

Comparison of Stress Level and Quality of Life in Elderly Who are Living with Chronic Illness in Bangkok and Surabaya

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Abstract: Elderly with chronic illness, such as hypertension (HT) and diabetes mellitus (DM), was prone to stress that potentially decrease quality of life (QOL). This study aimed to compare and analyze the differences of stress level and QOL in hypertensive and/or diabetic elderly between Bangkok and Surabaya. This cross-sectional study involved 100 and 96 elderly with HT and/or DM in communities of Bangkok and Surabaya respectively (n=196). There were 60 DM, 68 HT, and 68 DM&HT cases compiled from both sites. Instrument used were SPST-20 and WHOQOL-BREF. Independent sample T test and Kolmogorov-Smirnov Z test were used for data analysis ($\alpha=.05$). There were 6% and 0% mild stress, 64% and 29.17% moderate stress, 24% and 67.71% high stress, 6% and 3.13% severe stress were found in Bangkok and Surabaya respectively. Stress level was differ significantly between Bangkok and Surabaya ($p=.000$). Coping strategy tends to be more adaptive in Bangkok. There were 25% and 0% poor QOL, 52% and 91.67% moderate QOL, 23% and 8.33% good QOL were found in Bangkok and Surabaya respectively. QOL was also differ significantly between Bangkok and Surabaya ($p=.000$). Elderly in Surabaya had higher stress level, but elderly in Bangkok had lower QOL.

1 BACKGROUND

Non-communicable disease (NCD) or chronic diseases are not passed from person to person. They are of long duration and generally slow progression. The four main types of NCD are cardiovascular disease (e.g. hypertension/HT), cancer, chronic respiratory disease, and diabetes mellitus (DM). 80% of all NCD deaths occur in low- and middle-income countries. Almost three quarters of NCD deaths - 28 million - occur in low- and middle-income countries. 16 million NCD deaths occur before the age of 70; 82% of these "premature" deaths occurred in low- and middle-income countries (WHO, 2015).

In Thailand, the burden of disease is gradually shifting from communicable diseases to NCD, injuries, and mental illness. Greatest public health benefits are gained through prevention of NCD (particularly cardiovascular disease, cancer, and DM), injuries, and mental health disorder. These benefits can be achieved if risk factors are identified and mitigated through appropriate interventions. If

NCD and mental illnesses are detected at an early stage and appropriate controls initiated, their severity can be significantly reduced. The burden of NCD usually falls disproportionately on the lower socio-economic groups who often face higher exposure to risk factors and have limited access to health services. Diseases such as DM, cancer, and cardio-vascular diseases are often not detected until they reach advanced levels (WHO Thailand, 2014). In response to the increasing impact of NCD, the Royal Thai Government has increasingly directed its attention on prevention and control initiatives. The Bureau of Non-Communicable Diseases is responsible for NCD, injury prevention, tobacco and alcohol control programs. The Bureau has made steady progress in monitoring the burden of NCD and injuries in addition to identify major behavioural risk factors classified by province. The Bureau also plans to improve the collection and analysis of NCD and injury mortality and morbidity data. This is being done in efforts to monitor trends and evaluate the success of interventions. The Bureau of Policy and Strategy notes that due to the unreliability of incidence data for selected NCD, injuries, and

mental illnesses, cases of hospitalization with more accurate diagnosis are needed to ascertain trends as well as strengths/weaknesses of current programs.

In Indonesia, the burden of disease is gradually shifting from communicable diseases to NCD also. Over the past decades, Indonesia has made phenomenal progress. Per capita income has been increasing at a blistering pace, up to around \$3,000 per capita in 2010. At the same time, fertility has dropped dramatically, while life expectancy has increased steadily. From an individual perspective, these developments are clearly welcome. DM is of particular concern – by 2030, the number of people with DM will nearly double, from 7.6 million in 2013 to 11.8 million. With an annual growth in DM prevalence of 6%, this far exceeds the country’s overall annual population growth rate (Blueprint for Change Program, 2013). The costs associated with NCD in Indonesia are substantial. According to our calculations, the five domains of NCD (cardiovascular disease, cancer, chronic obstructive pulmonary disease, DM, and mental illness) will cost Indonesia \$4.47 trillion (or \$17,863 per capita) from 2012 to 2030 (data for total health expenditure is obtained from the Global Health Expenditure Database (GHED) of WHO, updated in 2014).

