Predictors of Suicidal Idea in The Elderly Living in Bangkok, Thailand

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ศุภเสก วิโรจนาภา : ปัจจัยทำนายความคิดฆ่าตัวตายในผู้สูงอายุกรุงเทพมหานคร ประเทศไทย. (Predictors of Suicidal Idea in The Elderly Living in Bangkok, Thailand) อ.ที่ปรึกษาหลัก : ผศ. ดร.ณัฏฐา ฐานีพานิชสกุล, อ.ที่ปรึกษาร่วม : ดร. อัญชลี ประสารสุขลาภ

บทนำ อัตราตายจากการฆ่าตัวตายในผู้สูงอายุในประเทศไทย เพิ่มจาก 7.82 รายต่อแสนประชากร ใน พ.ศ. 2,551 เป็น 8.58 รายต่อแสนประชากร ใน พ.ศ. 2561 คิดเป็นร้อยละ 9.7 ในขณะที่อัตราฆ่าตัวตายในกรุงเทพฯ เพิ่มขึ้นถึงร้อยละ 61.1 ในระยะเวลา 5 ปี แต่ยังไม่มีงานวิจัยเร็วๆนี้เพื่อศึกษาความชุกของคิดฆ่าตัวตายในผู้สูงอายุกรุงเทพฯ และปัจจัยที่เกี่ยวข้อง

วิธีดำเนินงานวิจัย งานวิจัยนี้เป็นการศึกษาข้อมูลทุติยภูมิจากการศึกษาวิจัยแบบตัดขวางที่ทำระหว่างเดือนมกราคม ถึง เดือนมีนาคม พ.ศ. 2,560 ประชากรตัวอย่างเป็นผู้สูงอายุในชมรมผู้สูงอายุของศูนย์บริการสาธารณสุขในกรุงเทพฯ จำนวน 1,454 คน เก็บข้อมูลเกี่ยวกับข้อมูลทั่วไป ความเหงา ความเศร้า คุณภาพชีวิต และความคิดฆ่าตัวตาย ด้วยการสัมภาษณ์ด้วยแบบสอบถามมาตรฐาน จากพยาบาล และอาสาสมัครสาธารณสุข คำนวณ ความชุกและการถดถอยโลจิสติก พหุกลุ่ม ด้วยโปรแกรม SPSS Statistics 21 งานวิจัยนี้ได้ผ่านการอนุมัติจาก คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย เลขที่ 054/2563

ผลการศึกษา ความชุกของความคิดฆ่าตัวตายในผู้สูงอายุกรุงเทพฯคิดเป็น ร้อยละ 6.46 ความเศร้า (aOR = 12.5, 95% CI = 7.50 – 20.84) คุณภาพชีวิตที่ต่ำ (aOR = 3.15, 95% CI = 1.93 -5.15) และ ความเหงา (aOR = 1.71, 95% CI = 1.02 - 2.85) สัมพันธ์อย่างมีนัยสำคัญทางสถิติกับความคิดฆ่าตัวตาย ตามลำดับ

สรุปผลการศึกษา ความชุกของความคิดฆ่าตัวตายในผู้สูงอายุกรุงเทพฯ สูงกว่าในเชียงรายในปีเดียวกัน และยังสูงกว่าในไต้หวันและประเทศจีน การป้องกันการฆ่าตัวตายควรมุ่งเน้นที่ภาวะซึมเศร้า คุณภาพชีวิต และความเหงาของผู้สูงอายุ

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

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KEYWORD: Suicidal Idea, Elderly, Bangkok, Urban

Supasaek Virojanapa : Predictors of Suicidal Idea in The Elderly Living in Bangkok, Thailand. Advisor: Asst. Prof. NUTTA TANEEPANICHSKUL, Ph.D. Co-advisor: ANCHALEE PRASANSUKLAB, Ph.D.

Background: The suicide mortality rate of the elderly in Thailand rose by 9.7% from 2008 to 2018. While the suicide mortality rate in Bangkok rose 61.1% in 5 years. There had been no recent research to estimate the suicidal idea prevalence and its association in the elderly living in Bangkok.

Methods: A secondary data analysis of 1,454 elderly, registered in the elderly clubs, was conducted. General characteristics, depression, suicidal idea, loneliness, and QoL were collected with standard questionnaires. SPSS Statistics Version 21 was used. This analysis had an ethics review from Health Science Group, Chulalongkorn University (COA No.054/2563).

Results: The prevalence of suicidal idea in the elderly living in Bangkok was 6.46%. Depression (aOR = 12.5, 95% CI = 7.50 – 20.84), poor QoL (aOR = 3.15, 95% CI = 1.93 -5.15), and loneliness (aOR = 1.71, 95% CI = 1.02 - 2.85) were significantly associated with suicidal idea.

Conclusion: The prevalence of suicidal idea in the elderly was higher than Chiang Rai, Thailand, China and Taiwan. Suicide prevention should focus on depression, quality of life. and loneliness.

Field of Study: Public Health
Academic Year: 2019

Student's Signature .....
Advisor's Signature .....
Co-advisor's Signature .....

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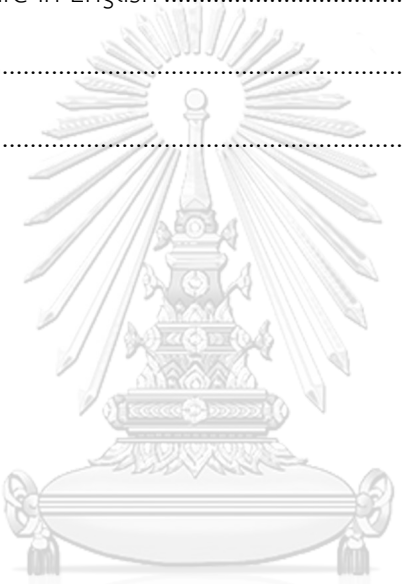

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LIST OF ABBREVIATIONS

BD	Bipolar disorder
BMI	Body Mass Index
BBQ	Brief Quality of Life scale
BSS	Beck Scale for Suicidal Idea
GDS	Geriatric Depression Scale
GQOL	Global Quality of Life Scale
IMPACT	Improving Mood – Promoting Access to Collaborative Treatment for depression in primary care
MDD	Major depressive disorder
PHQ	Patient Health Questionnaire
PROSPECT	Prevention of Suicide in Primary Care Elderly: Collaborative Trial
PTSD	Post-traumatic stress disorders
QoL	Quality of Life
QOLS	Quality of Life Scale
RULS-20	Revised UCLA Loneliness – 20
TNSPC	Thai National Suicide Prevention Center
SELSA	Social and Emotional Loneliness Scale of Adults
SUDs	Substance use disorders
WHO	World Health Organization
UCLA-LS	University of California, Los Angeles – Loneliness Scale

CHAPTER 1 Background and Rationale

According to World Health Organization (WHO), world elderly population is increasing from 12% to 22%, by 2050. Eighty percent of elderly are living in low- and middle-income countries (1). Prasartkul, et al. found that the elderly population in Thailand was at 13% in 2017 and it was predicted to be 20% in 2021 (2). With the rise of the elderly population, the elderly suicide mortality rate had been increasing at 1.7 times higher rate than the general population from 2008 to 2018, according to Thai National Suicide Prevention Center (TNSPC) (3, 4).

In 2018, global suicidal mortality rate was 10.6 per 100,000 population. South-East Asia suicide mortality was higher than global burden. It was 13.2 deaths per 100,000 population (5). According to WHO, Thailand suicide mortality rate was even higher than the region. Suicide mortality rate in Thailand was 14.4 deaths per 100,000 population (6). TNSPC's data showed that although the elderly suicide mortality rate in Bangkok was lower than other area, but it had been rising more rapidly (61.1%) from 2013 to 2018 (7).

Szanto K mentioned that, in order to address the suicide risk, we could assess by the suicidal idea since suicidal idea, both active and passive, leaded to 80% of suicides (8). Most suicides in the elderly started from grief, unlikely from personality disorder or substance abuse in other age groups (9). Grief was a series of emotion after losing a loved one - Kübler-Ross E (10). Higher grief level led to higher depression and suicidal idea (11). Suicidal idea differently led to suicide. Szanto K also found that, in young adults, their suicide tended to be impulsive and unplanned. While elderly had higher rate of complete suicide, since they planned well and used lethal method (9).

Suicide in elderly was multifactorial. Factors that contributed to suicide were social exclusion, mental and neurocognitive disorders, chronic physical illness and disability (12). Stravynski found that loneliness had strong association with suicidal idea and parasuicide (13). According to Burström, depression had the greatest impact on quality of life, comparing to other diseases (14). Especially, depression could increase loneliness which contributed to less quality of life (15). From a study on depressive patients of Alves, increasing quality of life is as important as giving treatment since better quality of life can reduce the suicide risk (16). As mentioned,

loneliness, depression, and reduced quality of life interacts with each other and all of them increase suicide risk. According to Waern, when we compared the magnitude of each factors, we found that interpersonal relationship problems, depression and physical illness increased suicide odds by 20.9 (6.2 to 70.0), 13.4 (5.2 to 34.5) and 6.4 (2.0 to 20.0) accordingly (17).

Suicide greatly impacts suicide survivors - people who have lost someone they care about deeply and are left grieving and struggling to understand (18). McNiel found that family survivors felt more guilt and were more often blamed, comparing to other violent deaths (19). Cerel, et al., studied the impact of suicide on family survivors and the results were as followed. Twenty-five percent of survivors of elderly suicide relocated and moved from their previous residence. They received less social support. They had longer period of grief, distressed, and depression than those who lost someone due to natural death. They reported greater level of stigma, shame, sense of rejection and secrets (20).

From a literature review of Lapierre, there were a lot of suicide prevention programs, but only a few of the elderly suicide prevention programs were evidently effective. IMPACT (Improving Mood – Promoting Access to Collaborative Treatment for depression in primary care) program and PROSPECT (Prevention of Suicide in Primary Care Elderly: Collaborative Trial) studies were examples of the elderly suicide prevention program in primary care units. The two preventions targeted depresses elderly and aimed to reduce suicidal idea. There were Japanese community-based outreach programs. Those programs found that depression-screening intervention was only effective for females, not males in suicide reduction. Alike telephone counseling intervention, it could only reduce female suicide. Only medical treatment and interpersonal psychotherapy could reduce suicidal idea in both sexes (21).

According to Jones DA, et al., social exclusion such as loneliness in elderly is higher prevalent in urban area (22). Despite these facts, there is still limited recent data about the suicidal idea and its associated factors in Bangkok, Thailand. With this research, we would be able to estimate and identify the risk group and plan for further prevention program in the selected area.

General Objectives

- To find suicidal idea prevalence among elderly living in Bangkok

Specific Objectives

- To find the association between general characteristic and suicidal idea in elderly.
- To find the association between loneliness and suicidal idea in elderly.
- To find the association between depression and suicidal idea in elderly.
- To find the association between QoL and suicidal idea in elderly.

Research Questions

- What is the prevalence of suicidal idea among elderly living in Bangkok?
- Do general characteristics associate with suicidal idea in the elderly living in Bangkok?
- Does loneliness associate with suicidal idea in the elderly living in Bangkok?
- Does depression associate with suicidal idea in the elderly living in Bangkok?
- Does QoL associate with suicidal idea in in the elderly living in Bangkok?

