Mortality of the Thai Elderly: Preliminary Findings from HART Panel Survey[1]

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Abstract
The paper reviews the mortality situation of the Thai elderly using the panel data from the second wave of Health, Aging, and Retirement in Thailand (HART) Project. The preliminary results of the mortality situation by variation in demographic characteristics, work status, causes of death, and heritance, debts, and insurance are explored. To reduce mortality or induce life security and healthy life expectancy, the results suggest the policy focuses on improving the socio-economic equality in regional or urban-rural development, conducting preventive health care, promoting elderly employment, strengthening family institution, and improving financial literacy of Thai people at all age groups.

Keywords: Mortality of the elderly, panel data of the Thai elderly, Thailand

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Introduction

Thailand has become an aging society since 2005 with the number of population aged 60 or over reaching approximately 7.0 million (around 10 % of the total population). Currently, the number increases approximately to 11.7 million or around 17% and it is projected to reach 23.0 million or around 35% in 2050. The life expectancy at age 60 for females is 23.1 years and for males is 20.0 years (UN, 2017). The magnitude in terms of the number of the elderly with the expected life span of longer than 20 years has led to the necessity for appropriate public policies to assist the elderly population to age actively with better quality of life. To formulate the appropriate policies scientific data at the household level are required. The scientific data at the household level of the elderly should be related to the behavioral data on aging in multi-dimensional aspects of their life, e.g. family and family transfers, health and cognition, employment, life expectation. The Center for Aging Society Research, National Institute of Development Administration, has conducted the national panel survey on the Health, Aging, and Retirement in Thailand (HART) since 2014. Two waves of the panel survey have been completed in 2015 and 2017, respectively. In Wave 2, the survey conducted the first exit interview for the same respondents in the previous survey, i.e., Wave 1, who died. Thus, the exit data is the base-line mortality data of the deceased respondents from the household panel.

With the availability of the base-line mortality data of the Thai elderly, this paper focuses on the preliminary findings related to the demographic characteristics, the causes of death, and the financial management of the deceased Thai elderly. It is of high hope that with more mortality data from longitudinal panel survey of the HART project as expected in 2019 (Wave 3), the rigorous analysis of mortality of the Thai elderly related to any interested issues, such as healthy life expectancy (Karcharnubarn, 2015) or obesity (Vapattanawong et.al., 2010) can be conducted. This paper is organized into 4 parts. After introduction in the first part, panel data from the Thai elderly panel survey (HART) will be briefly explained in part II. Part III the preliminary findings of mortality of the Thai elderly will be presented with the conclusion in the final part.

Panel Data from the Thai Elderly Survey, HART

The Health, Aging, and Retirement in Thailand (HART) is the first panel survey and study project on aging in Thailand. Under the Center for Aging Society Research (CASR), National Institute of Development Administration (NIDA), the project is aimed to create a panel and longitudinal data base at the household level on the aging behavior of the Thai population in multi-dimensions, i.e., demographic characteristics, family and family transfers, health and cognition, employment, income, assets and debts, and life expectation. The multi-dimension data are collected from a panel of the national representative households with one member aged 45 or older interviewed.

Realizing the importance of an aging society that Thailand would become and inspired by the Health and Retirement Study (HRS), Institute for Social Research (ISR), University of Michigan since 2007, the HART project has been initiated. Two

pilot surveys of the HART project[3] with 1,500 household samples from 2 provinces were conducted in 2010 and 2011 (Anantanasuwong, et.al. 2011 and 2012). The base-line national survey of the HART project[4] with 5,600 household samples from 2 provinces in each region and from Bangkok and Vicinity was conducted in 2015 using the paper and pencil interview (PAPI) instrument (Anantanasuwong, et.al. 2017). However, with the magnitude and complicated field survey management in conducting the longitudinal panel survey, the HART researchers decided to use the computer assisted personal interview (CAPI) instrument in Wave 2 of the national survey (Anantanasuwong, et.al. 2018). This change in interview instrument was made possible by the generous collaboration from HRS and Survey Research Center (SRC) at ISR[5] in providing computer programs (Survey Trak, Web Trak, and Blaise), server, and laptops for the field survey[6]. The Wave 2 field survey was completed in June 2017 with many challenges from implementing the new survey instruments and management. However, the data has been compiled with the base-line data in the EXCEL files[7].

