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Initial Physical Health Factors of an Individual Aging in Thailand

Chanwit Kotheeranurak, Achara Chandrachai, Ruttachai Seelajaroen and Saksit Pornrattanaseekul[*]

Technopreneurship and Innovation Management Progam of Chulalongkorn University, Bangkok, Thailand

Abstract:

Background:

The purpose of the research was to study activities and deportments of Physical Health affecting self-sufficient aging in Thailand. The research emphasizes physical health factors by the use of surveys and statistics and the data are recorded and can in turn be used to for self-sufficient aging.

Methods:

The samples in this research consisted of 807 individuals from Bangkok, Thailand. The data were analyzed in order to find the mean, standard deviation, the Pearson product moment correlation coefficient. Factors affecting the preparation of self-sufficient aging in Bangkok, Thailand were with a level of statistically significance at 0.01. The correlation of the Physical Health Factor was estimated.

Results:

It was found that the Physical Health Factors had a positive and significant Correlation Coefficient. The suitable factor from each Physical Health Predictive Measurement was with a coefficient of determination. The Physical Health Factor was field tested in Bangkok.

Conclusion:

It was found that the actual Physical Health of the samples was not significantly different from the predicted weight obtained from the measurement score for current levels of Physical Health. Physical Health Factors are composed of 13 factors; both quantitative (AGE, Body mass index, Nutrition behavior, Exercise period time, Smoke behavior, Drinking behavior Alcohol-Week, Work hour-per day, Sleep period time, Holiday period time, Family History disease, Ability to do daily routine) and qualitative (Health Satisfaction and Health Awareness).

Keywords: Physical health, Health factor, Retirement plan, Self-sufficient aging, Drinking behavior, Family history disease.

1. INTRODUCTION

By 2030, the Thai population will have nearly progressed to what is called an "Absolute Aging Society". The definition of an aging society by WHO (2491) is: "A nation that has more aging than 20 percent of its whole population" [1]. If the performance of the economy decreases, both the government and individuals cannot save enough money for a long period of time for life after retirement, meaning that a person has to manage every dimension in preparing for retirement alone. But why is the Thai population waiting for help only from the Thai government? If the Thai population does not need help form the Thai government, they must prepare their budget for their health care and general individual expenditure early before retirement.

* Address correspondence to this author at the Technopreneurship and Innovation Management Progam of Chulalongkorn University, Bangkok, Thailand; Tel: 0891062068; E-mail: yenwang33033@hotmail.com

Both life expectancy and the world population are slowly increasing [2]. The Asian population and life expectancy have increased so speedily that each government needs a strategic and new international policy for the management of aging in the present and the future [2]. Thailand too has this problem; however, self-sufficient individuals could help themselves with better maintenance after retirement, and to reduce the burden on welfare budgets from the Thai government.

The Holistic Approach Concept is a new issue and requires knowledge of each person's care for integrating an understanding of art, social science and science [3, 4]. It is an innovation in creating a new medical paradigm [5]. The integration and coordination of knowledge to create a new development process include adopting systematical practices [3, 6, 13]. A structured process and a comprehensive medical are covered by physical, mental, social, and personal financial science but this paper focuses on only physical health science [5, 7 - 12]. A high quality of life, happiness, financial stability and economic self-sufficiency are the best ways to seek Individual Knowledge Management [14, 15]. A quality of life will depend on an individual's satisfaction levels, different cultures, traditions and attitudes [6, 7, 11, 16 - 18].

Physical health is combined with (1) objective health [19, 21] (Physical Fitness Score (Physical Fitness includes Cardiorespiratory Fitness [20], Body Composition, Flexibility, Muscular Strength, Muscular Endurance) (U.S. Center for Disease Control and Prevention (1999)) and assessment of nutrition status (body mass index, waist to hip circumferences, abdominal circumference). Body mass index (WHO, 1998)) and (2) subjective health are connected to monetary factors (personal financial health) [24], meanwhile these factors could affect current physical health or cause poor physical health in the future [22, 23].

