CHAPTER 4

RESULTS AND DISCUSSION

Results

This descriptive correlation study was conducted to study perceived fall risk factors and falls preventive behaviors among the elderly in community and the relationship between perceived fall risk factors and falls preventive behaviors among the elderly in community, Yala province. The subjects were 400 elderly aged 60 years and above living in Yala province.

The findings are presented with tables and descriptions regarding:

Part 1: Demo characteristics

Part 2: Health related demo characteristics

Part 3: Perceived fall risk factors

Part 4: Falls preventive behaviors

Part 5: The relationship between perceived fall risk factors and falls preventive behaviors

Part 1 Demo characteristics

The demo characteristics of the subjects were showed in Table 3. Fifty point two percent of the subjects were female. Their age ranged from 60 to 103 years with a mean age of 70.05 years (SD = 7.58 years.) More than half of the subjects were Buddhist (57.5%). They were 65.5% with married status (lives-together). Fifty one percent of the

subjects had no formal education. The common occupation in the subjects was agriculturists (48.5%). Most of them (82.2%) felt they had sufficient income. Around 76.5% of the subjects lived with spouse and adult children.

Table 3

Frequency and Percentage of Subjects according to Demo characteristics (N = 400)

Characteristics	Frequency	Percentage
Sex		
Male	199	49.8
Female	201	50.2
Age		
$\bar{x}$ = 70.05 (S.D. = 7.58) Min = 60, Max = 103		
Religion		
Buddhist	230	57.5
Islam	168	42.0
Christian	2	0.5
Marital status		
Single	1	0.2
Married (lives together)	262	65.5
Widowed	133	33.3
Divorced / Separated	4	1.0
Education level		
No formal education	204	51.0
Primary school	176	44.0
Secondary school	14	3.5
Diploma	2	0.5
Bachelor's degree or higher	4	1.0
Occupation		
None / Housework	148	37.0
Agriculturist	194	48.5

Table 3 *(continued)*

Characteristics of subjects	Frequency	Percentage
Occupation (continued)		
Small business	28	7.0
Employee	22	5.5
Pensioner	8	2.0
Sufficiency of income		
Sufficient	329	82.2
Insufficient	72	17.8
Living situation		
Living alone	15	3.8
Living with spouse	77	19.2
Living with spouse and adult children	306	76.5
Living with relative	2	0.5

Part 2 Health related demo characteristics

The data as shown in table 4, only 35% of the subjects had no chronic disease, whilst the reminders had at least one. The common chronic diseases of the subjects were orthopaedic diagnosis (59.2%), hypertension (46.5%), asthma (8.46%), diabetes mellitus (6.5%), and heart disease (6.5%). About 48 percent of the subjects reported taking regular medications and 74% of the 48 % took only one medication. The common regularly medications that subjects took was anti-hypertensive agents (61.5%). Only 45.2% reported having eyes problems and 60.2% of them went to see the ophthalmologist to get eyes examination and treatment. The common treatment about eyes problems was wearing glasses (41.4%). Twenty five point five percent of the subjects reported they had problems with their body balance, gait, and musculoskeletal weakness. Only 48% of them used assisting equipment in moving. The common

assisting equipments used were canes (85.7%). The majority of these subjects reported no history of alcohol consumptions (92.3%). Only 13.2% of the subjects had experiences of falls in the previous 6 months. The amount of falls ranged from 1 – 15 with a mean 2.15 (SD = 2.12). About 34% of the subjects reported place of falls was around the home (outside) and garden. Thirty two point one percent of them reported the cause of falls was from trip and 26.4% from slip. Nearly half of the subjects (40.7%) perceived they were risk of falls with the common reason were older (33.7%), poor vision (9.8%), vertigo (9.2%), and complication of chronic diseases (9.2%).