In the Wave 2 survey, a set of data have been collected from the deceased respondents. These respondents were interviewed in the base-line or Wave 1 survey, but died in the second wave. The data on the deceased respondents were collected from the 'exit interview' with their spouse or proxy. The main questions were related to the deceased respondents on when and where they died, what kinds of contribution to their family before they died, what was the cause of death, what kind of work they did before death, how they manage their inheritance or will, and whether they left any debt burden behind.

Thus, the exit data from the second wave provide the base-line mortality information of the deceased samples. Preliminary main findings from the available data are presented in the following part.

Mortality of the Thai Elderly: Base-line Results

The Wave 2 field survey of HART completed with the response rate of 68.09% or 3,824 out of 5,616 sample interviews. Among this proportion, the number of 133

[3] The HART project was funded by the National Research Commission of Thailand (NRCT) in Fiscal Year (FY) 2009 for its first or base-line pilot survey, while its second pilot survey was supported by the research fund from the Commission for Higher Education Commission (CHE) in FY 2011. The pilot household samples of 1,500 were randomly selected from Bangkok and Khon Kaen.

[4] The national HART project were funded by NRCT in FY 2014 and FY 2016 for its Wave 1 or base-line survey and the Wave 2 survey, respectively. The household samples were randomly selected from 1-2 provinces from each regions, i.e., Chiangmai and Uttaradit from the North, Khon Kaen and Surin from the Northeast, Chanthaburi from the East, Petchabun and Singburi from the Central, Songkla and Krabi from the South, and Bangkok and Vicinity (i.e., Nonthaburi, Pathum Thani, and Samuth Prakarn). Thus, the 5,600 household samples were randomly selected from 13 provinces as the base-line national panel.

[5] The collaboration is under the Memorandum of Understanding (MOU) for Academic and Research Cooperation between the National Institute of Development Administration and the Regents of the University of Michigan on Behalf of Its Institute for Social Research, Survey Research Center, signed in April, 2016.

[6] Arguably, it is the first time that the computer programs and CAPI were introduced into the field survey in Thailand in collecting longitudinal panel data.

[7] The data files currently are kept at CASR. They will be transferred to the Intelligence and Information Center (IIC), NIDA in February, 2018.

respondents (3.5%) died. The exit interviews with the spouse of the deceased or with the proxy, who was a family member, were conducted. The results from the field survey are as followed:

Demographic structure of mortality

Table 1 presents the summary of the demographic characteristics of the respondents who died in the HART Wave 2 survey. By region, the proportion of deceased respondents were highest in the northeastern region (27.82%), but it was lowest in the eastern region and in Bangkok and Vicinity (9.02% and 6.02%, respectively). The high mortality occurred in the poorest region in terms of economic growth and lowest in the richest regions. According to the Office of the National Economic and Social Development Board of Thailand (NESDB), in 2015, GDP per capita in the eastern region was the highest (432,712 Baht), seconded by that in Bangkok and Vicinity (410,617 Baht); while the lowest GDP per capita was in the northeastern region (70,906 Baht). Research on the relation between regional economic development or regional economic growth and mortality of the elderly in Thailand, or the impact of regional economic development on mortality (or in another dimension, on the healthy life expectancy) should be further encouraged.

Considering the living areas, most of the deceased respondents lived in the rural area (64.66%), while only 35.34% lived in the urban area. This different proportion may reflect that the better living conditions (e.g. more/better medical services, better transportation system, and richer cultural or better sanitary environment) in the urban can keep the elderly live longer than living in the rural area.

By age group, the proportion of deceased respondents increased according to the age, i.e. more respondents died when they were older. The proportion of the entering-old age group (45 – 59 years old) who died was 9.77%, the young-old group (60 – 69 years old) was 15.79%. For the mid-old (70 – 79 years old) and the oldest old (80 years old or over) groups were 22.56% and 51.88%, respectively.

In terms of gender, the proportion of the male deceased respondents was higher than that of the females (57.89% and 42.11%, respectively). The result is consistent with the life expectancy at 60 of the Thai males, which is shorter than that of the Thai females (20.0 years and 23.1 years, respectively) (UN, 2017:30).

Considering marital status, most of the respondents who died, were married legally or commonly without marriage registration (50.38%), followed by the deceased respondents who were widowed (42.11%). Only 6.02% were single.