Conceptual Framework

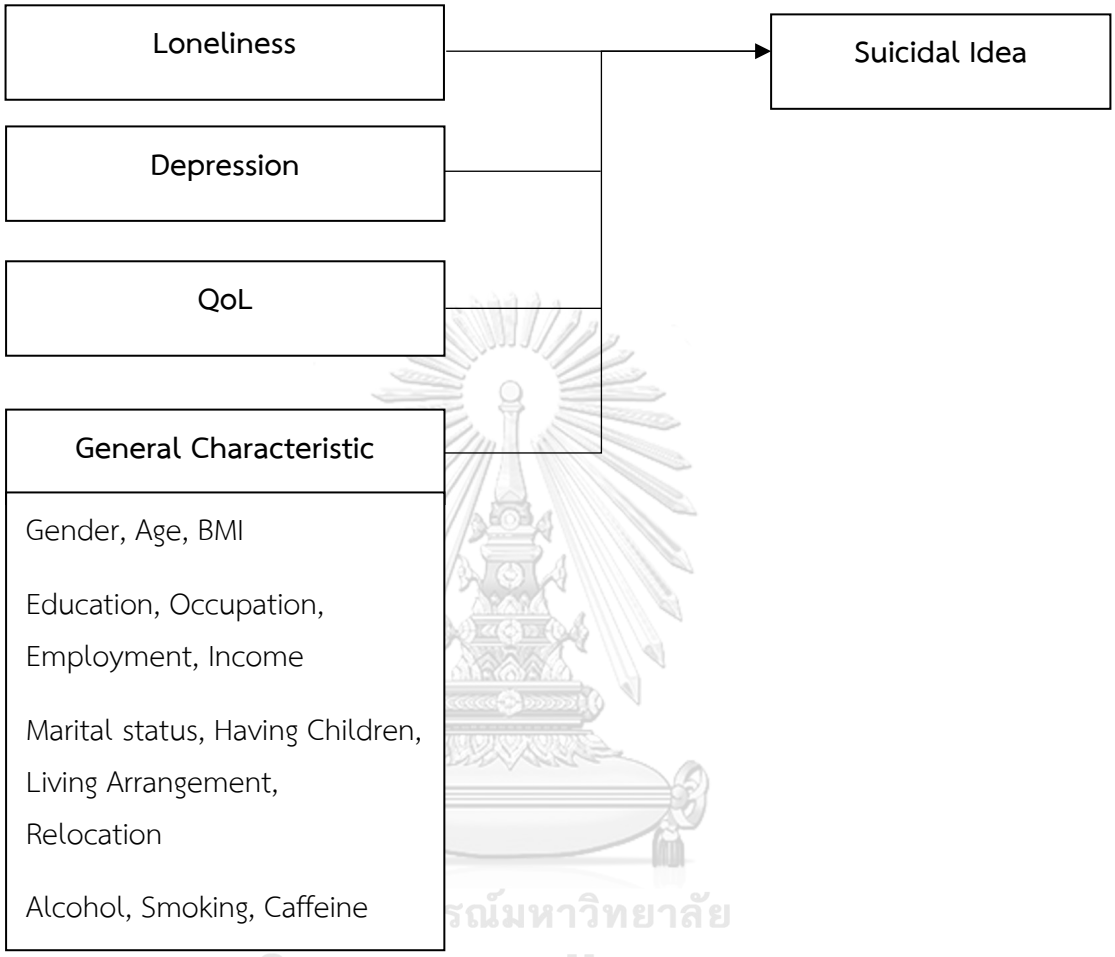

Figure 1 *Conceptual Framework*

Operational Definition

Suicidal idea

idea of hurting oneself, death (passive) or suicide (active), identified by the Patient Health Questionnaire (PHQ-9) item 9, scoring 1 to 3 out of 3.

Elderly

a person aged 55 years or more. They were categorized into 3 groups: pre-elderly (55-64 years old), early elderly (65-74 years old) and late elderly (75 years old or more)

Bangkok

living in Bangkok for more than 1 year

Loneliness

one of subjective psychological experience, occurred when one feels unsatisfied with his or her relationship regarding of intimacy, identified by Thai version of University of California, Los Angeles – Loneliness Scale (UCLA-LS), scoring at more than quartile 3 (23). It was translated by Wongpakaran T, et al and called Revised UCLA Loneliness – 20 (RULS-20) (24).

Depression

one of negative feelings including sadness and loss of interest in previous-interested activities, identified by Thai version of PHQ-9 item 1 to 8, scoring more than quartile 3 (25).

Quality of life

an individual's perception of their lives, can be divided into 4 domains including physical health, psychological state, social relationships and environment, identified by Thai version of WHOQOL-BREF (26).

Gender

male or female

Body Mass Index (BMI)

weight in kilograms divided by height in meter squared, categorized by Asia-Pacific BMI (27).

Marital status

current marital status as single, married or widowed/divorced

Living arrangement

whom the elderly was living with. It is either living with family or living alone.

Education

the highest education level the elderly achieved in their lives

Relocation

Relocation means that the elderly had moved from other area to Bangkok. It was identified by the difference of current living place and birth place.

Occupation

current occupation status of the elderly

Income

current monthly income in Baht of the elderly

Alcohol

alcohol consumption status as drinker, ex-drinker or never drink

Smoking

cigarette smoking status as smoker, ex-smoker or never smoke

Caffeine

coffee or tea consumption, as current drinker or not-drinker

CHAPTER 2 Literature Review

Situation

The world population is ageing which means the proportion of elderly is between 10 and 25 percent. Thailand is now an ageing society with the proportion of elderly at 13 percent in 2017 and she is predicted to be aged society by 2021 (2). TNSPC found that 10 years from 2008, Thai elderly suicide mortality rate had been increasing at higher rate than general population. Thai elderly suicide mortality rate rose from 7.82 to 8.58 (9.72%) per 100,000 population while the suicide mortality rate in general Thai population had been increasing from 5.98 to 6.32 (5.69%) per 100,000 populations, as shown in figure 2 (3, 4).

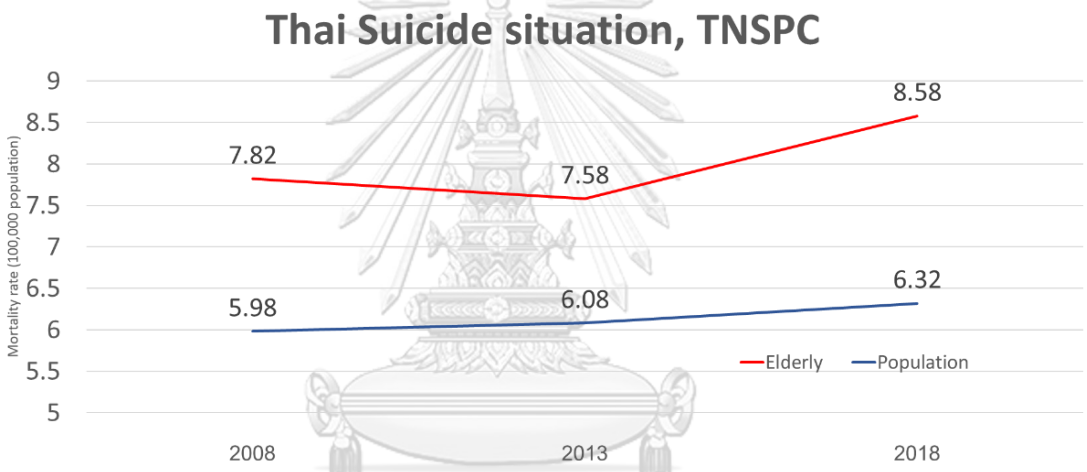

Figure 2 *Thai Suicide Situation During 2008 to 2018, according to Thai National Suicide Prevention Center (TNSPC)*

Although the elderly suicide mortality rate in Bangkok was lower in other area of Thailand, but it had been increasing rapidly. The elderly suicide mortality rate was only 1.67 deaths per 100,000 population in 2013, but it was 2.69 deaths per 100,000 population in 2018. It was 61.1% increase (7). The increase was visualized in figure 3. However, there were limited data regarding suicidal idea prevalence in the elderly. Wichitr Phantong, et al. found that the prevalence of suicidal idea in the elderly living in the rural area of Bueng Kan Province were 0% in males and 1.9% in females (28).

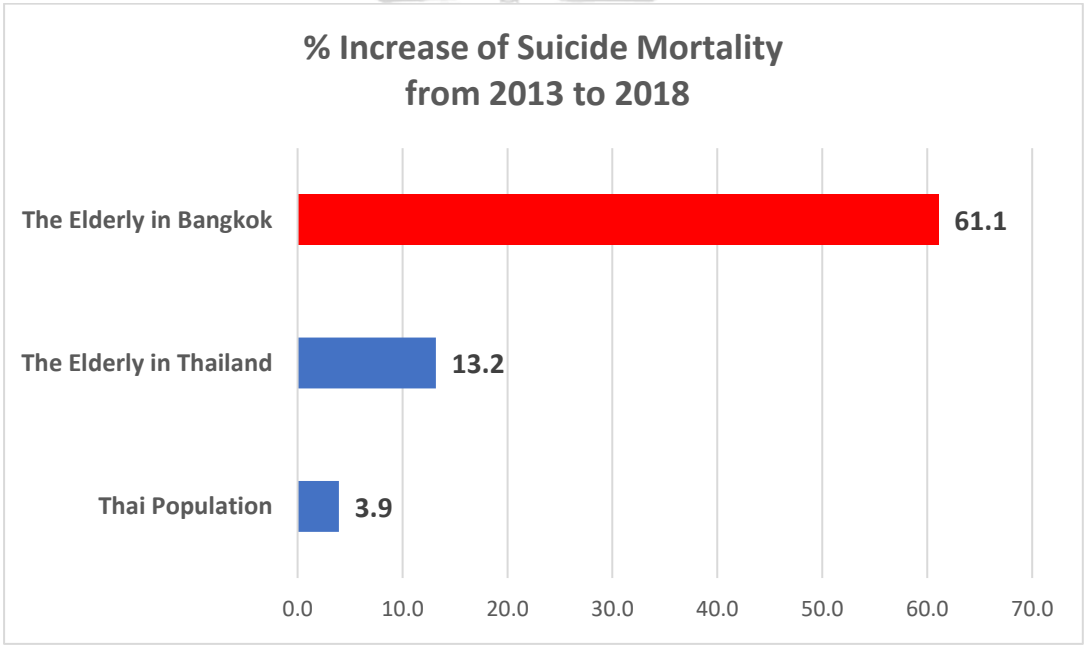

Figure 3 *The Increase of Suicide Mortality in Percentage from 2013 to 2018*

According to Conejero, the risk factors of suicide were multifactorial. They included social, psychological and physical factors (12).

Social factors

Social support was a protective factor of suicide (29). Mogensen, et al. found that social exclusion, such as loneliness, retirement, grief or bereavement and being a widow, could lead to suicides. Especially in older adults, suicide odds was highest in the first week after losing a close family member [OR = 3.43 (1.89 – 6.22)] and gradually decreased in months (30). As Szanto K mentioned, four-fifths of suicide originated from suicidal idea (8). Suicide in the elderly started from grief (9). Grief initiated loneliness (31). Loneliness increased suicide ideation (13).

De Jong-Gierveld defined loneliness as one of subjective psychological experience, occurred when one feels unsatisfied with his or her relationship regarding of intimacy. Weiss categorized loneliness into two components. The first component was the lack of emotional loneliness, an absence of intimate relationship, and the second component is social loneliness, an absence of social contacts (23). According to Rasch criteria, it consisted of four components; severe loneliness, abandoned situation, missing companionship, absence of sense of belongings (32). It was correlated with negative affect, social risk taking, and affiliative tendencies (33). Hughes found that it is higher in elderly, because quantitative and qualitative aspect of relationship decreased with age, such as number and emotion. The elderly also had more experience regarding social disruptions, such as, relocation, deaths of parents, especially the deaths of their spouse and children. Also, the current trend in the past decades had brought the families to be nuclear families not extended families, leading to living-alone elderly (34). Moreover, loneliness was also affected by non-kin relationship such as friends and participation in volunteer work (23). According to Valtorta N. and Hanratty B., the prevalence of loneliness was 2 – 16% in the elderly community, and lifetime prevalence after 55 years old was 32% (35).

Psychological factors

Mental disorders including bipolar disorder (BD), depression, substance use disorders (SUDs), schizophrenia, and anxiety disorders especially post-traumatic stress disorders (PTSD) were strong risk of suicides (36). According to Carla Ponte, et al. studies, 66.7% of psychiatric elderly patients had severe depression and suicidal idea (37). Major depressive disorder (MDD) was not only the highest prevalence in elderly but also the highest risk factor of suicide, comparing to other psychiatric illness (16, 38, 39). Hawton found that severe depression had odds ratio of 2.2 in increasing suicide risk (95% CI=1.05–4.60) (40). The prevalence of depression in Thailand was 6.0% (41). The prevalence of depression in rural area of Chiang Rai was 2.96% and 4.90% in China (42, 43). It was less than urban city of Rayong (21.6%) and urban city of Nong Bua Lam Phu (22.80%) (44, 45). The prevalence of depression seemed to be higher in urban area of Thailand.

Lapierre, et al. found that reducing depressive symptoms was one of the main ideas in decreasing suicide risk in the elderly. They categorized suicide prevention in the elderly into 5 groups; 1) depression case managers, 2) community outreach workshops, 3) telephone-counselling, 4) medical treatment and interpersonal psychotherapy and 5) resilience improvement (21).