Table 4

Health related demo characteristics of the subjects (N = 400)

Variables	Frequency	Percentage
Number of chronic disease	140	35.00
No	175	43.75
One disease	60	15.00
Two diseases	25	6.25
Three or more diseases		
Chronic diseases* (n = 260)		
Orthopaedic diagnosis	154	59.20
Hypertension	121	46.50
Asthma	21	8.46
Diabetes mellitus	17	6.50
Heart disease	17	6.50
Cancer	4	1.50
Regularly medical use		
No	208	52.00
Yes	192	48.00

* more than one answer

Table 4 *(Continued)*

Variables	Frequency	Percentage
• 1 Medication	142	74.00
• 2 Medications	35	18.20
• More than 2 medications	15	7.80
Kind of medication* (n = 192)		
Anti-hypertensive agents	118	61.50
Anti-diabetes	17	8.90
Muscle relaxants and NSAIDS	17	8.90
Bronchodilators	17	8.90
Cardiovascular drug	16	8.30
Barbiturate	12	6.30
Diuretic	8	4.20
Chemotherapy	4	2.08
Eyes problems		
No	219	54.80
Yes	181	45.20
Eyes examination & treatment (n = 181)		
No	72	39.90
Yes	109	60.20
Eyes treatment * (n = 109)		
Wear glasses	75	41.40
Operation	17	9.40
Medications	22	12.20
Others	6	3.30
Poor balance		
No	298	74.50
Yes	102	25.50
• Didn’t use assistant equipment (n = 102)	53	52.00

* more than 1 answer

Table 4 *(Continued)*

Variables	Frequency	Percentage
• Used assistant equipment (n = 49)	49	48.00
- Canes	42	85.70
- Crutches	3	6.10
- Others	4	8.20
Alcohol consumption		
No	369	92.30
Yes	31	7.70
Experience of falls in last 6 months		
No	347	86.80
Yes	53	13.20
Amount of experience of falls in the previous 6 months		
n = 53 , $\overline{x}$ = 2.15 (S.D. = 2.12) Min = 1, Max = 15		
Places of falls* (n = 53)		
Around the home (outside)	18	34.00
Garden	18	34.00
Toilet / bathroom	5	9.40
Stair	4	7.60
Bedroom	3	5.70
Causes of falls* (n = 53)	17	32.10
Trip		
Slip	14	26.42
Musculoskeletal weakness	11	20.80
Vertigo	7	13.20
Dizziness	4	7.60
Drunk	3	5.70
Perceived risk of falls		
No	237	59.30
Yes	163	40.70

* more than 1 answer

Table 4 *(Continued)*

Variables	Frequency	Percentage
The reason of risk*(n = 163)		
Older	55	33.70
Poor vision	16	9.80
Vertigo	15	9.20
Complication of chronic diseases such as HT, DM, heart disease.	15	9.20
Musculoskeletal weakness	14	8.59
Slip	13	7.98
Balance impairment	8	4.90

* more than 1 answer

The study result showed that there was difference between the subjects who had and no had experience of falls in last six months in age, sex, medication, eyes problem, poor balance, and perceived risk of falls (table 5).

Table 5

Demo characteristics and Health related demo characteristics of all elderly with falls in the last 6 months, and without falls in the last 6 months.

Characteristics	Total N = 400	With falls n = 53	Without falls n = 347
Sex			
Male	199(49.80%)	17(32.10%)	182(52.40%)
Female	201(50.20%)	36(67.90%)	165(47.60%)
Age			
Mean (S.D.)	70.05 (7.58)	72.72 (8.48)	69.64 (7.36)

Table 5 *(continued)*

Characteristics	Total N = 400	With falls n = 53	Without falls n = 347
Religion			
Buddhist	230(57.50%)	22(41.50%)	208(59.90%)
Islam	168(42.00%)	30(56.60%)	138(39.80%)
Christian	2(00.50%)	1(01.90%)	1(00.30%)
Marital status			
Single	1(00.20%)	0(00.00%)	1(00.30%)
Married	262(65.50%)	23(43.40%)	239(68.90%)
Widowed	133(33.30%)	29(54.70%)	104(30.00%)
Divorced / separated	4(01.00%)	1(01.90%)	3(00.90%)
Education level			
No formal education	204(51.00%)	36(67.90%)	168(48.40%)
Primary school	176(44.00%)	15(28.30%)	162(46.40%)
Secondary school	14(03.50%)	0(00.00%)	14(04.00%)
Diploma	2(00.50%)	1(01.90%)	1(00.30%)
Bachelor's degree	4(01.00%)	1(01.90%)	3(00.90%)
Occupation			
None / housework	148(37.00%)	31(58.50%)	117(33.70%)
agriculturist	194(48.50%)	17(32.10%)	177(33.70%)
Small business	28(07.00%)	2(03.80%)	26(07.50%)
Employee	22(05.50%)	1(01.90%)	21(06.10%)