For the place where the respondents died, it is noted that 61.07% of the deceased respondents died at home, followed by 38.17% at hospital. Only a very few of them died at nursing home (0.76%). The results imply the importance of family cares. Home or family institution is the main place where the Thai elderly are at the end of their life.

The final finding in this part is related to the work status of the deceased respondents before their death. From Figure 1, the proportion of the deceased respondents who did not work increased when getting older, i.e., 12.50% in the entering-old age group (45

– 59), 26.67% in the young-old group (60 – 69), and 47.37% and 44.83% in the mid-old (70 – 79) and the oldest-old (80+) groups, respectively. For the ones who worked, most of them in every age group hold 2 jobs, both being employed and having own business (from approximately 40 - 50%). About 45% of the deceased respondents in the oldest-old age group, who worked, also hold 2 jobs. Approximately 25% of the younger age groups, especially the entering-old age and the young-old, worked as employees, while 7% to16% in every age group worked in their own business.

Table 1: Demographic characteristics of the deceased respondents

Demographic Characteristic	Number (persons)	%
By region (n = 133)		
Bangkok & Vicinity	8	6.02
Central	29	21.8
East	12	9.02
Northeast	37	27.82
North	18	13.53
South	29	21.8
By living area (n = 133)		
Urban	47	35.34
Rural	86	64.66
By age group (Years) (n = 133)		
45 - 59	13	9.77
60 - 69	21	15.79
70 - 79	30	22.56
80+	69	51.88
By gender (n = 133)		
Males	77	57.89
Females	56	42.11
By marital Status (n = 133)		
Married	67	50.38
Separated	1	0.75
Divorced	1	0.75
Widowed	56	42.11
Single	8	6.02
By place of death (n = 131*)		
Hospital	50	38.17
Nursing home	1	0.76
Home	80	61.07
By working status before deceased (n = 71*)		
Unemployed	27	38.03
Employed	7	9.86
Own business	8	11.27
Both employed and own business	29	40.85

Source: HART Wave 2 Survey in 2017
Note: * Excluding the ‘don’t know’ answers

More detail study should be focused on the employment of the mid-old and the oldest-old since, in general, their physical health may not be fitted for working. What are the motives or incentives for the old age groups to continue working? What kind of working conditions that suitable for the old age groups in keeping on working?

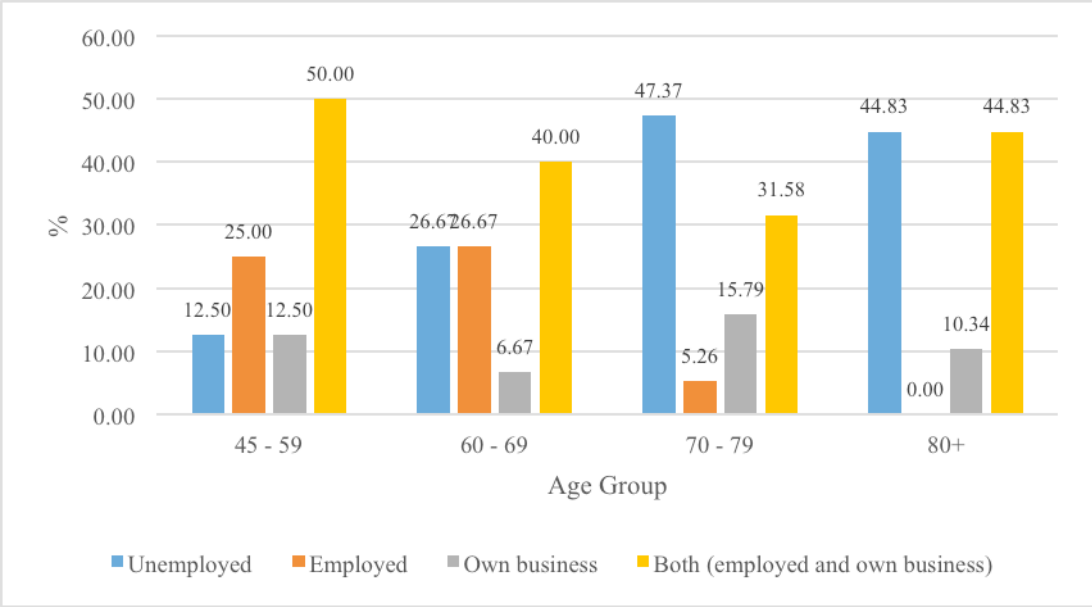

Figure 1: Work Status of the Deceased by Age Group (in %)