Not only because of adjustment to the new role as an elderly in the family and age-related physical changes, elderly with NCD are also get stressors from the disease burden, such as disturbing signs and symptoms, diet restriction, continuous physical exercise requirement, etc. Chronic illnesses or NCD can create stress in elders, both physically and psychologically. Apart from impairing physical and mental health, chronic illnesses may also have negative impact on occupational and social functioning and thus affecting the quality of life (QOL). Positive thinking and an optimistic attitude are needed to increase the compliance to treatment regime and can motivate them to adjust their lifestyle (e.g. quit smoking and alcohol use, giving up fatty foods), thus help to promote healthy living

This study aimed to compare and analyze the differences of stress level and QOL in elderly who are living with chronic illness especially HT and/or DM between Bangkok and Surabaya.

2 METHODS

This was a comparative study involving 196 elderly with Diabetes Mellitus (DM) and/or Hypertension (HT) in communities in Surabaya and Bangkok. There were 96 and 100 cases compiled from

Surabaya and Bangkok respectively. Sample distribution between 2 sites is presented in Table 1.

Sample was chose by criteria then totally included in the study (total sampling). Inclusion criteria consist of (1) elderly who are willing to participate in the study, and (2) consume medication from medical doctor to treat the disease. Exclusion criteria were cannot communicate using Pasa Thai or Bahasa Indonesia.

Instrument used were valid and reliable questionnaire. SPST-20 was used to measure stress level (IOC=.78; Cronbach's Alpha=.94). It consisted of 20 items assessed in Likert scale format: 1 = no stress, 2 = mild stress, 3 = moderate stress, 4 = high stress and 5 = severe stress. The category of stress level was 0-23 = mild stress, 24-41 = moderate stress, 42-61 = high stress, and >62 = severe stress.

WHOQOL-BREF was used to measure QOL (IOC=.83; Cronbach's Alpha=.84). It consisted of 26 items assessed in Likert scale format from 1 to 5, various terminologies were used to define the score of Likert in each item. Transformation score of 0-100 was used in this study context. The category of QOL is presented in Table 2.

Descriptive statistic, independent sample T test, and Kolmogorov-Smirnov Z test were used for data analysis ($\alpha = .05$). Ethical clearance was issued by Ethical Committee of Saint Louis College (SLC), Bangkok, Thailand (November 17th, 2016), Number: E. 038/2559.

Table 1: Sample distribution

Case	Bangkok	Surabaya	Total
DM	30	30	60
HT	35	33	68
DM&HT	35	33	68
Total	100	96	196

Table 2: Category of QOL

Domain	Poor	Moderate	Good
Physical	7-16	17-26	27-35
Psychological	6-14	15-22	23-30
Social	3-7	8-11	12-15
Environment	8-18	19-29	30-40
Overview	26-60	61-95	96-130

3 RESULTS

In total, the study respondents composed of 15.82% male and 84.18% female. Age range was 60 – 78 years old. The educational background of sample in Bangkok was mostly primary school (53%), while in Surabaya was mostly secondary school (64.58%). The income of sample in Bangkok was mostly 43% at THB 2000-6000 per-month (43%), while in Surabaya was mostly less than IDR 800 thousand per month (53.13%). In Bangkok, most respondents has relative who suffered from DM/HT (66%), while in Surabaya no family background was reported (69.79%). Table 3 will explain demography characteristic of study respondents.

There were 6% and 0% mild stress, 64% and 29.17% moderate stress, 24% and 67.71% high stress, 6% and 3.13% severe stress were found in Bangkok and Surabaya respectively. Majority, we

Table 3: Demography characteristic

Characteristic	Bangkok (100)		Surabaya (96)	
	n	%	n	%
Sex				
Male	20	20	11	11.45
Female	80	80	85	88.54
Age (years old)				
60-69	48	48	75	78.13
>70	52	52	21	21.87
Education				
Primary school	53	53	25	26.04
Secondary school	25	25	62	64.58
Bachelor degree	8	8	9	9.38
No study	14	14	0	0
Occupation				
Farmer	1	1	0	0
Businessman	10	10	12	12.50
Government officer	2	2	1	1.04
Other (retire, housewife)	87	87	83	86.46
Monthly income				
THB <2,000 (IDR <800,000)	18	18	51	53.13
THB 2,000-6,000 (IDR 800,000-2.4 million)	43	43	31	32.29
THB 6,000-10,000 (IDR 2.41-4 million)	19	19	10	10.42
THB >10,000 (IDR >4 million)	20	20	4	4.17
Family background of HT/DM				
Yes	66	66	29	30.21
No	34	34	67	69.79