Table 5 *(continued)*

Characteristics	Total N = 400	With falls n = 53	Without falls n = 347
Occupation (Continued)			
Pensioner	8(02.00%)	2(03.80%)	6(01.70%)
Sufficiency of income			
Sufficient	329(82.20%)	40(75.50%)	289(83.30%)
Insufficient	72(17.80%)	13(24.50%)	58(16.70%)
Living status			
Living alone	15(03.80%)	2(03.80%)	13(03.70%)
Living with spouse	77(19.20%)	5(09.40%)	72(20.70%)
Living with spouse & adult children	306(76.50%)	46(86.80%)	260(74.90%)
Living with relative	2(00.50%)	0(00.00%)	2(00.60%)
Chronic diseases			
No	140(35.00%)	5(09.40%)	135(38.90%)
Yes	260(65.00%)	48(90.60%)	212(61.10%)
Regularly medical use			
No	208(52.00%)	17(32.10%)	191(55.00%)
Yes	192(48.00%)	36(67.90%)	156(45.00%)
Eyes problem			
No	219(54.80%)	18(34.00%)	201(57.90%)
Yes	181(45.20%)	35(66.00%)	146(42.10%)

Table 5 *(continued)*

Characteristics of subjects	Total N = 400	With falls n = 53	Without falls n = 347
Poor balance			
No	298(74.50%)	23(43.40%)	275(79.30%)
Yes	102(25.50%)	30(56.60%)	72(20.70%)
Alcohol consumption			
No	369(92.30%)	48(90.60%)	321(92.50%)
Yes	31(07.80%)	5(09.40%)	26(07.50%)
Perceived risk of falls			
No	237(59.30%)	9(17.00%)	228(65.70%)
Yes	163(40.70%)	44(83.00%)	119(34.30%)

Part 3 Perceived fall risk factors

The data as shown in table 6 was the perceived fall risk factors in the subjects. The perceived fall risk factors were categorized into three aspects (perceived intrinsic fall risks factors, perceived extrinsic fall risks factors, and total perceived fall risks factors). Based on the level of perceived fall risk factors (page 31), the results showed that all aspects of perceived fall risk factors of the subjects were at high level of the perceived falls risk factors.

Table 6

Range, mean, standard deviation, and level of perceived fall risk factors.

Perceived fall risks factors	Range	Mean	S.D	Percent	Level of perceived fall risk factors
Perceived intrinsic fall risk factors	14 - 40	34	4.58	85	high
Perceived extrinsic fall risk factors	10 - 40	31.84	8.08	80	high
Total	24 - 80	65.83	11.12	82.29	high

As shown in table 7, based on the level of perceived fall risk factors in this study (page 31), it was found that 67% of the subjects had high level of total perceived fall risk factors. In each categorized, the results showed that 71% of the subjects had high level of perceived intrinsic fall risks factors and 62.3 % of the subjects had high level of perceived extrinsic fall risks factors.

Table 7

Frequency and percentage of the subjects categorized according to the level of perceived fall risk factors.(N = 400)

Level of perceived falls risk factors	Perceived intrinsic fall risk factors Frequency (percent)	Perceived extrinsic fall risk factors Frequency (percent)	Perceived fall risk factors Frequency (percent)
High	284 (71%)	249 (62.3%)	268 (67%)
Moderate	100 (25%)	82 (20.5%)	100 (25%)
Low	16 (4%)	69 (17.2%)	32 (8%)

Part 4 Falls preventive behaviors

The data as shown in table 8 was the falls preventive behaviors in the subjects. The falls preventive behaviors were categorized into three aspects (preventive intrinsic fall risks factors, preventive extrinsic fall risks factors, and total falls preventive behaviors). Based on the categorized of level of falls preventive behaviors (page 32), the results showed that the preventive intrinsic fall risk factors and total falls preventive behaviors were at moderate level of falls preventive behaviors. While the preventive extrinsic fall risk factors were at high level of falls preventive behaviors.

Table 8

Range, mean, standard deviation, and level of falls preventive behaviors.

Falls preventive behaviors	Range	Mean	S.D	Percent	Level of falls preventive behaviors
Preventive intrinsic fall risk factors	20 – 60	40.98	6.8	68.29	moderate
Preventive extrinsic fall risk factors	13 – 52	43.28	7.9	83.23	high
Total	34-112	84.25	12.9	75.29	moderate

As shown in table 9, based on the level of falls preventive behaviors in this study (page 30), it was found that the total of falls preventive behaviors of the subjects equal for moderate level of falls preventive behaviors (55.8%). In each categorized, the results showed that 63% of the subjects had moderate level of preventive intrinsic fall risks factors and 61% of the subjects had high level of preventive extrinsic fall risks factors.