Causes of death by region and living area

The second information from the Wave 2 survey on the deceased respondents is related to the causes of their death. From Figure 2 the non-communicable diseases (NCD) were the main cause of death among the deceased respondents in every region. The highest proportion of the deceased respondents in the central, followed by those in the north, the south, Bangkok and Vicinity, and the northeast, died because of the NCD. The natural cause or die of old age was the second cause of death in every region. The third cause of death was accidents and it occurred only in the central and northern regions. From Table 2, the common main causes of death by type of NCD in all regions were lung diseases or emphysema, vascular diseases / heart disease / heart failure, cancer / malignant tumor, and multiple non-communicable disease. More research should be focused on the health behaviors and the causes of death of the elderly at the region level.

By the living area in Figure 3, the main cause of mortality was NCD compared to natural cause or old age. However, the death caused by NCD were higher in the urban area than in the rural (74.47% and 65.12%, respectively), while those by the natural cause/old age were lower in the urban than in the rural (23.40% and 30.23%, respectively). The proportion of death caused by accidents was slightly higher in the urban area that in the rural area (2.13% and 1.16%, respectively). In terms of NCD, multiple non-communicable disease, cancer / malignant tumor, and lung Diseases / emphysema were the common main causes of death in both urban and rural areas, while kidney diseases were more common in the urban area.

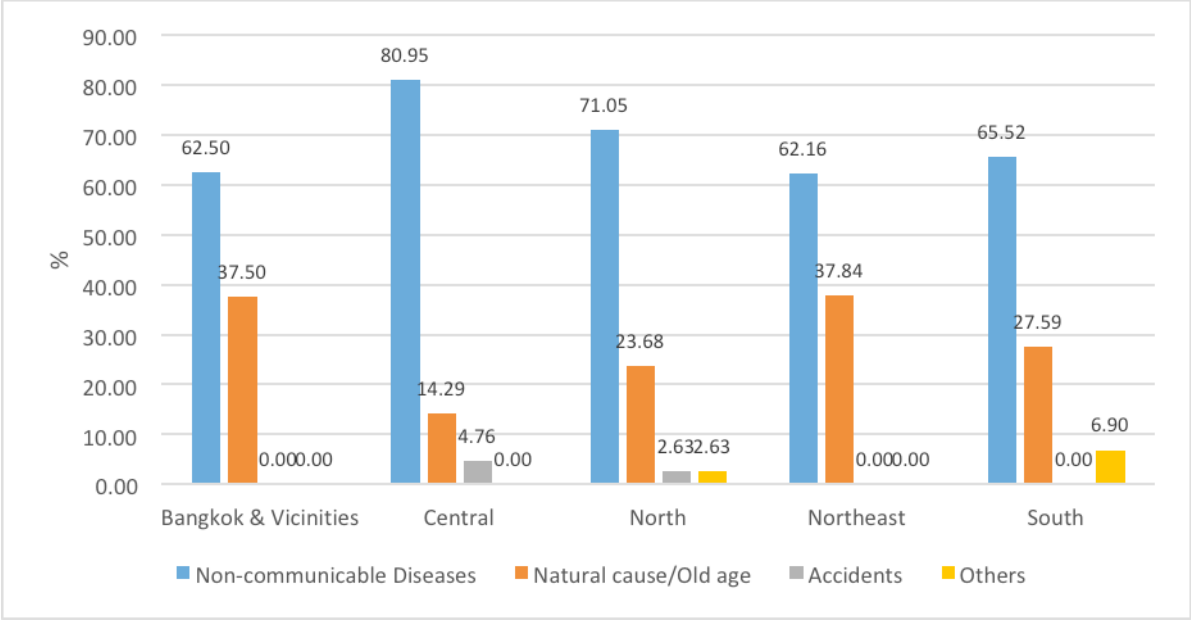

Figure 2: Causes of Death by Region (in %)

Table 2 Type of Diseases Causing Death by Region (in %)

