8-31.4
Do not know	23.2	20.6-26.1	18.7	15.9-21.8	15.2	13-17.7	19.2	16.2-22.7	28.7	24.4-33.4
No specific interventions	50.6	47.5-53.8	41.6	37.8-45.5	38.6	35.5-41.9	44.4	40.5-48.3	59.6	55.2-63.8

Bolded numbers significantly different to other age groups.

Table 5. Prevalence of Fall Prevention Intervention Responses by Ethnic groups, HBRFSS 2011

Fall intervention responses	Hawaiians /PIs	95%CI	Chinese/ Japanese	95%CI	Filipinos/ other Asians	95%CI	Whites	95%CI	Others	95%CI
Review/change prescription medicines	1.6	0.9-2.8	1.3	0.8-2.2	0.6	0.3-1.1	2.8	1.9-4.0	1.4	0.5-3.6
Have vision regularly checked	1.4	0.7-2.6	2.1	1.4-3.2	1	0.5-2.1	2.2	1.6-3.1	1.1	0.4-3.2
Consult physicians for fall prevention advice	2.5	1.4-4.3	3.6	2.4-5.4	1.1	0.6-2.0	2.8	2-3.8	4.3	2.1-8.4
Ensure adequate lighting	1.4	0.7-2.6	3.1	2.2-4.3	1.1	0.7-1.9	4.5	3.5-5.7	5.2	2.6-10.2
Wear safe footwear	7.3	5.4-9.7	6.7	5.4-8.3	7.1	5.2-9.5	9.9	8.2-11.9	10.9	6.1-19
Exercise/maintain good physical condition	9.5	7-12.8	14.5	12.7-16.6	11	8.4-14.3	14.9	12.9-17.1	10.7	7.3-15.2
Reduce clutter/tripping and slipping hazards	18.1	14.4-22.4	21.3	18.9-24	12.4	9.9-15.5	26.2	23.7-28.8	20.7	14.4-28.9
Install home safety features	22.0	18.2-26.3	27.4	24.8-30.2	17.7	14.5-21.5	29.5	26.9-32.3	25.5	19.4-32.8
Nothing can be done to prevent fall	1.7	1-2.9	1.7	1.0-2.8	1.2	0.6-2.4	0.9	0.5-1.5	0.2	0.1-1.2
Other	31.4	27.1-36.1	21.9	19.4-24.6	30.4	26.2-34.9	21.5	19.2-23.9	17.9	13-24.1
Do not know	21.0	17.2-25.5	22.0	19.3-24.9	29.1	25.2-33.4	16.7	14.4-19.3	25.4	18.8-33.5
No specific interventions	54.2	49.2-59.0	45.5	42.4-48.7	60.7	56.2-65.0	39.0	36.2-42.0	43.6	35.7-51.8

Table 7. Prevalence of Fall Prevention Intervention Responses by Annual Household Income levels, HBRFSS 2011.

Fall interventions	below \$35,000	95%CI	\$35,000 - \$74,999	95%CI	\$75,000 or more	95%CI	Unknown	95%CI
Review/change prescription medicines	1.6	0.9-2.8	1.5	1-2.3	2.4	1.6-3.6	0.4	0.2-1.3
Have vision regularly checked	1.6	1.1-2.4	2.0	1.4-2.9	1.8	1.1-2.8	1.7	0.8-3.5
Consult physicians for fall prevention advice	2.4	1.7-3.4	2.2	1.5-3.2	3.5	2.3-5.1	2.9	1.4-5.8
Ensure adequate lighting	2.5	1.8-3.6	2.6	1.9-3.7	4.3	3.3-5.7	2.1	1.1-4
Wear safe footwear	7.9	6.5-9.6	9.3	7.6-11.4	8.1	6.5-10.2	5.5	3.1-9.7
Exercise/maintain good physical condition	9.3	7.6-11.2	14.1	12-16.5	16.8	14.6-19.3	10.1	7.2-13.8
Reduce clutter/tripping and slipping hazards	17.7	15.4-20.3	20.7	18.2-23.4	25.8	23.2-28.7	14.4	10.7-19.1
Install home safety features	19.9	17.4-22.7	27.4	24.7-30.4	30.9	28.1-33.9	18.5	14.5-23.2
Nothing can be done to prevent fall	1.3	0.8-2	1.7	1-2.7	0.7	0.3-1.5	1.3	0.5-3.2
Other	27.9	25.1-30.8	23.8	21.2-26.6	21.0	18.3-24	31.2	25.6-37.4
Do not know	27.0	24.1-30.1	19.1	16.4-22	15.8	13.6-18.3	27.6	22.4-33.6
No specific interventions	56.1	52.9-59.3	44.5	41.2-47.8	37.6	34.4-40.8	60.1	54.1-65.8

Summary

- Nearly 464,000 adults (47.4%) in the state did not mention specific interventions to help reduce the risk of falls among older adults.
- Disparity in awareness of interventions to help reduce the risk of falls among older adults existed among segments of the adult population. Percentages by subpopulation that did not mention specific interventions:
 - 50.6% of men vs. 44.2% of women, significantly different.
 - Over half of adults aged 18-44 (50.6%) and aged 75 years or older (59.6%).

No mention of specific interventions was nearly U-shape by the five-age group considered. However, the percentage for the oldest age group 75 years and older (59.6%) is statistically significantly higher than any of the age group.

- Nearly three out of every five Filipinos/Other Asians adults (60.7%)
- More than one in two Hawaiians/PIs adults (54.2%)
 - The difference between Filipinos/Other Asians and Hawaiians/PIs was not statistically significant at $\alpha=0.05$ (p-value 0.0529).
- Nearly three out of every five adults with high school or less education (59.3%) compared to nearly one in four adults with college or more education (34.1%)
 - ◆ The percentage of no mention of specific interventions declined significantly as the education level completed increased.
- Over half of adults with annual household income \$35,000 or below (56.1%) or unknown annual household income (60.1%) compared to adults with annual household income \$75,000 or more (37.6%)
 - ◆ The percentage of no mention of specific interventions declined significantly as the annual household income category increased.
- The top three mentioned specific interventions to reduce falls are:
 - Install home safety features (25.4% adults mentioning)
 - Reduce clutter/tripping and slipping hazards (20.7%)
 - Exercise/maintain good physical condition (13.1%)

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This publication is available on the World Wide Web at the Hawaii Behavioral Risk Factor Surveillance System site <http://health.hawaii.gov/brfss/>

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