Table 9

Frequency and percentage of the level of falls preventive behaviors of the subjects. (N = 400)

Level of falls preventive behaviors	Preventive intrinsic fall risk factors Number (percent)	Preventive extrinsic fall risk factors Number (percent)	Perceived fall risk factors of Number (percent)
High	66 (16.5%)	244 (61.0%)	141 (35.2%)
Moderate	252 (63.0%)	122 (30.5%)	223 (55.8%)
Low	82 (20.5%)	34 (8.5%)	36 (9.0%)

The data as shown in table10 was the falls preventive behaviors in the subjects. The top three of falls preventive behaviors in the elderly which the most elderly usually practice were careful for walk (78.8%), careful in bath room and toilet (78.5%), and wear shoes which is stick on the ground (74.8%). For the top three of falls preventive behaviors, which the most of elderly never practice were the eye checking 1 time per year (62.5 %), the medical verify when found eye problem (53.9%), and the exercise 20-30 min per day at less 3 times per weak (32.3 %).

Table 10

Frequency and percentage of the subjects categorized by falls preventive behaviors.

(N = 400)

Falls preventive behaviors	Never practice		Practice sometime		Practice often		Practice always	
	(n)	%	(n)	%	(n)	%	(n)	%
1. Move carefully	19	4.8	14	3.4	52	13.0	315	78.8
2. Avoid life a lot of things.	77	19.2	32	8.0	76	19.0	215	53.8
3. Every time when you reach for catch something, you should hold with things that support your body.	70	17.5	87	21.8	105	26.2	138	34.5
4. Avoid being in dangerous areas such as areas with a lot of people, and traffic area.	85	21.3	48	12.0	141	35.3	126	31.4
5. Do daily activities too fast.	49	12.3	65	16.3	142	35.5	144	35.9
6. Change the position slowly such as change position from sit to stand, or from sleep to sit.	34	8.5	55	13.8	133	33.2	178	44.5
7. Avoid activities when you feel insufficient rest.	29	7.2	66	16.5	121	30.3	184	46.0
8. Exercise for 20-30 min per day at least 3 times per week.	129	32.2	119	29.8	63	15.8	89	22.2
9. Choose the soft exercise and moderate movement.	123	30.8	81	20.2	83	20.8	113	28.2
10.Annual health checking	117	29.2	145	36.3	60	15.0	78	19.5

Table 10 *(continued)*

Falls preventive behaviors	Never practice		Practice sometime		Practice often		Practice always	
	(n)	%	(n)	%	(n)	%	(n)	%
11. Continue follow up when you have chronic diseases or abnormal symptoms.	55	13.8	58	14.5	98	24.5	189	47.2
12. Take medication as the physician prescribed and shouldn't buy, stop taking, and reduce dose without the physician prescribed.	62	15.5	64	16.0	93	23.3	181	45.2
13. Consult doctor, pharmacist, etc. when you have a medical condition.	39	9.8	69	17.3	64	16.0	228	56.9
14. Get eye examination yearly	250	62.5	73	18.2	46	11.5	31	7.8
15. Get eye examination when you have poor visual / eyes problem.	215	53.8	65	16.3	60	15.0	60	14.9
16. Survey environment inside and outside a house.	28	7.0	68	17.0	114	28.5	190	47.5
17. When you found dangerous areas, you should tell everyone to explore.	22	5.5	58	14.5	105	26.3	215	53.7

18. When there is poor lighting in walkway, you should tell everyone to modify.	24	6.0	53	13.3	78	19.5	245	61.2

Table 10 *(continued)*

Falls preventive behaviors	Never practice		Practice sometime		Practice often		Practice always	
	(n)	%	(n)	%	(n)	%	(n)	%
19. You participate in setting furniture.	30	7.5	97	24.3	84	21.0	189	47.2
20. Check the furniture for firmness.	43	10.8	77	19.2	109	27.2	171	42.8
21. You should walk carefully when floor is wet.	17	4.2	40	10.0	87	21.8	256	64.0
22. Be careful when you in toilet.	14	3.5	17	4.2	55	13.8	314	78.5
23. When you in the toilet, you should catch handrail or things such as big jar or bath seat	58	14.5	48	12.0	73	18.2	221	55.3
24. You always participate to maintain the toilet floor that is clean.	35	8.8	97	24.2	96	24.0	172	43.0
25. Use a shoe that low heel.	16	4.0	26	6.5	62	15.5	296	74.0
26. You wear the shoes that good to catch the floor.	17	4.2	25	6.2	59	14.8	299	74.8
27. Use costumes that fitting.	35	8.8	17	4.2	56	14.0	292	73.0