Cause of Death	Region				
	Bangkok & Vicinity	Central	North	Northeast	South
Non-communicable Diseases (NCD)	62.50	80.95	71.05	62.16	65.52
Cancer / Malignant tumor	12.50	9.52	10.53	18.92	3.45
Diabetes / high blood sugar	0.00	4.76	0.00	0.00	3.45
Diseases of the bone / low bone density and osteoporosis	0.00	0.00	2.63	0.00	0.00
Hypertension / high blood pressure	0.00	4.76	0.00	5.41	0.00
Infection disease	12.50	0.00	10.53	0.00	13.79
Kidney diseases	12.50	14.29	7.89	5.41	13.79
Lung Diseases / emphysema	0.00	19.05	15.79	5.41	13.79
Vascular diseases / heart disease / heart failure	12.50	14.29	13.16	2.70	6.90
Multiple non-communicable disease	12.50	14.29	10.53	24.32	10.34
Natural cause/old age	37.50	14.29	23.68	37.84	27.59
Accidents	0.00	4.76	2.63	0.00	0.00
Others	0.00	0.00	2.63	0.00	6.90
Total (n = 133)	100.00	100.00	100.00	100.00	100.00

Source: HART Wave 2 Survey in 2017

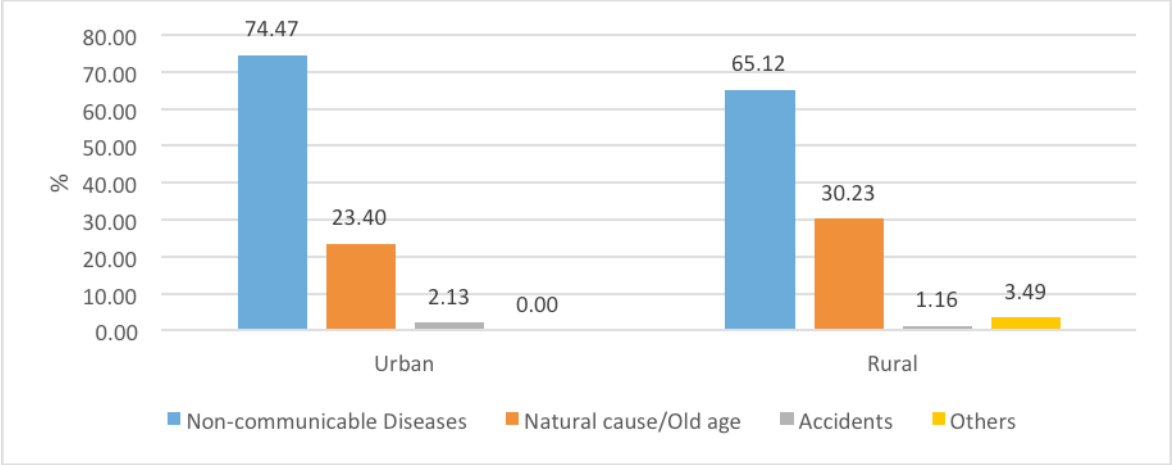

Figure 3: Causes of Death by Living Area (in %)

Table 3: Type of Diseases Causing Death by Living Area (in %)

Cause of Death	Urban	Rural
Non-communicable Diseases	74.47	65.12
Cancer / Malignant tumor	10.64	11.63
Diabetes / high blood sugar	0.00	2.33
Diseases of the bone / low bone density and osteoporosis	0.00	1.16
Hypertension / high blood pressure	2.13	2.33
Infection disease	6.38	6.98
Kidney diseases	14.89	6.98
Lung Diseases / emphysema	12.77	11.63
Vascular diseases / heart disease / heart failure	12.77	6.98
Multiple non-communicable disease	14.89	15.12
Natural cause/old age	23.40	30.23
Accidents	2.13	1.16
Others	0.00	3.49
Total (n = 133)	100.00	100.00

Source: HART Wave 2 Survey in 2017

Cause of death by age group

Considering the mortality by the age group as shown in Figure 4, NCD was the most common cause of death in all age groups (from approximately 55% to 90%). The next cause of death was the natural cause or old age for the mid-old and the oldest-old age groups (about 23% and 43%, respectively). For the young-old age and the oldest-old age groups, about 5% to 1% died because of accidents.

From Table 4, the most common type of NCD causing death for the entering-old age group (45 – 59 years old) was the disease related to heart, i.e. vascular diseases/heart disease/heart failure. For the young-old and the mid-old, the most common type of NCD was cancer/malignant tumor. For the oldest old, lung diseases/emphysema was the most common type. The multiple non-communicable disease was the common

cause of death for all age group, while kidney disease should be concerned for the entering-old age group.