1) IMPACT and PROSPECT studies found that receiving support, such as psycho-education, brief psychotherapy and close monitoring of depressive symptoms and side effects of medication, from care managers could reduce depression and suicidal idea.

2) Outreach mental health workshop in Japan promoted depression and suicide awareness and screened for depressive patients. The workshop could reduce the suicide rates in females, but it was controversial in males.

3) Telephone-counselling was also effective in reducing depressive symptoms and suicide in females only.

4) Medical treatment and interpersonal psychotherapy for depression could reduce suicidal idea.

5) Improving resilience and increasing meaning in life could reduce depression, psychological distress and suicidal idea.

Physical factors

From the fifth Thai national health survey, more than half of the elderly in Thailand had chronic diseases. The prevalence of hypertension, obesity, osteoarthritis, dyslipidemia and diabetes mellitus were 53.2%, 35.4%, 22.5%, 19.0% and 18.1% respectively (41). The prevalence of any chronic diseases in the Chinese elderly was 77.1% (42).

According to Waern, elderly with chronic physical illness have higher risk of suicides. Visual impairment is the most important risk of suicide comparing to other physical illness (17). Ju VJ, et al., found that the number of chronic diseases may not be associated with suicide, but perceived poor health was associated with suicide (46). Jianwen Wei, et al. found that having chronic diseases was associated with suicidal idea, but perceived health status was not associated (42). According to Alves, quality of life (QoL) also impacts suicide risk. Research found that psychiatric patients with suicide risk had the lowest quality of life, comparing to other psychiatric patients and general population (16).

Loneliness assessment

There were plenty of loneliness assessment tools. De Jong-Gierveld developed Rasch questionnaire according to Rasch model. It was a of set of questions that responded well with Rasch criteria, but it was a set of binary questions, yes or no answers. It was not proper to be a questionnaire since it was prone to guessing (32). In 1978, Dan Russell, et al. from University of California, Los Angeles developed UCLA Loneliness Scale. It was a standard questionnaire for measuring loneliness. It had excellent internal consistency of 0.96 and a two-month test-retest correlation of 0.73. Constructed validity was done by testing the correlations with the self-report of volunteers in a loneliness clinic (47). Besides, standardized loneliness assessment of loneliness, there was also a short questionnaire, called The Three-Item Loneliness Scale, developed by Hughes. It composed of only three questions but its relationship with subjective isolation was only modest (34). According to Weiss theory, Social and Emotional Loneliness Scale of Adults (SELSA) was produced. It has good-to-excellent internal consistency of 0.89-0.93 between subscales and convergent validity to UCLA Loneliness scale but it is lengthy as 7-point scale 37 items (48). Thai-version of UCLA-LS was used in this study.

Table 1 *The Strength and Weakness of The Loneliness Questionnaire.*

Questionnaires	Strength	Weakness
Rasch	responds well with Rasch criteria	prone to guessing
UCLA Loneliness Scale	Standard, reliable and valid	
The Three-Item Loneliness Scale	Short and easy	Modest relationship
SELSA	reliable and valid	lengthy

Quality of life assessment

Quality of life could be measured by several tools, such as the Global Quality of Life Scale (GQOL), the Quality of Life Scale (QOLS), the Brunnsviken Brief Quality of life scale (BBQ), WHOQOL-100 and WHOQOL-BREF. Hyland developed the GQOL, a crude scale for measuring QoL ranging from 0 to 100 without categorized domains (49). Burckhardt found that the QOLS is good for assessing the QoL of patients (50). Lindner, et al. developed the BBQ. It was valid and reliable but it was sensitive to psychiatric illness (51). The WHOQOL-100 was a reliable and valid instrument that could be used in a diverse range of cultures but it was lengthy (52). Last but not least, WHO developed WHOQOL-BREF, a brief version of WHOQOL-100 that was reliable, valid and applicable to any health research (53). Thai – version WHOQOL-BREF was used in this research.

Table 2 *The Strength and Weakness of The Quality of Life Questionnaire*

Questionnaires	Strength	Weakness
GQOL	simple	Crude, non-categorical
QOLS	Suitable for patients	may not work well with population
BBQ	valid and reliable	sensitive to psychiatric illness
WHOQOL-100	valid and reliable	lengthy
WHOQOL-BREF	valid and reliable	

Depression and suicide assessment

Several standard screening tools for depression were developed, such as the Patient Health Questionnaire (PHQ-9) and the Geriatric Depression Scale (GDS) and both of them can detect suicide. Without the relation to depression severity, PHQ-9 suicide detection relies on one item, item 9 > 0 [sensitivity 87.6% (95%CI 80.2-92.5%) and specificity 66.1% (95%CI 62.6-69.4%)] and GDS needed score 4 out of 5 in a subscale to detect suicides [sensitivity 75.4% and specificity 81.5%] (54-57). Although GDS was developed for elderly, PHQ-9 worked well on detection of depressive elderly too (58-62). Average time to complete PHQ-9 and GDS is 7.5 minutes and 10.09 minutes, respectively (60, 63). Esfahani, et al. studied on Beck Scale for Suicidal Idea (BSS). It was another suicide screening tool and assessment scale with the Cronbach's alpha of 0.83 and 0.84 for the screening part and the whole part accordingly (64). But it has no cut-off point, so we cannot determine the sensitivity and specificity (65). We might assume that PHQ-9 was a better way to screen for suicidal idea in elderly population, because of it had higher sensitivity and it took less time to complete. When we removed item 9 from PHQ-9 to study suicide, we had PHQ-8. PHQ-8 was equivalent to PHQ-9 in depression measurement and detection (66, 67). PHQ-9 and PHQ-8 had good internal reliability (Cronbach's alpha = 0.85 and 0.82 accordingly) for measuring depression (68, 69). GDS had excellent internal reliability in depression measurement (Cronbach's alpha = 0.92) (57). PHQ-9 was used in this study.

Table 3 *The Comparison of Suicidal Idea Questionnaire*

Questionnaires	Alpha	Depression	Suicide	Time
GDS	0.92	Geriatric	4/5 of subscale, sn* 75.4.6, sp* 81.5	10.09 minutes
PHQ-9	0.85	All age	item 9, sn* 87.6, sp* 66.1	7.5 minutes
BSS	0.84	Adults	No cut-off point	5-10 minutes

*sn = sensitivity, sp=specificity

Other related biological factors

There are other biological factors that may be related to suicide. As mentioned, the rate of elderly suicide is increasing more than general population. Elderly can be categorized into age-groups as pre-elderly, early elderly and late elderly with the range of 50-64, 65-74 and 75 or more, accordingly (70, 71). But there was no research yet to date to distinguish the risk among each age group. Most studies found that elderly men commit suicide more than elderly women (72-75). Coren and Hewitt explored these differences and found that elder men had financial and social status problem as suicide predictors while elderly women had social and environmental instability and stress as suicide predictors (76). Although chronic physical illness could increase the risk of suicide and obesity is one of the most prevalent chronic diseases, obesity is one of the controversial factors. Klinitzke, et al. conducted a systematic review and showed that most studies found obesity had negative correlation with completed suicide. For suicide attempts and suicidal idea, obesity was positive correlated in women but it was negatively correlated in men (77). According to a research on WHO data of Ajit Shah, elderly obesity differently affected the suicide between elderly male and female. There was no association between elderly obesity and suicide rates in male, but it was associated in elderly female (78). Gomes, et al. studied in BD patients, obesity increased the risk of suicide attempt almost two-folded (79). According to Marther, et al. the similar association was observed in other psychiatric-patient groups (80).

Other related social factors

The socio-economic difference also impacted suicide risk. The attributed risk was similar in both suicide attempters and complete suicide. Wiktorsson found that marriage, living alone, low education level, loneliness and previous suicide attempt were associated with suicide attempts. Marriage and higher education level decreased the suicide attempt risk by 49% and 44% accordingly. Living alone and previous suicide attempt increased the odds of suicide attempt by 1.90 (95%CI=1.16-3.11) and 19.46 (95%CI=8.10-46.7) accordingly (81). Maurizio found that living alone, retirement, low education level also increased the odds of complete suicide significantly (living alone OR=9.1, 95%CI=1.3–62.6; retirement OR = 26.8, 95%CI=9.0–79.2; low education level OR=14.6; 95%CI: 2.5–85.7) (82). According to Yeong Jun Ju, et al., suicidal idea odds were increased by low household income, food insecurity and living alone, descendingly. While age, education level and employment status were not significantly associated with suicidal idea (46). Moreover, relocation from their birthplace also increased suicide risk (83).

Other related behavioral factors

According to Blow's literature review, elderly behaviors also affect the suicide risk differently. Alcohol consumption and suicide in elderly remains a controversial issue. Different study methodology regarding of alcohol was done. The methodology differs among alcohol-use-disorders (AUD) alcohol-drinker and non-drinker group (84). According to Johanna Morin, et al., lifetime prevalence of AUD increased the suicide odds by 10.5 (95%CI= 4.9-22.5) (85). A cross-sectional study in South Korea in elderly found that elderly men who drink alcohol did not increase suicide risk. On the other hand, drinking alcohol increase the suicidal idea odd by 1.33 (95%CI=1.22-1.45) in female elderly. While smoking increases the suicide risk in both genders (46). Similarly, Barbara Schneider found that smoking increased the hazard ratio of suicide in male, in her population-based cohort study (86). Caffeine consumption also remains controversial regarding of suicide (87). A cohort on 121 thousand of female registered nurse found that caffeine can reduce suicide risk. Since it could elevate mood and decrease impulsivity (88). While, caffeine consumption in BD patients increased suicide odds by 2.42 (95%CI=1.15-5.09) (89).

Table 4 *Other Related Studies*

No.	Author	Population	Outcomes	Findings
1.	Lu Niu, et al.	Elderly	Depression-suicide Loneliness-suicide	Depressive symptoms were associated with complete suicide (OR = 6.70; 95% CI: 3.40–13.18) Higher levels of hopelessness and loneliness were associated with complete suicide (OR = 2.45; 95% CI: 1.09–5.49) (90).
2.	Misook Hong, et al.	Elderly ≥ 65 years	Depression-suicide	The Life-Love Program could reduce suicidal ideation (p = 0.026) without reducing depression (p = 0.094) (91).
3.	Shirley Musich, et al.	Population ≥ 65 years under Medicare	Loneliness-depression	Strongest predictor of loneliness is depression (OR=14.2, p<0.0001) (15).
4.	Lu Niu, et al.	Suicide deaths, age > 60 years	Depression-suicide	Depression was associated with suicide, male aOR = 6.28 (2.40–16.47) female aOR = 2.79 (1.20–6.48) (92).
5.	Carla Ponte, et al.	Geriatric psychiatric patients	Depression-suicide	Two-thirds has severe depression and suicidal idea (37).

6.	So Im Ryu and Yeon-Hwan Park	Female ≥ 65 years	Depression-suicide	Depression was associated with suicidal idea in living-alone elderly ($p < 0.001$) (93).
7.	F. M. Alpass &S. Neville	Population ≥ 65 years men	Loneliness-depression	Illness or disability was negatively associated with depression (Spearman correlation = -0.272, $p < 0.01$) but perceived poorer health is related. Loneliness has the strongest relationship with depression (Spearman correlation = 0.625, $p < 0.01$) (94).
8.	Lijun Liu, Zhenggang Gou, Junnan Zuo	Elderly Population	Loneliness-depression	Loneliness was significantly correlated with depression (Spearman correlation = 0.57, $p < 0.01$) (95).
9.	Jeannette Golden, et al.	Population ≥ 65 years people	Loneliness	Thirty-five percent of participants were lonely. It is less in men (OR=0.53, 95%CI=0.42-0.69) (96).
10.	Ali M AL-Asadi, et al.	Psychiatric patients with 2 or more diagnoses	Depression-suicide-QoL	Depression was associated with suicide (OR=1.91, 95%CI=1.83-2.00) and poorer quality of life (OR=1.81, 95%CI=1.74-1.89) (97).

CHAPTER 3 Methodology

Research design and data collection

This research was a secondary data analysis of an analytic cross-sectional survey study. The cross-sectional study was conducted by collaboration of 17 elderly clubs under Primary Health Center (PHC) of Bangkok Metropolitan Administration (BMA) and College of Public Health Science (CPHS), Chulalongkorn University. It was conducted between January and March 2017. Data regarding of the elderly general characteristics, loneliness, depression, QoL and suicidal idea were collected. They were collected by a 30-minute structured one-to-one in-person interview. The interviewers were nurses and public health volunteers who were trained in the conduct of research involving humans and interviewing methods. The results were noted in the structured questionnaires attached in the appendix. Data were cleaned and coded into Microsoft Excel 2016. The investigator exported the data to SPSS Statistics 21 to analyze.