28. Use assistant equipment in moving.	22	5.5	41	10.3	64	16.0	273	68.2

Part 5 The relationship between perceived fall risk factors and falls preventive behaviors

Relationship between perceived fall risk factors and falls preventive behaviors were categorized into three aspects (intrinsic fall risk factors, extrinsic fall risks factors and total).

As shown in table 10, the relationship between perceived fall risks factors and falls preventive behaviors of each aspects as follows;

There was low positive relationship between perceived intrinsic fall risk factors and preventive intrinsic falls risk behaviors ($r = 0.282$, $p < 0.01$)

There was a very low positive relationship between perceived extrinsic fall risk factors and preventive extrinsic falls risk behaviors ($r = 0.129$, $p < 0.01$)

There was low positive relationship between perceived fall risk factors and falls preventive behaviors ($r = 0.277$, $p < 0.01$).

Table 11

Relationship between perceived fall risk factors and falls preventive behaviors of the subjects.

Falls preventive behaviors Perceived Fall risk factors	Intrinsic risk factors	Extrinsic risk factors	Total
Intrinsic risk factors	0.282*	0.003	0.147*
Extrinsic risk factors	0.415*	0.129*	0.298*
Total	0.418*	0.092	0.277*

* $p < 0.01$

Discussion

This descriptive correlational study aimed to describe the perceived fall risk factors and falls preventive behaviors among the elderly in community and their relationships among the elderly in community, Yala province. Represents by 400 elderly aged 60 years and above, living in community, Yala province.

Demo characteristics of the subjects

Demo characteristics of the subjects in this study were not different from those of Thai elderly in general. In this study, mean age and its standard deviation were 70.5 years and 7.58 years. Similarly, in a national survey conducted by Jitapunkul and colleagues (1998) the mean age was 70 years and standard deviation was 8.1 years. Another study about health of Thai elderly also reported a mean age of Thai elderly was 70 years and standard deviation 7.3 years (Jitapunkul, et al., 1999). Half of the subjects in this study were female (50.3%) and married-live together (65.5%). This is similar to other study which found that, 55% of Thai elderly were female and 61.9% of Thai elderly were married-live together (Jitapunkul, et al., 1998). In terms of education level, fifty one percent of the subjects in this study had no formal education (51%). This is consistent with the national survey conducted by National statistics Office (Siripanitch, 1999) nearly half of Thai elderly who live in southern part of Thailand had no formal education (48%). Interestingly, most subjects in this study felt or perceived that they had sufficient income (82%) and lived with their spouse or adult children. These same characteristics of the subjects implied that most of them had sufficient income (81%) and had someone to take care of them (92%) (Jitapunkul, et al., 1998).

Health related demo characteristics

In this study, more than half of the subjects had chronic diseases (65%) and the most common was Orthopedics diagnosis (59.2%). These same characteristics of the subjects in the study of Teerunda and Sanjai (2002) 51% of the elderly had chronic diseases and the most common was Orthopaedic diagnosis (36.5%). This is similar to other studies (Chayovan, et al., 1991; National statistical office, 1997; Chayovan & Nodel, 1999) that the most common disease in Thai elderly was musculoskeletal disease / Orthopaedic diagnosis (74.6%, 72.4%, and 68%). Only 13.3% of the subjects in this study had experience of falls in last six months. Similarly, in a national survey conducted by Jitapunkul and colleagues (1998) 18.7 % of Thai elderly had one or more falls during the last six months. 34% of the subjects in this study fell around the home and garden, equally. This finding is consistent with the study by Jittapunkul, et al. (1998) which found most incidences occurred outside the home. It is likely because of the older mean age of the subjects in this study nearly the previous study (70.05 & 69,1, respectively). Elderly Thai people tend to have low levels of activity, and spend more time indoors when their age increases. In this study, the majority of the elderly worked in agricultural occupations (48.5%) and housework (37%). Therefore, they spent most of their time outside the home. In this study, most of the subjects who had experience of falls in last 6 months (58.52%) reported extrinsic factors as the main cause of falls, such as tripping and slipping. This is consistent with several studies (Blake, et al., 1988; Lach, et al., 1991). This result may imply that the environments in Thai home and outside are not suitable and safe for the elderly, particularly the design characteristics of floors. Spills on floor or irregular floor surfaces associated with the elder's decrease in

visual acuity and depth perception, mean that the elderly may trip and fall because of failure to see a curb or step. With the reduction of visual field size, the elderly may not be aware of approaching people or objects (Stone & Chenitz, 1991).