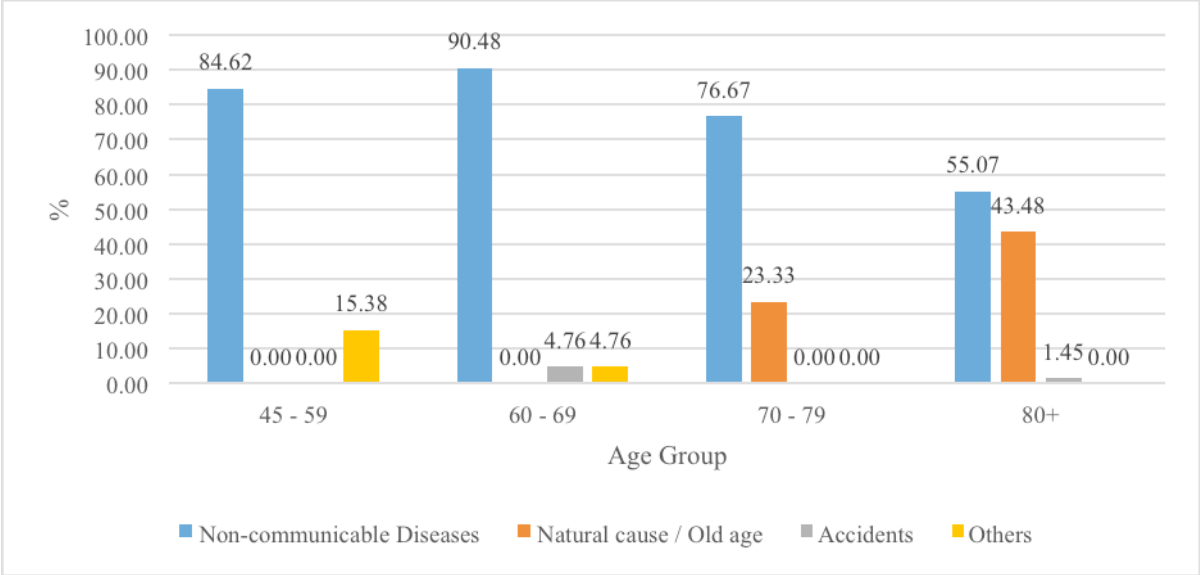

Figure 4: Causes of Death by Age Group (in %)

Table 4: Type of Disease Causing Death by Age Group (in %)

Cause of Death	Age Group (Years)			
	45 - 59	60 - 69	70 - 79	80+
Non-communicable Diseases	84.62	90.48	76.67	55.07
Cancer / Malignant tumor	0.00	28.57	20.00	4.35
Diabetes / high blood sugar	0.00	4.76	0.00	1.45
Diseases of the bone / low bone density and osteoporosis	0.00	0.00	3.33	0.00
Hypertension / high blood pressure	7.69	4.76	3.33	0.00
Infection diseases	7.69	9.52	10.00	4.35
Kidney diseases	23.08	4.76	6.67	10.14
Lung Diseases / emphysema	0.00	14.29	16.67	11.59
Vascular diseases / heart disease / heart failure	30.77	4.76	3.33	8.70
Multiple non-communicable disease	15.38	19.05	13.33	14.49
Natural cause/old age	0.00	0.00	23.33	43.48
Accidents	0.00	4.76	0.00	1.45
Others	15.38	4.76	0.00	0.00
Total (n = 133)	100.00	100.00	100.00	100.00

Source: HART Wave 2 Survey in 2017

Cause of death by gender

The death from NCD was the main causes for both gender, seconded by the natural cause or old age; while a small proportion of the male respondents died from accidents as shown in Figure 5 and Table 5. The proportion of the deceased male respondents from NCD was higher than that of the female (71.43% and 64.29%,

respectively). But higher proportion of the female respondents died from the natural cause or old age. Type of death related to NCD for the male deceased respondents mostly were lung diseases / emphysema and cancer / malignant tumor. For the female deceased respondents, kidney diseases and infection disease, as well as vascular diseases / heart disease / heart failure were the main causes of death. The multiple non-communicable diseases were the common type of NCD for both gender.