Figure 4 *Data Flowchart*

Instruments, Materials and Tools

Pilot testing was done to test the face validity, readability, internal reliability, flow of questions and timing. The questionnaires were in Thai and consisted of 4 parts.

a. General Characteristics

The questionnaire asked about biological status, socio-economic status, behaviors and health.

Biological status consisted of gender, age, weight and height. Gender was either female or male. Age was in years. Weight and height were in kilograms (kg) and centimeter (cm) accordingly.

Socio-economic status consisted of marital status, having children, education level, living area, birthplace, living arrangement, occupation and income. Marital status choices were single, married, and divorced or widowed. Education level were no education, primary school, secondary school, high school, Bachelor degree or above than Bachelor degree. Living area was asked about the sub-district, district and postal code. Birthplace was noted as Bangkok or others. Living arrangement was asked whether the interviewee was living with their family or not, if yes, how many people is he or she living with including him- or herself. Occupation was listed as private employee, civil servants, housewives, private business, merchandise, and others. Income was asked in Baht without range.

Health behaviors consisted of smoking, alcohol consumption and caffeine consumption. Smoking was asked as non-smokers, ex-smokers, or current smokers (how much?). Alcohol consumption was asked as non-drinkers, ex-drinkers, or current drinkers (how much?). Caffeine mean any regular tea or coffee. Caffeine consumption was asked as non-regular drinkers or regular drinkers (cups/day).

b. **Quality of Life (QoL)**

QoL was measured by WHOQOL-BREF-Thai, a standard questionnaire. It had good internal consistency as Cronbach's alpha coefficient of 0.84. Its validity was 0.65, comparing to WHOQOL – 100 - Thai. It composed of 4 domains including physical health, psychological health, social relationships and environment. Each domain consisted of different numbers of items ranging from 3 to 8 items. There were 2 new questions that were not in the 4 domains, nor in the original WHOQOL-BREF. The 2 questions were not used for analysis. Counting all items, there were total of 26 items. Each item was a 5-score Likert scale from 1 to 5, which mean never, rarely, sometimes, usually and always (98).

There were 7 items on physical health asking about…

a) Item 2 pain and discomfort

b) Item 3 energy and fatigue (both work and daily living activities)

c) Item 4 sleep and rest

d) Item 10 satisfaction of activities of daily living

e) Item 11 health care visits

f) Item 12 working capacity

g) Item 24 mobility

There were 6 items on psychological health asking about…

a) Item 5 positive feelings

b) Item 6 thinking learning, memory and concentration

c) Item 7 self-esteem

d) Item 8 bodily image

e) Item 9 negative feelings (such as lonely, depressed, hopeless, anxious)

f) Item 23 spirituality, religion and personal beliefs

There were 3 items on social relationships asking about...

a) Item 13 personal relationships

b) Item 14 social support

c) Item 25 sexual activity

There were 8 items on environment asking about...

a) Item 15 freedom, physical safety and security

b) Item 16 home environment

c) Item 17 financial resources

d) Item 18 health and social care: accessibility and quality

e) Item 19 opportunities for acquiring new information and skills

f) Item 20 participation in and opportunities for recreation and leisure activity

g) Item 21 physical environment is healthy

h) Item 22 transportation satisfaction

Item number 2, 9 and 11 were negative aspects, so they were needed to be converted when we analyzed the data (98). The pilot testing found that the Cronbach's alpha coefficient was 0.915. It had excellent internal consistency.

c. **Loneliness**

Loneliness was assessed with Thai-version The UCLA Loneliness Scale (UCLA-LS). UCLA-LS was a standard questionnaire for measuring loneliness. It had excellent internal consistency of 0.96 and a two-month test-retest correlation of 0.73. It was translated into Thai language by Wongpakaran and called RULS-20 (24). Back-translation into English was done for content validity. It consisted of 20 questions, asking about the frequency of loneliness in the past two weeks. Each question was a 4-score Likert scale, ranging from 1) never, 2) sometimes, 3) often to 4) always. The summation of the score mean the level of loneliness. Twenty mean no loneliness and 80 mean extreme loneliness. It had no standard cut-off point (33). Cronbach's alpha coefficient of 0.701 was found during pilot testing, resulting in an acceptable internal consistency.

d. **Depression and Suicidal Idea**

Depression and suicidal idea were assessed with Thai-version PHQ-9. It was translated by Prof. Manote Lotrakul (99). The researcher will divide the questionnaire into 2 parts: item 1-8 for depression, called PHQ-8, and item 9 for suicide.

The PHQ-8 has good internal reliability with the Cronbach's alpha of 0.82 and valid for depression (68). It consisted of 8 questions asking about the frequency of depressive symptoms in the last 2 weeks. Each item was a 4-score Likert scale, ranging from 0) never, 1) sometimes, 2) often to 3) always. The greater the summation was the more severe depressive symptoms. It had no standard cut-off points. The pilot testing found good internal consistency. Its Cronbach's alpha coefficient was 0.888.

PHQ-9 item 9 asked "Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?" It was a 4-score Likert scale, ranging from 0) never, 1) sometimes, 2) often to 3) always. The researcher was using 1 as a cut-off point, meaning 0 was no suicidal idea and 1 to 3 means positive suicidal idea. Using this cut-off point had a sensitivity of 87.6% (95%CI 80.2-92.5%) and a specificity of 66.1% (95%CI 62.6-69.4%) (54).

Sampling Technique

The researcher used purposive sampling and aimed to recruit all elderly aged more than 55 years old in the elderly clubs under PHC. There were 68 PHCs in Bangkok. Out of 68 PHCs, 17 centers were willing to participate in the study. Totally, 1,996 elderly were enrolled and 542 elderly with mental illness, under psychiatric treatment, unable to communicate with Thai language or involvement with other intervention study were excluded. There are 1,454 elderly remaining in this study. The result of this study was able to be generalized to the elderly in elderly club under PHC of BMA.

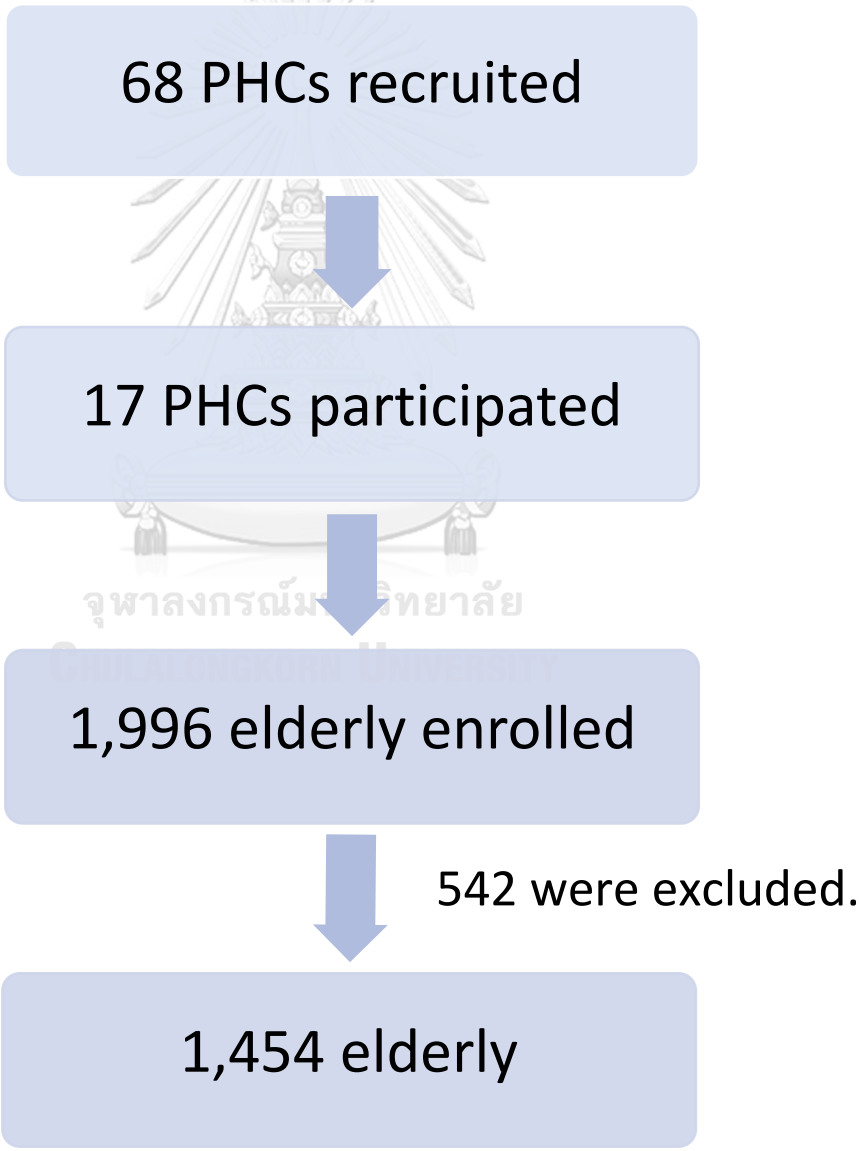

Figure 5 *Sampling Technique*

Independent Variables

There were 3 independent variables in this study. They were loneliness, depression and QoL. The coding of each independent variable was provided next.

Since there was no cut-off point of loneliness level when we use UCLA-LS. Loneliness was categorized into quartiles (Q), since they were skewed. Loneliness level at Q3 or below was categorized as "not high lonely." UCLA-LS score more than Q3 will be categorized as "high lonely."

Although PHQ-9 had standard cut-off point, PHQ-8 had no standard cut-off point. Depression was categorized according to the quartiles (Q), since they were skewed. PHQ-8 score at Q3 or below was categorized as "not high depressed." Depression level more than Q3 will be categorized as "high depressed."

Selected brief QoL score was transformed to WHOQOL-100 percentile, according to Bergner et al (100). Each domain and overall QoL was analyzed separately. The conversion table was shown in table 5 on page 27.

Dependent Variable

Suicidal idea was the only dependent variable in this study. It was identified with PHQ-9 item 9. It was categorized as having suicidal idea (score 1-3) and no suicidal idea (score 0).

"Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?"	Never 0	Sometimes 1	Often 2	Always 3

NO

Having suicidal idea

Table 5 WHOQoL-BREF Conversion Table

DOMAIN 1		
Raw Score	Trasnformed scores	
	4-20	0-100
7	4	0
8	5	6
9	5	6
10	6	13
11	6	13
12	7	19
13	7	19
14	8	25
15	9	31
16	9	31
17	10	38
18	10	38
19	11	44
20	11	44
21	12	50
22	13	56
23	13	56
24	14	63
25	14	63
26	15	69
27	15	69
28	16	75
29	17	81
30	17	81
31	18	88
32	18	88
33	19	94
34	19	94
35	20	100

DOMAIN 2		
Raw score	Trasnformed scores	
	4-20	0-100
6	4	0
7	5	6
8	5	6
9	6	13
10	7	19
11	7	19
12	8	25
13	9	31
14	9	31
15	10	38
16	11	44
17	11	44
18	12	50
19	13	56
20	13	56
21	14	63
22	15	69
23	15	69
24	16	75
25	17	81
26	17	81
27	18	88
28	19	94
29	19	94
30	20	100

DOMAIN 3		
Raw score	Transformed scores	
	4-20	0-100
3	4	0
4	5	6
5	7	19
6	8	25
7	9	31
8	11	44
9	12	50
10	13	56
11	15	69
12	16	75
13	17	81
14	19	94
15	20	100

DOMAIN 4		
Raw score	Transformed scores	
	4-20	0-100
8	4	0
9	5	6
10	5	6
11	6	13
12	6	13
13	7	19
14	7	19
15	8	25
16	8	25
17	9	31
18	9	31
19	10	38
20	10	38
21	11	44
22	11	44
23	12	50
24	12	50
25	13	56
26	13	56
27	14	63
28	14	63
29	15	69
30	15	69
31	16	75
32	16	75
33	17	81
34	17	81
35	18	88
36	18	88
37	19	94
38	19	94
39	20	100
40	20	100

Covariates

Several demographic characteristics of the elderly were investigated in this study. Covariates included gender, age groups, BMI, marital status, having children, educational level, relocation, living arrangement, occupation, income, smoking, alcohol consumption, caffeine consumption, and underlying diseases.