There were difference between the subjects who had and no had experience of falls in last six months in age, sex, medication, eyes problem, poor balance, and perceived risk of falls.

The mean age and its standard deviation of the subjects who had experience of falls in last six months were 72.72 years and 8.5 years, while those of subjects who didn't had experience of falls in last six months were 69.64 years and 7.4 years. The finding of an association between advance age and likelihood of falls was the same as those reported in several previous studies (Chan, et al. (1997); Dolinis, et al., 1997; Mendez-Rubio, et al., 1997; Thaimwong, et al., 2001). It is known that the older elderly have a higher risk of falls than the younger elderly because poorer health status and functional abilities. Aging and physiological changes might cause many disorders simultaneously, such as gait changes and reduction in limb coordination, that cause the elderly no longer lift their feet as high as he/she used to, and prone to trip on uneven paving stones or curbs (Overstall, 1980).

The majority of the subjects who had experience of falls in last six months were female (67.9%), but the subjects who had no experience of falls in last six months were male (52.4%). This finding is similar to a report by Assantachai and colleagues (2002), Jitapunkul and colleagues (1998), and Pasunan and colleagues (1998) that female elderly are more likely to falls than male elderly. This may be explained by several reasons which are more commonly found in women: 1) low proximal leg strength from

age-related changes (Campbell, et al., 1989); 2) different patterns of living activity, such as housework rather than gardening, which may be less effective in maintaining muscle strength; 3) obesity, which reduces stability and leads stumbles or tripping (Campbell, et al., 1990); 4) body sways (Overstall, et al., 1977); 5) different in gait pattern-elder women tend to walk with a waddling gait and have a narrow walking and standing base whereas elder men tended to walk with a small-stepped gait and have a wide walking and standing base (Tideiksaar&Kay, 1986); 6) use of high heel footwear which has been suggested as a contributing factor to fall in women (Gabell, et al., 1985 cited by Campbell, et al., 1990); 7) underreportage of falls in men deu to reluctance (Campbell, et al., 1990; Jittapunkul, et al., 1998); and 8) living alone-women living alone may carry out tasks which were normally done by men and more likely to lead to falls. The lack of partner with whom to share tasks may lead to tiredness and consequent clumsiness (Wickham, et al., 1989 cited by Campbell, at al., 1990).

While more than half of the subjects who had experience of falls in last six months reported they had chronic disease at least one and taking current medication (67.9%), only 45% of the subjects who had no experience of falls in last six months present with at least one disease and taking current medication. Medication commonly associated with increased risk for falls. Medication can contribute causing drowsiness, poor balance, and postural hypotension (Letvak & College, 2000). Fallers were more likely to take either four or more medication or have had at least one fall-specific medication during the past six months compare to non fallers (Fuller, 2000; Ignatavicius, 2000).

Around 66% and 56.6% of the subjects who had experience of falls in last six months reported they had problem with eyes and balance. But only 42.1% and 20.7% of the subjects who had no experience of falls in last six months reported they had problem with eyes and balance. The finding that visual impairment is significant risk factor that increases the likelihood of fall was confirmed by number of studies (Assantachai, et al., 2002; Chan, et al., 1997; Dolinis, et al., 1997; Dresner-Pollak, et al., 1996; Koski, et al., 1998; Nevitt, et al., 1989; Yasumura, et al., 1994). It may be that impaired visual acuity lead to inaccurate awareness of environmental obstacles or configuration and increases the risk of slipping or tripping accidentally (Dargent-molina, et al., 1996). The finding of significant association between balance impairment and likelihood of falls was similar to several previous studies (Lord, et al., 1991; Maki, et al., 1994; Nevitt, et al., 1991; Speechley & Tinetti, 1991). The elderly who have reduced protective reflexes and peripheral neuropathy are more prone to falling when developing mobility impairment (King & Tinetti, 1995; Rose, et al., 1991; Spellbring, 1992).