Table 4: Table of frequency and descriptive statistic of Stress Level

Category	Bangkok (100)		Surabaya (96)	
	n	%	n	%
Mild	6	6	0	0
Moderate	64	64	28	29.17
High	24	24	65	67.71
Severe	6	6	3	3.13
Mean	36.82		48.42	
Std. Deviation	13.29		8.89	

Table 5: Table of frequency and descriptive statistic of overview QOL

Category	Bangkok (100)		Surabaya (96)	
	n	%	n	%
Poor	25	25	0	0
Moderate	52	52	88	91.67
Good	23	23	8	8.33
Mean	78.83		60.91	
Std. Deviation	18.96		8.15	

found moderate stress in Bangkok and high stress in Surabaya. 25% and 0% poor QOL, 52% and 91.67% moderate QOL, 23% and 8.33% good QOL were found in Bangkok and Surabaya respectively. Majority, we found moderate QOL in both site. Table 4 and 5 will explain the result of descriptive statistical analysis of measured variables.

The value of stress level in Bangkok was more various than Surabaya. The data of stress level was not normally distributed and not homogenous ($p < \alpha$). Kolmogorov-Smirnov Z test showed that there was significant difference of stress level between Bangkok and Surabaya ($p = .000$). After deeper analysis of each item in SPST-20 instrument, there were 11 items determined this significant difference. They were item 1, 2, 4, and 5 about anxiety, 6 about finance, 7 about muscular pain, 10 about appetite, 11 about headache, 14 about anger, 18 about concentration, and 19 about fatigue.

The value of overview QOL was also more various in Bangkok. All data of QOL was normally distributed and homogenous ($p > \alpha$). Independent sample T test showed that there was significant difference of QOL between Bangkok and Surabaya ($p = .000$). After deeper analysis of each item in WHOQOL-BREF instrument, there were 14 items determined this significant difference. They were Q1 about overview QOL, Q2 about health satisfaction, Q5 about enjoyment of life, Q6 about life meaning, Q7 about concentration, Q9 about living environment, Q18 about working satisfaction, Q19 about

self-satisfaction, Q20 about personal/social relationship, Q21 about sexual life, Q22 about social support, Q24 about access to health care facility, Q25 about transportation, and Q26 about negative feeling. All domains was affected by the difference, especially social domain in which all items were affected (Q20, Q21, Q22), and psychological domain (Q5, Q6, Q7, Q19, Q26).

4 DISCUSSION

4.1 Stress Level Differences

Results showed that there was significant difference of stress level in elderly who are living with chronic illness between Bangkok and Surabaya. This difference was influenced by physical, psychological/emotional, and financial aspect. Physical aspect relates to muscular pain, headache, appetite loss, and fatigue. Psychological aspect relates to anxiety, anger, and decreased concentration. Financial aspect relates to low monthly income.

Muscular pain is frequently found in elderly. Muscular pain in elderly usually happens because of osteoporosis and osteoarthritis (Urban et al., 2010; Camacho-Soto et al., 2011). An exploratory study in Ghana showed that musculo-skeletal pain in elderly is psychological, will worsen when they think too much because of retirement, especially without a house or enough money; also when the elderly left alone at home and not doing anything, at times they feel so bored (Aziato et al., 2016). The elderly experience mild, moderate or severe pain and the severity of pain increases with advancing age (Herr et al., 2010). Pain also impairs sleep among the elderly (Jacobson et al., 2009). Lack of sleep could induce headache, along with hunger because of low appetite. Chronic pain leads to a high incidence of depression and anxiety among the elderly (Cino, 2014). Pain and aches were frequent stressors found in elderly; therefore pain in various area of the body could increase their stress level.

Appetite loss and the lack of hunger related to aging have been termed as the anorexia of aging. The etiology is multi-factorial and includes a combination of physiological changes associated with aging (decline in smell and taste, reduced central and peripheral drive to eat, delayed gastric emptying), pathological conditions (depression, dementia, somatic diseases, medications and iatrogenic interventions, oral-health status), and social factors (poverty, loneliness). The anorexia of aging is associated with protein-energy malnutrition,

sarcopenia, frailty, functional deterioration, morbidity, and mortality. Loss of appetite may lead to protein-energy malnutrition and weight loss (Wysocki et al., 2015). Appetite loss with weight loss becomes a stressor for elderly because of its bad consequences for health.