Age groups were categorized into 3 age groups. People aged 50-64, 65-74 and 75 or more years old was in pre-elderly, early elderly and late elderly group, accordingly. Body mass index (BMI-kg/m^2) was categorized into 4 groups according to Asia-Pacific BMI; underweighted (<18.5), normal weighted (18.5 - 22.9), overweighed (23.0 - 24.9) and obese (≥25) (27). Relocation was identified as any people whose birthplace was not Bangkok. Living arrangement was analyzed by the number of people living with the elderly. Other general characteristics was analyzed as noted.

Methods and Tests of Statistical Analysis

For univariate analysis, the frequency distributions of general characteristics of studied participants was examined. Counts, percentages and mode was used for categorical variables, including gender, age groups, BMI, marital status, educational level, relocation, employment status, smoking, alcohol consumption and caffeine consumption. Other characteristics (including having children, living arrangement, underlying diseases, smoking status, alcohol consumption and caffeine consumption) will be summarized using means (±standard deviation) for continuous variables with normal distribution and median (interquartile range; IQR) for skewed distribution.

In bivariate analysis, chi-square and binary logistic regression procedures were used to estimate associations of loneliness (independent) with suicidal idea (dependent). Binary logistic regression model was used to estimate adjusted odds ratio (aOR) and 95% confident interval (CI). Same pattern of analysis was done between depression (independent) and suicidal idea (dependent) and between quality of life (independent) and suicidal idea (dependent).

In multivariate adjustment model, statistically significant covariates were introduced into the model. Multiple logistic regression was used to determine the relationship between loneliness, depression, quality of life and suicidal idea. All analyses was performed by SPSS version 21.

Ethics

The cross-sectional survey was approved by the ethics review committee for research involving human research subjects, Health Science Group, Chulalongkorn University (COA No.183/2559) and the Institutional Review Board for research involving human subjects, Medical Service Department, Bangkok Metropolitan Administration (COA No. 80, E014q/59_EXP). All participants provided a written informed consent prior to participation.

This secondary survey had ethics review exemption from Health Science Group, Chulalongkorn University (COA No.054/2563).

CHAPTER 4 Results

Total population in this study were 1,454 elderly who were participating elderly clubs under PHC, BMA. The results were categorized into 7 parts.

4.1. General characteristic of the population

4.2. Prevalence of suicidal idea

4.3. Association between general characteristics and suicidal idea

4.4. Loneliness and suicidal idea

4.5. Depression and suicidal idea

4.6. Quality of life and suicidal idea

4.7. Adjusted odds ratio of risk and suicidal idea

Part 4.1 General characteristic of the population

The demographic characteristics of the elderly participating elderly clubs under PHC, BMA were as followed. Quantitative data was not normally distributed (sig < 0.001) and reported with median. Qualitative data was reported as percentage. There were 1,070 females (73.6%) and 384 males (26.4%). The median age was 66 years old. Forty percent (40.4%) of them are obese. More than half of them (54.7%) has primary education level. Almost half of them (48.5%) of them are housewives and unemployed. The median of elderly income was 3,000 baht a month. Most of them never drink alcohol (78.7%) or smoke cigarettes (86.5%). They don't drink coffee 47.8 percent. For those who drinks, they mostly drink one-to-two cups of coffee. Nine hundred and seven elderly were originally living in Bangkok. About one-third (37.6%) of them had moved in from rural areas. More than half of them (58.7%) are married. Thirty percent (30.1%) of them are divorced or widowed. The rest of them are single. They mostly live with their families (91.7%). Most of them (61.5%) have children. Data was shown in table 6.

Table 6 General Characteristics of The Participants

General Characteristics		Total (N=1,454)	
		n	%
Gender	Female	1,070	73.59
	Male	384	26.41
Age (years)	Median (IQR)	66 (11)	
	Pre-elderly	594	40.85
	Early elderly	589	40.51
	Late elderly	271	18.64
BMI (kg/m^3)	Median (IQR)	24 (4.94)	
	Underweighted	64	4.40
	Normal Weight	465	31.98
	Overweighed	338	23.25
	Obese	587	40.37
Education	No	106	7.29
	Primary	795	54.68
	Secondary	167	11.49
	High School	211	14.51
	Bachelor	164	11.28
	Master or above	11	0.76
Occupation	Employee	31	2.13
	Civil Servant	76	5.23
	Housewife	705	48.49
	Businessman	113	7.77
	Merchant	193	13.27
	Others	336	23.11
Employment	no	705	48.49
	yes	749	51.51
Income (THB)	Median (IQR)	3,000 (9,000)	
	No	419	28.82
	Less than 9000	652	44.84
	9,000 to 14,999	180	12.38
	More than 15,000	203	13.96
Marriage	Single	163	11.21
	Married	853	58.67
	Divorced/Widow	437	30.06

Table 6 *General Characteristics of The Participants (cont.)*

General Characteristics		Total (N=1,454)	
		n	%
Living arrangement	with family	1,333	91.68
	alone	121	8.32
Children	no	560	38.51
	yes	894	61.49
Relocation	No	907	62.38
	Yes	547	37.62
Alcohol	Never	1,145	78.75
	Ex-drinker	219	15.06
	Drinker	90	6.19
Smoking	Never	1,257	86.45
	Ex-smoker	118	8.12
	Smoker	79	5.43
Caffeine	No	695	47.80
	Yes	759	52.20

Part 4.2 Prevalence of suicidal idea

Suicidal idea prevalence was 6.46%. Elderly men had slightly higher suicidal idea prevalence (6.51%) than women (6.45%). The prevalence of suicidal idea increased with age. Pre-elderly had the prevalence of 5.89% while the late elderly had higher suicidal idea at 8.12%. The prevalence of suicidal idea increased with BMI. Obese people had highest suicidal idea prevalence. They had suicidal idea 8.01%. The underweighted elderly had the least suicidal idea at 4.69%. Those elderly with no, primary and secondary level of education had higher suicidal idea (7.40%). Elderly who finished Bachelor degree or higher had suicidal idea 3.89%. Those who finished Master degree or above did not have any suicidal idea during the data collection. Surprisingly, occupation did not have effect on suicidal idea prevalence. Elderly who had income from 1 to 8,999 baht had the highest suicidal idea (8.6%). They had more suicidal idea than those without any income (5.7%). Elderly who earned 9 thousand baht a month or more had lowest suicidal idea (3.94%). Alcohol and smoking did not have significant effect on suicidal idea. Coffee-drinking elderly had lower suicidal idea. They had suicidal idea prevalence of 5.53% while the non-drinker had 7.48%. Relocation into Bangkok did not show statistically significant difference of suicidal idea prevalence (p-value = 0.337). Elderly living alone had higher suicidal idea. Living-alone elderly had suicidal idea prevalence of 9.09%. It is higher than elderly with no other family member (8.74%). Elderly with children had suicidal idea prevalence of 5.4%, comparing to 8.2% of no-children groups. Data were shown in table 7.

The characteristics are categorized into two groups: having and not having suicidal idea. Chi-square was used to test the difference of frequencies between the two groups. P-value less than 0.05 was considered statistically significant. Difference in gender, age, BMI, occupation, employment status, marital status, living arrangement, history of relocation, smoking status, alcohol and caffeine consumption was found to be non-statistically significant. There was statistically significant difference in education level, income, and having children between the two groups.

Education level was classified by secondary school. Elderly without any education, elderly who completed primary or secondary school were considered lower education level. Elderly graduated high school, Bachelor degree, and Master degree or above were classified as higher education level. As mentioned in table 7, 79 of 1,068 lower education level elderly had suicidal idea. The prevalence was 7.40%. Only 15 of 386 (3.89%) elderly with higher education level had suicidal idea. Chi-square found it was statistically significant (p-value = 0.018). Logistic regression was used to test the odds ratio. Elderly with lower education level had 1.976 times the risk of having suicidal idea, comparing to elderly with higher education level (95% CI: 1.123 – 3.475).

Thailand minimum salary was used as cut point to categorized income level. Elderly earning less than 9 thousand baht a month was categorized as low-income group. Elderly earning at least 9 thousand baht per month was categorized as high-income group. The prevalence of suicidal idea in low-income group was significantly higher than the high-income group (p-value = 0.016). Low-income elderly had higher risk of having suicidal idea. The odds ratio was 2.128 (95% CI: 1.191 – 3.801).

Table 7 Prevalence of Suicidal Idea, Categorized by Demographic Data

General Characteristics		Total (N=1,454)	Suicidal Ideation	
			n	Prevalence (%)
Gender	Female	1,070	69	6.45
	Male	384	25	6.51
Age	Pre-elderly	594	35	5.89
	Early elderly	589	37	6.28
	Late elderly	271	22	8.12
BMI	Underweighted	64	3	4.69
	Normal Weight	465	26	5.59
	Overweighed	338	18	5.33
	Obese	587	47	8.01
Education	Secondary or less	1068	79	7.40
	High School or more	386	15	3.89
Employment	no	705	44	6.20
	yes	749	50	6.70
Income	Less than 9,000	1071	80	7.50
	9,000 or more	383	14	3.70
Marriage	Single	163	14	8.59
	Married	853	47	5.51
	Divorced/Widow	437	33	7.55
Living arrangement	with family	1,333	83	6.23
	alone	121	11	9.09
Children	no	560	46	8.20
	yes	894	48	5.40
Relocation	No	907	63	6.95
	Yes	547	31	5.67
Alcohol	Never	1,145	79	6.90
	Ex-drinker	219	11	5.02
	Drinker	90	4	4.44
Smoking	Never	1,257	80	6.36
	Ex-smoker	118	10	8.47
	Smoker	79	4	5.06
Caffeine	No	695	52	7.48
	Yes	759	42	5.53

Part 4.3 Association between general characteristics and suicidal idea

Having children was statistically different between the elderly with and without suicidal idea (p-value = 0.033). Elderly without children had 57.7% higher risk of having suicidal idea. Odds ratio was 1.577 and 95% confidence interval was 1.037 to 2.398. However, having children was not statistically significant between the two groups.

In summary, lower education level, low-income, and having no children increased the risk of having suicidal idea in elderly. The analysis of all of demographic data was provided in table 8.

Table 8 Association of Demographic Data and Suicidal Idea

General Characteristics		Suicidal Ideation		p-value	OR	95%CI	
		Yes	No			Lower	Upper
Gender	Female	69	1,001	0.966	0.99	0.617	1.589
	Male	25	359		1	ref.	
Age	Pre-elderly	35	559	0.454	1	ref.	
	Early elderly	37	552		1.411	0.811	2.455
	Late elderly	22	249		1.318	0.762	2.281
BMI	Underweighted	3	61	0.266	0.83	0.244	2.826
	Normal Weight	26	439		1	ref.	
	Overweighed	18	320		0.95	0.512	1.762
	Obese	47	540		1.47	0.896	2.412
Education	Secondary or less	79	989	0.018*	1.976	1.123	3.475
	High School or more	15	371		1	ref.	
Occupation	Employee	2	29	0.978	1	ref.	
	Civil Servant	5	71		1.021	0.187	5.566
	Housewife	44	661		0.965	0.223	4.177
	Businessman	7	106		0.958	0.189	4.859
	Merchant	11	182		0.876	0.185	4.157
	Others	25	311		1.166	0.263	5.17
Employment	no	44	661	0.736	1	ref.	
	yes	50	699		1.075	0.707	1.634
Income	Less than 9,000	80	991	0.016*	2.128	1.191	3.801
	9,000 or more	14	369		1	ref.	

Table 8 *Association of Demographic Data and Suicidal Idea (cont.)*

General Characteristics		Suicidal Ideation		p-value	OR	95%CI	
		Yes	No			Lower	Upper
Marriage	Single	14	149	0.185	1	ref.	
	Married	47	806		0.62	0.333	1.154
	Divorced/Widow	33	404		0.869	0.453	1.67
Living	with family	83	1,250	0.22	1	ref.	
arrangement	alone	11	110		1.506	0.78	2.909
Children	no	46	514	0.033*	1.577	1.037	
	yes	48	846		1	ref.	3.168
Relocation	No	63	844	0.337	1	ref.	2.743
	Yes	31	516		0.805	0.516	3.913
Alcohol	Never	79	1,066	0.423	1	ref.	2.925
	Ex-drinker	11	208		0.714	0.373	
	Drinker	4	86		0.628	0.224	2.398
Smoking	Never	80	1,177	0.587	1	ref.	
	Ex-smoker	10	108		1.362	0.686	
	Smoker	4	75		0.785	0.28	1.254
Caffeine	No	52	643	0.196*	1	ref.	
	Yes	42	717	Fisher	0.724	0.476	1.364

Part 4.4 Loneliness and suicidal idea

Loneliness was identified with Thai-version UCLA-LS. There were 20 questions asking about symptoms of loneliness. The score ranged from 20 (not lonely) to 80 (extremely lonely). The median score was 41.5 (IQR = 7.0). The researchers categorized the score by quartile and used score-above-quartile 3 (>46.0) as high lonely and the rest (≤48.5) as not high lonely.