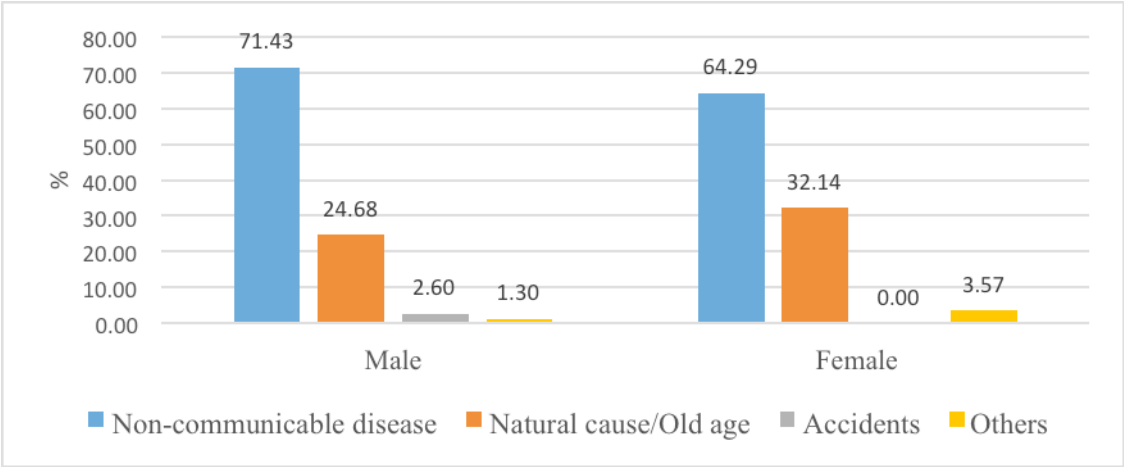

Figure 5: Causes of Death by Gender (in %)

Table 5: Type of Disease Causing Death by Gender (in %)

Cause of Death	Male	Female
Non-communicable disease	71.43	64.29
Cancer / Malignant tumor	14.29	7.14
Diabetes / high blood sugar	2.60	0.00
Diseases of the bone / low bone density and osteoporosis	0.00	1.79
Hypertension / high blood pressure	0.00	5.36
Infection disease	5.19	8.93
Kidney diseases	9.09	10.71
Lung Diseases / emphysema	15.58	7.14
Vascular diseases / heart disease / heart failure	9.09	8.93
Multiple non-communicable diseases	15.58	14.29
Natural cause/old age	24.68	32.14
Accidents	2.60	0.00
Others	1.30	3.57
Total (n = 133)	100.00	100.00

Source: HART Wave 2 Survey in 2017

Financial management

Another topic of interest is how the deceased respondents manage their finance before death whether they left any inheritance or will for their spouse/children, had any debt to be burdened, and had any life insurance. The preliminary results from Table 6 indicates that by age group, before their death, majority of the deceased respondents in every age group had no inheritance or will left for their spouse or children (in total

of 68.42%). Only 27.82% of the deceased respondents had inheritance or will left. The proportion of the deceased respondents that left inheritance or will for their spouse or children increased according to the increase in age.

In terms of debt, majority of the deceased respondents had no debt burden left behind, only 15.04% did. The proportion of having no debt of the deceased respondent increased according to their age. However, most of them (78.95%) had no life insurance, only 17.29% did have life insurance. The proportion of having life insurance seems to decrease with age. However, the high proportion of having life insurance in the oldest-old age group compared to the young-old and mid-old age groups should be noted. As shown in Table 6, 20.29% of the oldest-old group who had life insurance compared to 14.29%, and 10.00%, respectively.

Table 6: Financial Management of the Deceased Respondents by Age Group (in %)

Financial Management	Age Group				
	45 - 59	60 - 69	70 - 79	80+	Total
Inheritance/will (n = 133)					
Yes (inheritance/will)	7.69	14.29	16.67	40.58	27.82
No (inheritance/will)	76.92	85.71	80	56.52	68.42
Don't know	15.38	0	3.33	2.9	3.76
Debt (n = 133)					
Yes (debt)	38.46	33.33	13.33	5.8	15.04
No (debt)	53.85	66.67	83.33	89.86	81.2
Don't know	7.69	0	3.33	4.35	3.76
Life Insurance (n = 133)					
Yes (life insurance)	23.08	14.29	10	20.29	17.29
No (life insurance)	69.23	85.71	86.67	75.36	78.95
Don't know	7.69	0	3.33	4.35	3.76

Source: HART Wave 2 Survey in 2017

To consider the situation of financial management between genders, Table 7 shows that both genders did not leave inheritance or will for their spouse or children (71.43% of the males and 64.29% of the females). Only 27.27% of the male deceased respondents and 28.57% of the female deceased respondents did. More studies should be encouraged on the behavior of leaving inheritance or will of the elderly since it reflects their ability to save and accumulate wealth.