In this study, the majority of subjects who had experience of falls in last six months perceived their risk for falls (83%), only 34.3% of the subjects who had no experience of falls in last six months perceived their risk for falls. Perceived risk of falls is individual's feeling of his/her risk for falls. An individual's perception of risk should be concordant with his or her actual risk. (Pender, et al., 2002). Because the subjects who had experience of falls in last six months, they were more likely to fall. From the previous study, having a history of falls was found to be significantly associated with risk of falls. This finding was support by four longitudinal studies that history of falls

was a strongest of predictor of falls (Graafmans, et al., 1996; Luukinen, et al 1995; Nevitt, et al., 1989; Suzuki, et al., 1999). Additional, Luukinen and colleagues (1995) concluded that a history of falls was a significant risk factor for recurrent falls. Recurrent falls were more likely to result from intrinsic factors, which were difficult to change (Graafmans, et al., 1996). The elderly who had history of falls were more likely to have a repeated fall.

Perceived fall risk factors

From the study, it was found that the subjects in the study had the mean score of perceived fall risk factors were 65.83 which were in the high level. In considering the frequency of the subjects' perceived of risk of falls, 67% of our subjects had a high level, 25% had a moderate level and 8% had a low level. In this study, 49% of the subjects were illiterate. Education takes an important role in helping people to gain knowledge and fall was an accident commonly found since human were a kid until the elderly (Ingalls & Sallerno, 1983). This could be possible that the elderly learn a lot from their previous experience. Furthermore, these experiences are transformed into skills in that person. This proficiency is a socialization process that each person gained from the child aged until the old aged (Prajanapatjaneuk, 1995). Therefore, the perceived falls risk factors in the elderly was a direct experience embedding in that person, and with the increasing influence of new technology, the public health system could spread knowledge and information about health care to everybody more easily. Besides, the elderly could gain information by watching television, listening to radio as well. Most elderly had at least one health problem which influences the elderly to pay

attention to their own health more. It can be concluded that the elderly had a tendency to perceive intrinsic falls risk factors more than extrinsic falls risk factors. Apart from this, the lack knowledge of extrinsic risk factors – using a mat, using the utilities, using bar in the toilet – which the elderly never realize that there are related to fall risk factors. In conclusion, in this study focus on the study of the perceived fall risk factors and fall preventive behaviors, so can not conclude or point out only from one factor.

Falls preventive behaviors

From this study found that the mean score of falls preventive behaviors was at a moderate level (X = 84.25). When consider from the number of the subjects, 55.8 % of the subjects had moderate level of falls preventive behaviors, 35.5 % of the subjects had high level of falls preventive behaviors, and only 9% of the subjects had low level of falls preventive behaviors.

The top three of falls preventive behaviors, which the most elderly usually practice were careful for walk (78.8%), careful in bath room and toilet (78.5%), and wear shoes which is stick on the ground (74.8%). And the top three of falls preventive behaviors, which the most of elderly never practice were the eye checking 1 time per year (62.5 %), the medical verify when found eye problem (53.9%), and the exercise 20-30 min per day at least 3 times per week (32.3 %). Falls preventive behaviors of the elderly in this study consistent with Pornputasa study (1999) found that all falls prevention behavior in the elderly practice correctly as wearing the low-heeled shoes fit to foot (100 %), choose suitable wearing (99 %) and careful for movement 98 %. In this study, it could be explained that the elderly in community admire wearing well-fitting

and wearing slippers which the low-heeled, also the believe of the elderly ought to move carefully including the suitable changing of movement. And the top three that the most elderly never practice were the eye checking (74.5 %), the construct of holding hand in toilet (58.2%) and enough the exercise (43 %). Also congruent with Ubonwan study (1998) found that the most of elderly self care behavior for accident protection emphasize to the safety environment. Meaning, the most action of fall prevention behaviors in the elderly meditate only extrinsic risk factors not refer to the health care and the health of human body developing for well standing control.