From 1,454 elderly, there were 332 high lonely elderly. The prevalence of high loneliness was 22.8% Thirty – four (10.2%) of them had suicidal idea. In the not high lonely group, there were 60 out of 1,122 (5.3%) elderly with suicidal idea. Chi-square was tested and p-value was 0.001. The risk of having suicidal idea in high lonely elderly was 2.019 times of the not high lonely group. (OR = 2.019, 95% CI = 1.30 – 3.135). The risk was statistically significant. Descriptive statistics of loneliness are shown in table 9 and analytical statistics are shown in table 12.

Table 9 Descriptive Statistics of Loneliness

Loneliness (n=1,454)	
Median (IQR)	41.5 (7.0)
Cut-off	>46
High lonely	332 (22.8%)
Not high lonely	1,122 (77.2%)

Part 4.5 Depression and suicidal idea

Depression was assessed with Thai-version PHQ-9. Question 1 to 8 were used to calculate depression score. The score ranged from 0 (not depressed) to 24 (extremely depressed). The median score was 10 (IQR = 6). Scoring more than 14 was categorized as high depressed. The other was categorized as not high depressed.

Two-hundred and fifty – five seniors were high depressed. The prevalence of high depression in elderly living in Bangkok was 17.5%. Sixty – nine (27.1%) of them had suicidal idea. Only 25 (2.1%) out of 1,174 not high depressed elderly had suicidal idea. The risk of having suicidal idea in high depressed elderly was 17.4 times of the risk of not high depressed group (p-value < 0.001). The odds ratio was 17.42 and 95% confidence interval was 10.75 to 28.24. High depression was associated with suicidal idea in elderly. Descriptive statistics of depression are shown in table 10 and analytical statistics are shown in table 12.

Table 10 Descriptive Statistics of Depression

Depression (n=1,454)	
Median (IQR)	10.0 (6.0)
Cut-off	>14
High depressed	255 (17.5%)
Not high depressed	1,199 (82.5%)

Part 4.6 Quality of life and suicidal idea

Thai-version of WHOQOL-BREF was used to assess quality of life. It was translated by Department of Mental Health. The raw scores in each domain were converted to percentiles according to WHO guideline. The percentiles were later summed up to calculate total score. Scoring less than the 25^{th} percentile was considered as poor quality of life in each domain and also total score.

Physical domain median percentile was 61 and interquartile range was 13. Scoring less than 56 percentiles was considered as poor physical quality of life. There were 324 elderly with poor physical quality of life. It was 22.3% of all elderly. Fifty-one (15.74%) of them had suicidal idea (p-value < 0.001). Odds ratio was 4.72 (95%CI = 3.08 - 7.237).

Psychological domain median percentile was 69 and interquartile range was 25. Scoring less than 56 percentiles was considered as poor psychological quality of life. There were 241 elderly with poor psychological quality of life. It was 16.6% of all elderly. Forty - seven (19.5%) of them had suicidal idea (p-value < 0.001). Odds ratio was 6.01 (95%CI = 3.90 – 9.257).

Environmental domain median percentile was 63 and interquartile range was 25. Scoring less than 50 percentiles was considered as poor environmental quality of life. There were 156 elderly with poor environmental quality of life. It was 10.7% of all elderly. Thirty (19.2%) of them had suicidal idea (p-value < 0.001). Odds ratio was 4.59 (95%CI = 2.87 – 7.351).

Social domain median percentile was 56 and interquartile range was 25. Scoring less than 44 percentiles was considered as poor social quality of life. There were 227 elderly with poor physical quality of life. It was 15.6% of all elderly. Forty-two (18.50%) of them had suicidal idea (p-value < 0.001). Odds ratio was 5.13 (95%CI = 3.32 – 7.927).

All percentiles were summed up to calculate total quality of life score. The full score would be 400. The median score was 251 and interquartile range was 75. Scoring less than 212 was categorized as poor quality of life. There were 346 elderly with poor QoL. It was 23.8%. Fifty – nine of them (17.1%) had suicidal idea (p-value < 0.001). Odds ratio was 6.3 (95%CI = 4.07 – 9.766). From all four QoL domains, psychological quality of life may be the best predictor as it yielded highest risk. Descriptive statistics of QoL are shown in table 11 and analytical statistics are shown in table 12.

Table 11 *Descriptive Statistics of QoL*

Domains	Median (IQR)	Cut-off	Poor (n)	Prevalence (%)
QoL: Physical	61 (13)	<56	324	22.3
QoL: Psychological	69 (25)	<56	241	16.6
QoL: Environmental	63 (25)	<50	156	10.7
QoL: Social	56 (25)	<44	227	15.6
Total QoL	251 (75)	<212	346	23.8

Table 12 Odds Ratio of Loneliness, Depression, Poor QoL

Independent Variables		Suicidal Ideation		p-value	OR	95%CI	
		Yes	No			Lower	Upper
Loneliness	High	18	133	0.004*	2.19	1.27	3.765
	Not high	76	1,227		1	ref.	
Depression	High	35	65	<0.001	11.82	7.26	19.229
	Not High	59	1,295		1	ref.	
QoL: Physical	Poor	51	273	<0.001	4.72	3.08	7.237
	Good	43	1,087		1	ref.	
QoL: Psychological	Poor	36	95	<0.001	8.27	5.19	13.161
	Good	58	1,265		1	ref.	
QoL: Environmental	Poor	21	64	<0.001	5.83	3.37	10.06
	Good	73	1,296		1	ref.	
QoL: Social	Poor	42	185	<0.001	5.13	3.32	7.927
	Good	52	1,175		1	ref.	
Total QoL	Poor	29	76	<0.001	7.54	4.59	12.366
	Good	65	1,284		1	ref.	

Part 4.7 Adjusted odds ratio of risk and suicidal idea

Statistically significant variables which had p-value less than 0.25 were introduced into multiple-logistic model. They were education level, income, having children, living arrangement, caffeine consumption, marital status, loneliness, depression, and poor QoL. Depression, poor QoL, and loneliness remained statistically significant. Depressed elderly had suicidal idea adjusted odds ratio (aOR) of 12.5 (95% CI = 7.50 – 20.84), comparing to non-depressed elderly. Poor QoL in the elderly had 3.15 times risk of having suicidal idea, comparing to having good QoL (aOR = 3.15, 95% CI = 1.93 – 5.15). Loneliness increased the risk of having suicidal idea in the elderly 71% (aOR = 1.71, 95% CI = 1.02 – 2.85). Education, income of the elderly, having children, living arrangement, caffeine consumption and marital status were not associated with suicidal idea in the elderly living in Bangkok. Table 13 for adjusted odd are provided below.

Table 13 *Adjusted Odds Ratio*

Suicidal Idea	p-value	aOR	95% CI	
			Lower	Upper
Lower Education	.17	1.60	.82	3.13
Low Income	.08	1.81	.92	3.55
No Children	.35	1.39	.70	2.74
Alone	.93	1.04	.47	2.28
No Caffeine	.45	1.20	.74	1.95
Single	.89	1.07	.42	2.73
Divorced/Widowed	.48	0.78	.40	1.54
High lonely	.04	1.71	1.02	2.85
High depressed	<0.001	12.50	7.50	20.84
Poor QoL	<0.001	3.15	1.93	5.15

CHAPTER 5 Discussion

This study aimed to find the prevalence and associated factors of suicidal idea in elderly living in Bangkok. The prevalence of suicidal idea was 6.46%. Depression, poor QoL, and loneliness were associated with suicidal idea, aOR were 12.50 (95% CI = 7.50 – 20.84), 3.15 (95% CI = 1.93 – 5.15) and 1.71 (95% CI = 1.02 – 2.85) respectively. General characteristics of the elderly living in Bangkok were not associated with suicidal idea.

The Prevalence of Suicidal Idea

The prevalence of suicidal idea in elderly living in Bangkok was 6.46%. It was higher than other research conducted in Asia. Rawipat P. found that the risk of having suicidal idea in rural area of Chiang Rai was 3.2%, in the same year, 2017 (43). While the suicide mortality rate in Bangkok was 3.94 deaths per 100,000 population but the suicide mortality in Chiang Rai was 10.8 deaths per 100,000 population in that year (7). The suicidal idea and suicide mortality seemed to go to different directions. People with different culture or ethnicity expressed their suicidal behaviors differently (101). People in Bangkok might express better if they had the risk, while people in Chiang Rai could express less. Because the people in Bangkok were more affected by the globalization and urbanization and they could more easily accept their mental illness (102). The Chinese elderly had suicidal idea prevalence at 2.6% while the Taiwanese elderly had 3.1% (42, 103). The lower suicidal idea prevalence in China might resulted from the lower prevalence of depression. The prevalence of depression of the Chinese elderly in the study was 3.4% (42). The difference of risk of having suicidal idea might also be due to different research methodology such as data collection and measurement tools.

General Characteristics

Biological status

Most of the studied population were female. They had the same prevalence of suicidal ideation with male (p-value = 0.97). It was different from the study conducted by Jianwen W, et al. They found that female elderly had higher suicidal idea (42). Age of the elderly did not show statistical difference of prevalence of suicidal idea. It was congruent with Yeong Jun Ju, et al. (46). Although many of the studied population were obese, the researchers found no difference of the prevalence of the suicidal idea across the BMI. The result was similar with the research conducted by Ajit Shah. He found that obesity was not associated with suicide rates but it was associated with obese female elderly (78). Obesity seemed to only be associated with suicide in psychiatric patients, which were excluded in this study (79, 80). Psychiatric patients with suicidal idea were more likely to have more psychotropic medication, which most of them had obesity as side-effects. This could be the reason of the association between obesity and suicidal idea in psychiatric patients.

Socio-economic status

Education level and income were not associated in this study. Lower education level was associated increased the risk of suicidal idea by 97.6% (OR = 1.98, 95% CI = 1.123 - 3.475). The association was similar with research conducted by Wiktorsson S, et al. They found that higher education level decreased the suicide attempt risk by 44% (81). Low-income was also associated with the risk of having suicidal idea. The association was the same with Yeong Jun Ju's findings (46). But education level and income were not statistically significant after adjustment with other variables. The result might be the same if adjusted odds ratio was analyzed in the previous research.

Many socio-economic status variables were not the same with previous research. The researchers found no different of prevalence of suicidal idea among different occupation and employment status (p-value = 0.98, 0.74 accordingly). Previous research found that retirement was associated with suicide (82). The reason of the different of finding might be due to about eighty percent of the elderly in Bangkok lived with their family. So, there were more social support from the family. In Thai culture, working adults usually give a part of their income to their parents and leave their children to be raised by grandmother and grandfather. The elderly would still have income and things to do. They would not be vacancy like retired seniors in other culture. On the other hand, Ju, et al. found the same result with this study that unemployment in the elderly was not associated with suicide (46).

Marital status, and living arrangement were not associated with suicidal idea. This was against the study conducted by Ju and Wiktorsson (46, 81). The population in this study were under elderly clubs, they might be more likely to have friends and social cohesion within the clubs. Widows or divorced seniors had more chance to meet the each other with the same status. They could talk and help each other. Moreover, the year of the data collection was different. Globalization and technology were more advanced, they can help the elderly to connect to the world more easily. The elderly can contact to their family and friends without staying together. Having no children was associated with suicidal idea (OR = 1.58, 95% CI = 1.04 – 2.40). However, the p-value was 0.033 and it was not introduced to the multiple-logistic model. Having children could be a protective factor like the study conducted by Conejero, et al in 2018 (12). This study found no difference of the prevalence of suicidal idea in the elderly with previous relocation. It was not coherent with de Leo D's study in the elderly with history of crisis (83). The elderly in Bangkok who had relocated might not have a crisis before they moved into Bangkok.