Fatigue is one of the most common symptoms experienced by older people, both with and without chronic disease. It is unpleasant and distressing and can affect functioning and QOL (Egerton, 2013). Fatigue can be an overwhelming and distressing experience that constrains capacity for physical functioning and social participation as well as worsens morbidity and mortality outcomes (Yu et al., 2010). A prospective study results focused on the correlation between subjective fatigue, cognitive function, and everyday functioning in elderly showed that all domains of cognitive function and everyday functioning declined significantly over five years; and the decline rates differed by the latent class of subjective fatigue. Except for the *decreased fatigue* class, there were different degrees of significant associations between the decline rates of subjective fatigue and all domains of cognitive function and everyday functioning in other classes of subjective fatigue (Lin et al., 2013). Fatigue could be a serious stressor for elderly because of its consequences for everyday functioning impacted on QOL.

The anxiety disorders are a prevalent mental health problem in older age; it has a particular comorbidity and risk factor profile (Sami & Nilforooshan, 2014). Anxiety disorders in the elderly have been associated with neurotic personality trait, cognitive decline, and increased burden on physical health including frailty, worsening physical functioning, increased disability and increased taking of medications (Gale et al., 2011; Ní Mhaoláin et al., 2012). Physical activity is associated with lower levels of depression and anxiety in elderly; female gender and lower educational background had higher values of anxiety and depression (Teixeira et al., 2013). Anxiety could influence stress level in elderly because of its effect on physical function in everyday life.

Anger could be an ordinary reaction to life situations or indicative of emotional illness. Anger can be healthy, and this should be recognized. For some elders, anger correlates with good mental health. Depression is regarded as an alternative to anger – anger turned inward. Anger in elderly correlates with the quality of their past relationships with parents, siblings, children, and friends; conflict management, coping strategy, work history, sexual

history, and life view. The elder's anger response has become conditioned over time. The elder could be trying to gain attention or to distance himself from others through the use of anger. The rechanneling of anger in elderly can be promoted through the use of physical activity, resident councils, recreation activities, and other socially acceptable means (McKinnon, 1998). By using these means, coping strategy could be influenced.

Concentration is the ability to maintain attention in a longer period. One of acute stress reaction is concentration disorder (Idrus, 2016). A study towards 74 elderly concluded that chronic stress and coping strategies may be modulated by the presence or absence of cognitive impairment, where memory deficit awareness constitutes an additional potential factor involved in high stress severity (Souza-Talarico et al., 2009). Concentration disorder may affect stress level in elderly because of its effect on cognitive function impairment.

Financial problem is one of great stressor for elderly, especially for those who had permanent job previously. Study results showed that some elderly already retire, and respondents in Surabaya had lower monthly income than Bangkok. Financial stress or strain which is presumably frequently experienced by elderly in low socioeconomic status or low income resulted in lower personal control associated with distress (Caplan & Schooler, 2007). Although financial strain is associated with actual income and poverty, it is also associated with cognitive capacity, depression, and self-esteem in elderly, resulted in adverse effects on subjective health (Angel et al., 2003). Economic security is the key element that in a straightforward manner affects people's quality of life (Drobnic et al., 2010). Financial problem in elderly needs to be addressed by the family in which the elders live; therefore stress level and subjective health status could be perceived better.

During the aging process, there is evidence that global perceived stress is associated with greater reported exposure to daily stressor in older adults (Stawski et al., 2008). These experiences of aging and chronic illness symptoms may lead to continuous anticipation of negative consequences, triggering high levels of perceived stress symptoms and cortisol levels. Stress symptoms are dependent to coping strategy (Souza-Talarico et al., 2009). The more adaptive coping strategy implemented, the lower stress level perceived. Lower stress level found in study respondents in Bangkok showed that the elders there implemented more adaptive coping strategy than the study respondents in Surabaya.

4.2 QoL Differences

Results showed that there was significant difference of QOL in elderly who are living with chronic illness between Bangkok and Surabaya. This difference was mostly existed in psychological and social domain of QOL. The difference was influenced by working satisfaction (physical domain); enjoyment of life, life meaning, concentration, self-satisfaction, and negative feeling (psychological domain); personal/social relationship, sexual life, and social support (social domain); living environment, access to health care facility, and transportation (environmental domain).