About the eye checking, although this study was discovered 45.25 % of eye problem in the subjects and 62.5 % of the elderly never check the eye. This study is similar to the study about using of the government clinic at northern for eye disease (Ministry of Public Health, 1982) found that the customers for checking the eye so less. The factors of decision for the eye problem customers are the convenient as close to home, a neighbor suggestion, the trust in capabilities of the doctors and the officers at the eye division, and the health officer suggestion. The lack of these factors might be the reasons to the elderly were not check the eye. The study result showed that only 60.22 % of the elderly had eye problem and get treatment. This may be explained that the entire elderly think the problem in poor vision was the normally for the elderly and its can not improve or repair. Also they were not important to see the doctor because it is useless for the eye as same as younger time. The reason show that the elderly not understands for the eye caring, including to the interesting in the little fell. In the other way, Not only in the community lack the eye caring center or unclear eye checking

center for the elderly to be care and improve the eye but also the fees are high price not suitable for the oldie economy.

About fall preventive behaviors for the exercise, only 32.3% of the elderly exercise 20-30 min per day at least 3 times per week. Similar to the study of Pothiban (1993) and Punyothee (1996) which found that the elderly in community, Chiang Mai province lacked of exercise and the study of Churinta (1997) for the upper north discovered 67 % the elderly in community did not exercise. For this study, it could be explained that the reason of the unexercised form the older sample that 65 % of them had a chronic disease and the most older believe that the old age are the time to relax not ought to exercise as the young age (Boonyanupong, et al., 1983), also the body structure and muscles for the elderly are problem (Siripanitch, 1981) This study found that Orthopaedic diagnosis to underlying disease 59.2 % of the subjects, make treat to the exercise .

Relationship between perceived fall risk factors and falls preventive behaviors

According to this study, the hypothesis stated that there is a positive relationship between perceived fall risk factors and falls preventive behaviors among the elderly in community. It was found that the perceived fall risk factors and falls preventive behaviors have low positive relationship ($r= 0.277$, $p<0.01$). However, the correlation between perceived risk factors of fall and falls preventive behaviors test was low. This can be explained that the perception in each person is the identity of practical behavior and there might be other factors, which influenced with falls preventive behaviors, such as age, education, socioeconomic factors which did not include in the

present study. There are many factors associated with health behavior (Mainan & Becker, 1974). Pender (1996) stated that health behavior relied on two factors. The two factors were individual characteristic and experience; and behavior specific cognition and affect. This concept corresponds with Becker's concept of perception (Becker, 1974) which stated that people will conduct health behavior when they are ready to perform with justified perception. The perception is in aspect of perceived susceptibility of disease or complications.

Perceptions of risk are important because they have been found to influence health behaviors. If the elderly believe themselves to be at risk for fall, they are more likely to do something about it (Shantinath, 2003). Basically, human are afraid of danger, and they don't want to be harmful (Hanucharoenkul, 1996). From the instinct, human want themselves to be safety, and in the same way for the elderly that they want the security as well. This natural desire affects to their positive thinking and encourages them in preventive measures. It is in accordance with Pender's statement – an individual will have happiness in life when he/she conduct good health promoting behavior because the behavior can prevent and control possible complication and can reduce health problems; and, thus, remain healthy (Pender, 1987). This encouragement in the elderly is in accordant with the study of Nemcek (1990) which emphasized that the perceived in the risk of getting the breast cancer has a relationship with the behavior of self breast examination the highest, the study of Rundull & Wheeler (1979) which stated that the observation in the risk of getting the cold in the elderly has a relationship with the tendency to received vaccination, and the study of Mundt (1992) which defined

that the perception in the risk of getting hepatitis has a connection with the behavior of receiving a hepatitis vaccination among the nurses.

Due to the low positive relationship between the perceived fall risk factors and the falls preventive behaviors, it could be explained that the elderly who perceived the risk in falling in the highest level might not have the capability to prevent themselves from the fall. Since there are many measures such as the annual checking program which the elderly didn't realize that they were helpful for them in preventing from the fall, so they ignored to do that. Besides, some activities- health problems and body competence- caused a burden and blocked the elderly from the exercising habit. Some preventive measures need other aspects such as health checking and eye checking to include for the consideration, but with time limitation, inconvenient traveling to the hospital and the health problems are the obstacles. For the workout in the aged, the subjective norm agreed that exercising is not suitable for the elderly (Boonyanupong, et al., 1983). Moreover, health problems led to less training habit as in the study which emphasized that the subjects in the study had underlying disease; namely, orthopedic diagnosis (59.2%), hypertension (46.5%), diabetes mellitus (6.5%), and heart disease (6.5%) making the aged had a limitation in the workout. This result was in line with the study of Conn (1990) stated that joint problem and fatigue are main aspect annoying exercising activities. In the decorating and repairing the dwelling, it needed monetary status together with economic and social condition to include for the consideration.