However, in terms of debt burden, majority of both gender left no debt behind. However, higher proportion of the male deceased respondents than the female left no debts (85.71% compared with 75.00%).

For life insurance, majority of both genders indicated no life insurance had been bought. Higher proportion of the female deceased respondents did not have life insurance (80.36% of the female deceased respondents compared to 77.92% of the male).

Table 7: Financial Management by Gender (in %)

	Male	Female	Total
Inheritance/will (n = 133)			
Yes (Inheritance/will)	27.27	28.57	27.82
No (Inheritance/will)	71.43	64.29	68.42
Don't know	1.30	7.14	3.76
Debt (n = 133)			
Yes, debt	12.99	17.86	15.04
No debt	85.71	75	81.20
Don't know	1.30	7.14	3.76
Life Insurance (n = 133)			
Yes, insurance	20.78	12.5	17.29
No insurance	77.92	80.36	78.95
Don't know	1.30	7.14	3.76

Source: HART Wave 2 Survey in 2017.

Policy Implication

The preliminary results with simple statistics from the mortality data of the deceased respondents from the HART survey explained above have led to some important notes for policy implication as followed:

1) On development for quality of life of the elderly: In terms of geographical area, the results indicate the different proportion of the respondents who died in different regions and living areas (urban and rural), i.e. the highest in the northeastern region, but the lowest in Bangkok and Vicinity and in the eastern region; and the higher in the rural area than in the urban. These differences in mortality distribution imply that more in-depth studies are required to formulate proper policies on development to reduce mortality or to induce longer healthy life expectancy of the people at the regional level and the urban-rural level.

2) On human resource development for healthy aging: More studies are needed to concentrate on the causes of death, especially of the entering-old age and young-old groups, who are still active and able to make contribution to the economy and the society/community. The non-communicable diseases concerning lung, heart, kidney, cancer, hypertension, and multiple non-communicable disease should be focused as major health problems for the elderly. The preventive health policies for the young and old population are important to keep them as an active human resource pool of the country.

3) On employment of the elderly: More studies on the motives and incentives to work for the elderly should be encouraged in order to formulate policies that

can facilitate the elderly to keep on working according to their preference with flexible time and responsibility to secure income.

4) On life security for the elderly: Despite dying with no debt left behind, the majority of the elderly, especially females, left no inheritance/will for their family nor life insurance for themselves. This indicates that the elderly's life security of both gender is still at high risk. Policies concerning financial management for life security of the elderly, both males and females, are important. The financial management policies, however, should be extended to cover beyond the old age group to the young age group of both gender in order to raise their life security after retirement.

5) On the long-term care for the elderly: Policies to maintain and support the role of the family institution in taking care of the elderly till and towards the end of their life should be important for Thailand. The policies should be concerned not only with the elderly themselves, but also with the family members as well as social infrastructure to support the long-term care at home.

Conclusion

The paper focuses on the mortality structure of the Thai elderly using the preliminary data on the base-line exit interview from the national HART survey, Wave 2 (2017). The simple statistics indicate the different structure of death of the deceased respondents in terms of geographical region, living area, age group, and gender as well as place of death and work status before death. The causes of death were mainly from the non-communicable diseases, such as diseases concerning lung, heart, kidney, cancer, hypertension, and multiple non-communicable disease. For financial management, majority of the diseased respondents had no inheritance/will left behind, no debt burden, and no life insurance.

Thus, policy implication from the preliminary findings on the mortality of the elderly from the base-line HART exit data suggests that policies related to improving the socio-economic equality in regional or urban-rural development, conducting preventive health, promoting elderly employment, strengthening family institution, and improving financial literacy should be concentrated in order to provide the Thai elderly as well as the younger population with better life security and longer healthy life expectancy.

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