Working satisfaction in elderly relates to physical capacity needed for performing daily live activities or household works; most study respondents already retire, or being a housewife for now. Work is an important economic, social, and psychological ingredient of human life. Higher work intensity may lead to deterioration of health and simultaneously less likely to be able to afford the time needed for health care due to work obligation (Zajc & Kohont, 2017). Time of health care in elderly with chronic illness needs to be sufficient for monitoring their health status and providing long-term care needed based on current health conditions. Less amount of free time also affects life satisfaction, happiness, depressed feeling, problem solving capacity, and self-confidence of individual (Zajc & Kohont, 2017). Elderly needs sufficient free time and leisure activities to increase their life satisfaction and QOL.

Enjoyment of life were found to be lesser in individual with limiting and long standing illness, such as DM and HT resulted in stroke, smoking, physical inactivity, and alcoholic. Enjoyment of life could predict a reduced risk of functional impairment at older ages impacting QOL. Independent predictors of functional impairment are greater age, less wealth, having limiting – long standing illness; baseline diabetes, arthritis, and stroke; having a single impaired activity of daily living at baseline, and physical inactivity (Steptoe et al., 2014). Enjoyment in later life may also affect cognitive health in elderly. Lack of cognitive health in elderly results in decreased independence and well-being, increased health care costs, and wellbeing, increased healthcare costs, institutionalization and high levels of caregiver burden (Hughes & Ganguli, 2009). Enjoyment of life needs to be addressed by elderly and the people around them, along with adaptive coping strategy implemented, so that better QOL could be achieved.

Life meaning, together with hope, have significant correlation with positive mental health. Life meaning explained 8% of variance of life satisfaction. Life meaning is an independent predictor of life satisfaction and self-esteem (Halama & Dedova, 2007). For a single living older woman, low living standard assessed by economic and housing conditions seems to be a more serious obstacle than poor health, making it difficult to obtain a reasonable life satisfaction (Horstmann et al., 2012). Generally, QOL is influenced by living standard. Reasonable standard of living has changed with time and cultural settings. In a society with inequalities in living standard, there is elevated stress level, especially in the lowest socio-economic status, leading to poorer health and even lower life satisfaction (Marmot, 2005). Poor QOL found in Bangkok and lower QOL found in Surabaya potentially because of inequalities in living standard in the society, or unmatched status between expectations and ambitions of respondents and the possibility to reach their goals in life.

Self-satisfaction was associated with self-image. Negative self-image is associated with various psychological problems such as psychiatric disturbance, low self-esteem, depression, and behaviour problems. Self-image could predict mental health in adulthood. The chronological age influences the self-perception about self image. The level of satisfaction indicates the assessment of the quality of the resources that individuals hold in order to face the challenges of age. Interpersonal relationships and the reference cultural system, where the individual acts, significantly contribute to the definition of the idea of self (Diana et al., 2014). Self-image in elderly is influenced by the construct of self developed by values and culture in the family and community. Better understanding of physical changes and self-realization related to age could promote positive self-image and psychological well-being in elderly.

Negative feeling sometimes experienced by elderly, such as loneliness and feeling abandon. Loneliness was widespread among elderly widows. Many felt isolated, dislocated from former social circulation and missed being relevant (Nyanzi, 2011). A study conducted in rural Thailand towards 212 elderly showed that 9% were found to live alone, 20% stated that they felt abandoned to some degree. Feelings of abandonment do appear to result in lower QOL in terms of psychological factors, including one's overall enjoyment of life, having a meaningful life, and feelings of despair, anxiety or depression (Sudnongbua et al., 2010). Abandonment

or loneliness of elderly, especially in rural area, usually is a result of children emigration to other area/city because of work and job obligations. But, in city like Bangkok and Surabaya this condition also exists, also mainly because of job obligations. Adult children these days should pay more attention to their elderly parents to promote better QOL.