Behaviors

This study found no difference of suicidal idea, regarding of alcohol consumption, smoking status or caffeine consumption. Many research found that alcohol consumption in AUD patients increased the risk of suicide but it was controversial in normal population (84, 85). However, this research excluded the mentally-ill patients and did not screen for AUD. This might obscure the association. Ju and Schneider found that smoking increased suicide risk (46, 86). But the association was not found in this study. Caffeine consumption was not associated with suicidal idea. But Szekely found that caffeine could reduce the risk while Baethge found that it could increase the risk (88, 89). The explanation of association between caffeine consumption and suicide should be further studied.

Loneliness and Suicidal Idea

The prevalence of high loneliness was 22.8%. According to Valtorta N. and Hanratty B., it was 2 – 16% in the elderly community, and lifetime prevalence after 55 years old was 32% (35). High loneliness was associated with suicidal idea (OR = 2.02, 95% CI = 1.30 – 3.14). It was also significantly associated after being introduced to multiple-logistic model (aOR = 1.71, 95% CI = 1.02 - 2.85). According to Stravynski A. and Boyer R., feeling lonely very often was associated with suicidal idea (OR=10.5, 95%CI = 8.4 - 13.1) (13). Loneliness was associated with suicidal idea in both adults and the elderly. There should be more social support to decrease the loneliness in the elderly living in Bangkok.

Depression and Suicidal Idea

The prevalence of high depression in this study was 17.5%. It was higher than the prevalence of depression in the elderly in Thailand, which was 6.0% (41). It was higher than the prevalence in rural area of Chiang Rai (2.96%) and China (4.90%) (42, 43). It was less than urban city of Rayong (21.6%) and urban city of Nong Bua Lam Phu (22.80%) (44, 45). The urban city was more likely to have more depression than rural area in Thailand. High depression increased the risk of having suicidal idea 17 times (OR = 17.4, 95% CI = 10.75 – 28.24). aOR was 12.50 (95% CI = 7.50 – 20.84). Depression had the strongest association with suicidal idea in this study. This is supported by Yeates Conwell, et al (39). Depression had more effects on suicide risk in the elderly while its effect was less in adults. Depression increased the risk of suicide 91-120% in adults (40, 97). The association differed through ageing. Age might be an effect modifier on the association between depression and suicide.

QoL and Suicidal Idea

The elderly in this study had poor physical QoL 22.3%. It was associated with suicidal idea (OR = 4.72, 95% CI = 3.08 – 7.24). The elderly in this study had poor psychological QoL 16.6%. It was associated with suicidal idea (OR = 6.01, 95% CI = 3.90 – 9.26). The elderly in this study had poor environmental QoL 10.7%. It was associated with suicidal idea (OR = 4.59, 95% CI = 2.87 – 7.35). The elderly in this study had poor social QoL 15.6%. It was associated with suicidal idea (OR = 5.13, 95% CI = 3.32 – 7.93). These statements were supported by P. N. Suresh Kumar and Biju George. They found that the mean score of each domain of QoL was significantly lower in the suicide attempters' group ($p<0.01$) (104).

The elderly in this study had poor overall QoL 23.8%. It was associated with suicidal idea (OR = 6.3, 95% CI = 4.07 – 9.77). The association was stronger than the study conducted by Pankaj Joshi, et al. Poor overall QoL increased the risk of having suicidal idea by 2.31 times (OR = 3.31, 95% CI = 3.10 – 3.54) and suicidal attempt by 3.18 times (OR = 4.18, 95% CI = 3.19 – 5.48) (105).

Strength and Weakness

This is the first research that study the prevalence of suicidal idea and its associated factors, using aOR, in the elderly living in Bangkok. This secondary data analysis had large sample size. It can be generalized to the elderly under elderly clubs of PHC, BMA. However, it could not be generalized to all of the elderly in Bangkok.

The cross-sectional study excluded the mentally ill patients which might have excluded patients with depression. The correlation of depression to suicidal idea may be underestimated. The results cannot be generalized to the whole elderly population.

The data was prone to recall bias, especially with the elderly with cognitive impairment and antecedent-consequent bias by cross-sectional study design. The questionnaires were also prone to recall biases of the interviewees and social-desirable response. Stigma in mental health problem could lead to nondisclosure of the depression and suicidal idea (106). The general characteristics of the interviewees may be confounders or effect modifiers. The recall biases of the general characteristics were minimized by asking about the lifestyle and facts of the interviewees. The other questionnaires ask about the past 2 weeks events. It should be proportionate to the recall power of the interviewees. Some sensitive questions were asked late in the interview to reduce the social-desirable response. Since the interviewers were trained to build trust of confidentiality and listen non-judgmentally.

Selection bias might occur since the population enrolled for this study was from elderly clubs under PHC of BMA. They might have more social engagement, less loneliness and better QoL since they were still able to participate in the club activities.

The results could only show the association between the variables collected in this study. It could not show causal-relationship.

Recommendations

Suicide prevention for the elderly should focus on depression and poor QoL of the elderly. These two factors were the main risk of having suicidal idea in the elderly. Selective prevention should target on the elderly with depression or poor QoL. Indicated suicide prevention should include depression reduction and QoL improvement in the intervention.

Further research on elderly suicide prevention should include depression and QoL in their studies. New short and handy QoL screening tools might be an appropriate tool to identify the elderly with poor QoL in order to address risk of suicidal idea.

Possible risk factors including loneliness, income, education level and having children should be further studied in the era of telecommunication. Household income might be a better indicator than income of the elderly.

Conclusions

With the rapid rising of the suicide mortality in the elderly, there had been no recent studies conducted to estimate the prevalence and associated factors of suicidal idea in the elderly. This study was a secondary data analysis from a cross-sectional survey of the elderly from the elderly clubs under PHC, BMA. The results of this study showed that elderly had the prevalence of suicidal idea at 6.46%. The risk factors of having suicidal idea were depression and poor QoL. Suicide prevention for the elderly should focus on reducing depression and improving QoL of the elderly.

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APPENDIX 1 Questionnaire in Thai

แบบสอบถาม

โดย วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถามนี้เป็นส่วนหนึ่งของการวิจัย เพื่อศึกษาคุณภาพชีวิต ความเหงา และภาวะซึมเศร้าของผู้สูงวัยในแง่มุมต่างๆ โดยการศึกษาวิจัยครั้งนี้จะสามารถเป็นประโยชน์ทางวิชาการและสามารถนำมาพัฒนาเป็นแนวทางส่งเสริมคุณภาพชีวิตของผู้สูงอายุได้

แบบสอบถามนี้แบ่งออกเป็น 4 ส่วน ดังนี้

ส่วนที่ 1 คุณลักษณะทั่วไปของผู้ตอบแบบสอบถาม

ส่วนที่ 2 แบบวัดคุณภาพชีวิตตามองค์การอนามัยโลก [WHOQOL Brief]

ส่วนที่ 3 แบบวัดความรู้สึกโดดเดี่ยว [UCLA Loneliness]

ส่วนที่ 4 แบบประเมินภาวะความซึมเศร้า (PHQ-9)

วันเดือนปี ที่ทำการสัมภาษณ์.....

ผู้ทำการสัมภาษณ์.....

ส่วนที่ 1 คุณลักษณะทั่วไปของผู้ตอบแบบสอบถาม				
1	เพศ	☐ หญิง	☐ ชาย	
2	อายุ	ปี		
3	น้ำหนัก	กิโลกรัม		
4	ส่วนสูง	เซนติเมตร		
5	สถานภาพสมรส	☐ โสด	☐ สมรส	☐ หย่าร้าง
6	จำนวนบุตร	คน		
7	ระดับการศึกษาสูงสุด	☐ ไม่ได้ศึกษา	☐ ประถมศึกษา	☐ มัธยมศึกษาตอนต้น
		☐ มัธยมศึกษาตอนปลาย	☐ ปริญญาตรี	☐ ปริญญาโท หรือสูงกว่า
8	ภูมิลำเนาเดิม	☐ กทม.	☐ ต่างจังหวัด.....	
9	อาชีพปัจจุบัน	☐ พนักงานบริษัท	☐ รับราชการ/รัฐวิสาหกิจ	☐ แม่บ้าน/ว่างงาน
		☐ ธุรกิจส่วนตัว	☐ ค้าขาย	☐ อื่นๆ.....
10	รายได้เฉลี่ยต่อเดือน	บาท		
11	บุหรี่	☐ ไม่สูบ	☐ เคยสูบ	☐ สูบ
12	แอลกอฮอลล์	☐ ไม่ดื่ม	☐ เคยดื่ม	☐ ดื่ม
13	คาเฟอีน (ชา/กาแฟ)	☐ ไม่ดื่ม	☐ ดื่ม	
14	พักอาศัย	☐ อยู่กับครอบครัว	☐ คนเดียว	

ส่วนที่ 2 แบบวัดคุณภาพชีวิตตามองค์การอนามัยโลก [WHO-QOL Brief]

คำชี้แจง ข้อคำถามต่อไปนี้จะถามถึงประสบการณ์อย่างใดอย่างหนึ่งของท่านในช่วง 2 สัปดาห์ที่ผ่านมา ให้ท่านสำรวจตัวท่านเอง และประเมินเหตุการณ์หรือความรู้สึกของท่าน แล้วทำเครื่องหมาย ในช่องคำตอบที่เหมาะสมและเป็นจริงกับตัวท่านมากที่สุด โดยมีตัวเลือก 5 คำตอบ คือ

ไม่เลย หมายถึง ท่านไม่มีความรู้สึกเช่นนั้นเลย รู้สึกไม่พอใจมาก หรือแย่มาก
เล็กน้อย หมายถึง ท่านมีความรู้สึกเช่นนั้นนานๆ ครั้งรู้สึกเช่นนั้นเล็กน้อย รู้สึกไม่พอใจ หรือรู้สึกแย่
ปานกลาง หมายถึง ท่านมีความรู้สึกเช่นนั้นปานกลาง รู้สึกพอใจระดับปานกลาง หรือรู้สึกแย่ระดับกลางๆ
มาก หมายถึง ท่านมีความรู้สึกเช่นนั้นบ่อยๆ รู้สึกพอใจ หรือรู้สึกดี
มากที่สุด หมายถึง ท่านมีความรู้สึกเช่นนั้นเสมอ รู้สึกเช่นนั้นมากที่สุด หรือรู้สึกว่าสมบูรณ์ รู้สึกพอใจ

ประสบการณ์ของท่านในช่วง 2 สัปดาห์		ไม่เลย	เล็กน้อย	ปานกลาง	มาก	มากที่สุด
1	ท่านพอใจกับสุขภาพของท่านในตอนนี้เพียงใด	1	2	3	4	5
2	การเจ็บปวดตามร่างกาย เช่น ปวดหัว ปวดท้อง ปวดตามตัว ทำให้ท่านไม่สามารถทำในสิ่งที่ต้องการมากน้อยเพียงใด	1	2	3	4	5
3	ท่านมีกำลังเพียงพอที่จะทำสิ่งต่างๆในแต่ละวันไหม (ทั้งเรื่องงานหรือการดำเนินชีวิตประจำวัน)	1	2	3	4	5
4	ท่านพอใจกับการหลับนอนของท่านมากน้อยเพียงใด	1	2	3	4	5
5	ท่านรู้สึกพึงพอใจในชีวิตของท่าน (เช่น มีความสุข ความสงบ มีความหวังมากน้อยเพียงใด)	1	2	3	4	5
6	ท่านมีสมาธิการทำงานต่างๆดีเพียงใด	1	2	3	4	5

ประสบการณ์ของท่านในช่วง 2 สัปดาห์		ไม่เลย	เล็กน้อย	ปาน กลาง	มาก	มาก ที่สุด
7	ท่านรู้สึกพอใจในตนเองมากน้อยแค่ไหน	1	2	3	4	5
8	ท่านยอมรับรูปร่างหน้าตาของตัวเองได้ไหม	1	2	3	4	5
9	ท่านมีความรู้สึกไม่ดี เช่น รู้สึกเหงา เศร้า หดหู่ สิ้นหวัง วิตกกังวล บ่อยแค่ไหน	1	2	3	4	5
10	ท่านรู้สึกพอใจมากน้อยแค่ไหนที่สามารถทำอะไรๆ ผ่านไปได้ในแต่ละวัน	1	2	3	4	5
11	ท่านจำเป็นต้องไปรับการรักษาพยาบาลมากน้อยเพียงใด เพื่อที่จะทำงานหรือมีชีวิตอยู่ไปได้ในแต่ละวัน	1	2	3	4	5
12	ท่านพอใจกับความสามารถในการทำงานได้อย่างที่เคยทำมามากน้อยเพียงใด	1	2	3	4	5
13	ท่านพอใจต่อการผูกมิตรหรือเข้ากับคนอื่น อย่างที่ผ่านมาแค่ไหม	1	2	3	4	5
14	ท่านพอใจกับการช่วยเหลือที่เคยได้รับจากเพื่อนๆมากน้อยแค่ไหน	1	2	3	4	5
15	ท่านรู้สึกว่าชีวิตมีความมั่นคงปลอดภัยดีไหมในแต่ละวัน	1	2	3	4	5
16	ท่านพอใจกับสภาพบ้านเรือนที่อยู่ตอนนี้มากน้อยเพียงใด	1	2	3	4	5