Sexual life for elderly is difficult matter, especially related to widower, negative body image, depression, and erectile dysfunction due to chronic illness. Sexuality impacts elderly's QOL by mechanism of spouse/family support, life enjoyment, and secure feeling. Most study respondents were women elderly, marital status and widower were not identified. Post-menopausal widows have less sexual appeal than younger widows for whom reproduction is a viable outcome of sexuality. Adult children usually control the sexuality of their elderly parents often by discouraging sexual liaisons. Adult children may also arrange for new spouses with utilitarian value, such as providing healthcare for ill elders (Nyanzi, 2011). QOL showed significant positive correlations with body image and sexuality, but a significantly negative correlation with depression. Body image, depression, education level, sexuality, and stressor were significant predictors influencing QOL in middle-aged adults in the community (Kim & Kang, 2015). Erectile dysfunction was associated with higher level of diabetes-specific health distress and worse psychological adaptation to DM, related to worse metabolic control. Erectile problem was also associated with a dramatic increase in the prevalence of severe depressive symptoms, less satisfactory in sexual life, lower scores in the mental component of QOL assessed by SF-36 (Berardis et al., 2002).

Social support gained from the family or neighborhood is important to increase the value of social domain of QOL in elderly because communication with other person could add life experiences that are stress relieving and cognitively stimulating. A study in Turkey towards 108 older adults concluded that QOL correlated with social support from subgroups of family (spouse and children), friends, and special friend (Unsar et al., 2016). Social environment comprised of social relationships and interpersonal interaction. Social relationships can provide protection to life stresses depression, loneliness, cognitive decline, risk of institutionalization. Interpersonal interactions promote psychological well-being and decreased rates of morbidity and mortality (Smith & Christakis, 2008). Socially active older adults tend to have better cognition. Maintaining social networks

in later life may be beneficial as it provides several social opportunities (Flatt & Hughes, 2013). Social support gained from several social activities in later life could promote cognitive health, life enjoyment, adaptive coping strategy, and QOL.

Environmental factors also affect QOL. The factors which are important in maintaining a good QOL are being safe, overall living conditions, having sufficient money, access to health services, access to information for everyday living, leisure activities, physical environment, and transport (Sudnongbua et al., 2010). Living arrangement was associated with health among older adults. Living arrangement concordance increases the likelihood of rating self-rated health as good, with concordance having a greater impact for institutionalized elders than for communityresiding elders (Sereny & Gu, 2011). Both living arrangement and home modifications are important for promoting better QOL in elderly who are having physical limitations. Living environment is essential for elderly; it is important to assure their safety, comfort, life enjoyment, and conducive interpersonal relationship with all family member.

Access to health care facility is essential for elderly who are living with chronic illnesses, sufficient time and proper health care service are needed to promote routine check up of elderly's health condition. A poor, aging service design exerts a negative effect on the QOL of elderly people. This usually happens because government agencies have limited resources, so that improvement items cannot be implemented simultaneously. A comprehensive aging place policy and increases effective use of resources are needed to meet elderly people demands, provide a clear design, and improve service quality to match the demands and expectations of elderly people (Chen, 2016).

Transportation is also important for promoting better QOL in elderly. Currently, there are about 8.4 million senior citizens who depend on others for their transportation. Shortly, the number of older drivers will be more than double, making the issue of senior transportation even more critical. In fact, according to the Administration on Aging, by the year 2030 the number of drivers over age 85 will be 4–5 times what it is today. The use of private vehicle is not easy in older age, because of eye problems, musculo-skeletal pain, tremor, and family restriction; and because the skills and abilities associated with driving tend to diminish with age—viable alternate forms of transportation for the elderly will continue to be an important issue for years to come (FamilyCare America, 2018).

Therefore, elderly really need an easily accessible public transportation developed by government or private agencies to promote the use of medical care, especially in urban life presented in Bangkok and Surabaya.

5 CONCLUSIONS

There was significant difference of stress level in elderly who are living with chronic illness between Bangkok and Surabaya. This difference was influenced by physical, psychological/emotional, and financial aspect. Physical aspect relates to muscular pain, headache, appetite loss, and fatigue. Psychological aspect relates to anxiety, anger, and decreased concentration. Financial aspect relates to low monthly income. Coping strategy tends to be more adaptive in Bangkok.

There was significant difference of QOL in elderly who are living with chronic illness between Bangkok and Surabaya. This difference was mostly existed in psychological and social domain of QOL. The difference was influenced by working satisfaction (physical domain); enjoyment of life, life meaning, concentration, self-satisfaction, and negative feeling (psychological domain); personal/social relationship, sexual life, and social support (social domain); living environment, access to health care facility, and transportation (environmental domain). Inequalities in living standard tends to happen in Surabaya's society.

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