ประสบการณ์ของท่านในช่วง 2 สัปดาห์		ไม่เลย	เล็กน้อย	ปาน กลาง	มาก	มาก ที่สุด
17	ท่านมีเงินพอใช้จ่ายตามความจำเป็นมากน้อยเพียงใด	1	2	3	4	5
18	ท่านพอใจที่จะสามารถไปใช้บริการสาธารณสุขได้ตามความจำเป็นเพียงใด	1	2	3	4	5
19	ท่านได้รู้เรื่องราวข่าวสารที่จำเป็นในชีวิตแต่ละวันมากน้อยเพียงใด	1	2	3	4	5
20	ท่านมีโอกกาสได้พักผ่อนคลายเครียดมากน้อยเพียงใด	1	2	3	4	5
21	สภาพแวดล้อมดีต่อสุขภาพของท่านมากน้อยเพียงใด	1	2	3	4	5
22	ท่านพอใจกับการเดินทางไปไหนมาไหนของท่านมากน้อยเพียงใด (การคมนาคม)	1	2	3	4	5
23	ท่านรู้สึกว่าชีวิตท่านมีความหมายมากน้อยแค่ไหน	1	2	3	4	5
24	ท่านสามารถไปไหนมาไหนได้ด้วยตนเองได้ดีเพียงใด	1	2	3	4	5
25	ท่านพอใจในชีวิตทางเพศของท่านแค่ไหน (ชีวิตทางเพศหมายถึง เมื่อเกิดความรู้สึกทางเพศขึ้นแล้วท่านมีวิธีจัดการให้ผ่อนคลายลงได้ รวมถึงการช่วยตนเองหรือการมีเพศสัมพันธ์)	1	2	3	4	5
26	ท่านคิดว่าท่านมีคุณภาพชีวิต (ชีวิตความเป็นอยู่) อยู่ในระดับใด	1	2	3	4	5

ส่วนที่ 3 แบบวัดความรู้สึกโดดเดี่ยว [UCLA Loneliness]					
ประสบการณ์ของท่านในช่วง 2 สัปดาห์		ไม่เคย	นานๆครั้ง	บ่อยครั้ง	ประจำ
1	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณเข้ากันได้ดีกับคนรอบข้าง	1	2	3	4
2	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณขาดเพื่อนเคียงข้าง	1	2	3	4
3	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณไม่รู้จะหันหน้าไปหาใคร	1	2	3	4
4	บ่อยครั้งเพียงใดที่ท่านรู้สึกโดดเดี่ยว	1	2	3	4
5	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณเป็นส่วนหนึ่งของกลุ่มเพื่อน	1	2	3	4
6	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณมีอะไรหลายๆอย่างที่เหมือนกับผู้คนรอบข้างตัวคุณ	1	2	3	4
7	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่า ต่อจากนี้ไปคุณไม่ได้สนิทสนมกับใครอีกแล้ว	1	2	3	4
8	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณไม่ได้คุยกับผู้คนรอบข้างและแสดงความคิดเห็นในเรื่องที่คุณให้ความสนใจ	1	2	3	4
9	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณเข้าสังคมได้ง่ายและดูเป็นมิตร	1	2	3	4
10	บ่อยครั้งเพียงใดที่ท่านรู้สึกสนิทสนมกับบุคคลอื่นๆ	1	2	3	4
11	บ่อยครั้งเพียงใดที่ท่านรู้สึกเหมือนถูกทอดทิ้งให้อยู่คนเดียว	1	2	3	4
12	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าความสัมพันธ์ของคุณกับคนอื่นๆนั้นไร้ความหมาย	1	2	3	4
13	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าไม่มีใครรู้จักคุณดีพอ	1	2	3	4
14	บ่อยครั้งเพียงใดที่ท่านรู้สึกแปลกแยกจากคนอื่นๆ	1	2	3	4
15	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณสามารถหาเพื่อนเคียงข้างได้ในยามที่คุณต้องการ	1	2	3	4
16	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่ามีผู้คนมากมายที่เข้าใจคุณอย่างแท้จริง	1	2	3	4
17	บ่อยครั้งเพียงใดที่ท่านรู้สึกเขินอาย	1	2	3	4
18	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่าคุณไม่มีใคร ทั้งๆที่มีผู้คนมากมายอยู่รอบตัวคุณ	1	2	3	4
19	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่ามีคนมากมายที่คุณสามารถพูดคุยปรึกษาด้วยได้	1	2	3	4
20	บ่อยครั้งเพียงใดที่ท่านรู้สึกว่ามีคนมากมายที่คุณสามารถพึ่งพาหรือหันหน้าไปหาได้	1	2	3	4

ส่วนที่ 4 แบบประเมินภาวะความซึมเศร้า (PHQ-9)					
ใน 2 อาทิตย์ที่ผ่านมา ท่านมีปัญหาเหล่านี้บ่อยเพียงใด		ไม่มีเลย	เป็นบางวัน	เป็นบ่อย	เป็นทุกวัน
1	เบื่อ ไม่สนใจอยากทำอะไร	0	1	2	3
2	ไม่สบายใจ ซึมเศร้า ท้อแท้	0	1	2	3
3	หลับยาก หรือหลับๆ ตื่นๆ หรือหลับมากไป	0	1	2	3
4	เหนื่อยง่าย หรือ ไม่ค่อยมีแรง	0	1	2	3
5	เบื่ออาหาร หรือ กินมากเกินไป	0	1	2	3
6	รู้สึกไม่ดีกับตัวเอง คิดว่า ตัวเองล้มเหลวหรือ ทำให้ตนเองหรือครอบครัวผิดหวัง	0	1	2	3
7	สมาธิไม่ดีเวลาทำอะไร เช่น ดูโทรทัศน์ ฟังวิทยุ หรือทำงานที่ต้องใช้ความตั้งใจ	0	1	2	3
8	พูดช้าทำอะไรช้าลงจนคนอื่นสังเกตเห็นได้หรือกระสับกระส่ายไม่สามารถอยู่นิ่งได้เหมือนที่เคยเป็น	0	1	2	3
9	คิดทำร้ายตนเอง หรือคิดว่าถ้าตายไปคงจะดี	0	1	2	3

APPENDIX 2 Questionnaire in English

	Part 1 General Characteristic			
1	Gender	☐ Female	☐ Male	
2	Age		years old	
3	Weight		kg	
4	Height		cm	
5	Marital Status	☐ Single	☐ Married	☐ Divorce/Widow
6	Children		Persons	
7	Education level	☐ No	☐ Primary School	☐ Secondary School
		☐ High School	☐ Bachelor	☐ Master or higher
8	Birth Place	☐ Bangkok	☐ Other……	
9	Occupation	☐ Employee	☐ Civil Servant	☐ Housewives
		☐ Businessman	☐ Merchant	☐ Other……
10	Income		Baht	
11	Cigarette	☐ Never	☐ Ex-smokers	☐ Smokers
12	Alcohol	☐ Never	☐ Ex-drinkers	☐ Drinkers
13	Caffeine	☐ No	☐ Yes	
14	Living Arrangement	☐ with family	☐ alone	

Part 2 WHOQOL-Brief

This assessment asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response. Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last two weeks.

	Your life in the last two weeks	Not at all	Not much	Moderate	A great deal	Completely
1	How satisfied are you with your health?	1	2	3	4	5
2	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
3	Do you have enough energy for everyday life?	1	2	3	4	5
4	How satisfied are you with your sleep?	1	2	3	4	5
5	How much do you enjoy life?	1	2	3	4	5
6	How well are you able to concentrate?	1	2	3	4	5

Your life in the last two weeks		Not at all	Not much	Moderate	A great deal	Completely
7	How satisfied are you with yourself?	1	2	3	4	5
8	Are you able to accept your bodily appearance?	1	2	3	4	5
9	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5
10	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
11	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
12	How satisfied are you with your capacity for work?	1	2	3	4	5
13	How satisfied are you with your personal relationships?	1	2	3	4	5
14	How satisfied are you with the support you get from your friends?	1	2	3	4	5
15	How safe do you feel in your daily life?	1	2	3	4	5
16	How satisfied are you with the conditions of your living place?	1	2	3	4	5

Your life in the last two weeks		Not at all	Not much	Moderate	A great deal	Completely
17	Have you enough money to meet your needs?	1	2	3	4	5
18	How satisfied are you with your access to health services?	1	2	3	4	5
19	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
20	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
21	How healthy is your physical environment?	1	2	3	4	5
22	How satisfied are you with your transport?	1	2	3	4	5
23	To what extent do you feel your life to be meaningful?	1	2	3	4	5
24	How well are you able to get around?	1	2	3	4	5
25	How satisfied are you with your sex life?	1	2	3	4	5
26	How would you rate your quality of life?	1	2	3	4	5

	Part 3 UCLA Loneliness Scale				
	Two weeks experience	Never	Rarely	Sometimes	Often
1	I am unhappy doing so many things alone.	1	2	3	4
2	I have nobody to talk to.	1	2	3	4
3	I cannot tolerate being so alone.	1	2	3	4
4	I lack companionship.	1	2	3	4
5	I feel as if nobody really understands me.	1	2	3	4
6	I find myself waiting for people to call or write.	1	2	3	4
7	There is no one I can turn to.	1	2	3	4
8	I am no longer close to anyone.	1	2	3	4
9	My interests and ideas are not shared by those around me.	1	2	3	4
10	I feel left out.	1	2	3	4
11	I feel completely alone.	1	2	3	4
12	I am unable to reach out and communicate with those around me.	1	2	3	4
13	My social relationships are superficial.	1	2	3	4
14	I feel starved for company.	1	2	3	4
15	No one really knows me well.	1	2	3	4
16	I feel isolated from others.	1	2	3	4
17	I am unhappy being so withdrawn.	1	2	3	4
18	It is difficult for me to make friends.	1	2	3	4
19	I feel shut out and excluded by others.	1	2	3	4
20	People are around me but not with me.	1	2	3	4

	Part 4 PHQ-9				
Two weeks experience		Not at all	Several days	More than half of the days	Nearly everyday
1	Little interest or pleasure in doing things?	0	1	2	3
2	Feeling down, depressed, or hopeless?	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much?	0	1	2	3
4	Feeling tired or having little energy?	0	1	2	3
5	Poor appetite or overeating?	0	1	2	3
6	Feeling bad about yourself - or that you are a failure or have let yourself or your family down?	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television?	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?	0	1	2	3
9	Thoughts that you would be better off dead, or of hurting yourself in some way?	0	1	2	3

APPENDIX 3 ETHICS

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย
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COA No. 054/2563

ใบรับรองโครงการวิจัย
ยกเว้นการพิจารณาจริยธรรมการวิจัย

โครงการวิจัยที่ 035/63 : ปัจจัยทำนายความคิดฆ่าตัวตายในผู้สูงอายุกรุงเทพฯ

ผู้วิจัยหลัก : นายศุภเสก วิโรจนาภา

หน่วยงาน : วิทยาลัยวิทยาศาสตร์สาธารณสุข จุฬาลงกรณ์มหาวิทยาลัย

โครงการวิจัยนี้ได้รับการยกเว้นการทบทวนจริยธรรมการวิจัยโดยใช้หลักของ Office for Human Research Protections (OHRP Exempt Categories) 45 CFR part 46.101(b)

โดยมีเงื่อนไขว่าผู้วิจัยดำเนินการวิจัยอย่างเคร่งครัดตามที่ปรากฏในโครงการวิจัยฉบับที่ส่งให้คณะกรรมการฯ พิจารณา

ลงนาม.....
(รองศาสตราจารย์ นายแพทย์ปรีดา ทัศนประดิษฐ)
ประธาน

ลงนาม.....
(ผู้ช่วยศาสตราจารย์ ดร.นันทรี ชัยชนะวงศาโรจน์)
กรรมการและเลขานุการ

วันที่รับรอง : 18 กุมภาพันธ์ 2563

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