The physical health of aging should prepare for prophylactics both diseases and age-degenerations that focuses on individual deportment and aging process [25]. Physical health contains two components that are preventive measurements for retirement. The first component is the objective health index, which includes: I.) Physical Fitness Score (Physical Fitness includes Cardiorespiratory Fitness, Body Composition, Flexibility, Muscular Strength, Muscular Endurance). Physical fitness is the ability to perform daily functions in each age group by themselves [5]. In research by the U.S. Center for Disease Control and Prevention (1999) it shows some components are related to either general health or sport health, and define that components are related with other health [20]. Physical activity is a modifiable to decrease risk factors for cardiovascular diseases and a diversity of other chronic diseases, including Alzheimer's disease, cancer, obesity, hypertension, diabetes mellitus, osteoporosis, osteoarthritis, and sex hormone deficits [20, 24 - 26, 34]. Increased levels of physical activity and fitness were found to have reductions in the relative high risk of death (Health benefits of physical activity: the evidence; Darren E.R. (2006)) However, an increase in energy expenditure from physical activity for every 1,000 kcal per week increased the mortality benefit by 20% [20, 25, 27, 28]. The effect of regular physical activity can reduce this hazard, alleviate and prevent several chronic diseases such as cardiovascular, diabetes, cancer, hypertension, obesity, depression, osteoporosis and dyslipidemia [20, 25, 27 - 29], as well as increase the best life expectancy and physical activity [22, 24]. Exercise should be done by all members of the Thai population to maintain wellbeing before receding into getting a disease and a long period of degeneration. (Miriam E., ACSM/AHA Recommendations, (2007)).

ii) Assessment of nutrition status [(body mass index, waist to hip circumferences, abdominal circumference). Body mass index (WHO, 1998) is the best index and is expedient in measuring nutritional status [30]. Nutritional status is difficult to test by oneself but one can record each type of diet and suitable domain meal (WHO: Essential Nutrition Actions). The second component is the subjective health index that appraises the feeling of total physical health and function, such as ability of activity or roles functional (functionality) according to the Katz Index of Independence in Activities of Daily Living, mobility or fitness, pain or discomfort, self-care ability (physical independence), general physical health (general health perception), physical functioning, self-feeding ability, energy or vitality, ability to sleep or rest and required lifestyle change [12, 17, 18, 21, 31 - 33].

In regards to deportment such as the ability to sleep, period of working and relaxing period time, they must be suitable for each age-range according to the National Sleep Foundation and International Labour Organization [35 - 37]. Poor deportment factors which are not advisable to carry out are smoking and using alcohol. The American Cancer Society (2016) said that smoking increases the risk of lung cancer in every person, both in primary and secondary smokers [29, 38, 39]. WHO: Alcohol use Disorder Identification recommends (2004) that alcohol use at a high frequency affects liver enzymes and can cause liver diseases in the future [26, 40]. Family History Disease is propagated by parentage's genes; however, it can stop progress in a young person [29]. If someone has Family History Disease and does not live healthily, his/her body will not control all silent diseases (WHO: Chronic disease and their

common risk factors (2002)) [2, 25, 27].

The motivation for the current study is to study the impact of how individual or self-sufficient aging could help maintain a good quality of life after retirement. The study also looks at the purpose of the government would need to increase the massive burden on welfare budgets from the Thai government to take care of the aging society, especially as welfare budgets will not be enough in the future. Carlos Pestana *et.al*, (2007) demonstrated that demographic and economic indicators affect personal financial sustainability of Social Security Systems everywhere in the developed country and the role of private occupational pension plans and personal saving plans are also being realized as more essential. Most research studies health factors that affect diseases in the future or how budgets need to be prepared for after retirement. In addition, research shows that subjective health is a good predictor of objective health (Dong. 2008), but two measures are important to highlight wellness. Several studies have focused on discordances between health perception and health factors considered to be more objective health (Johnston *et al*. 2007, Bound. 1991).

However, little is known about considering the aforementioned problem. This paper in studying the factors or indicators that could forecast situations in order to develop a proper strategy for the Thai population to prepare basic factors associated in preparing for an earlier aging society. Physical health effects of quality of retirement and should be combined with many factors. Evaluating physical health in the early middle life of individuals can lead to a good quality of retirement. Establishing factors are aggravated by selection of retirement. (Disney, Emmerson, and *et.al*. (2006) and Rice, Roberts, and *et.al*. (2007)). If everybody knew the best physical health factors they would be able to act upon them, meaning the Thai population could best prepare their physical health for retirement in the future [23, 41].

2. MATERIALS AND METHODS

2.1. Study Design

This study conducted a set of questionnaires which covered Physical Health Dimensions. A set of questionnaires were reviewed and recommended by a specialist. Studies sited and study samples and Research context: the target population for this study was the Thai population between ages of 21 to 80 years old. World Health Organization National Institute on Aging, U.S. Department of Health and Human Service said that "If these links between early life and health at older ages can be established more directly, they may have especially significant implications for less development countries. Behavior and exposure to health risks during a person's adult life also influence health in older age." (Reason: for sample of the preparation to retire in each individual age in the future).The population in this study consists of sites in Bangkok, Thailand. Sample size estimation: The exact population is known and then used to determine the sample size, which in this case consists of a known population confidence level of 99% and alpha error 0.05 (Taro Yamane, 1970). The minimum sample size is 666 people, and this research study has 807 people. The Thai sample population in the age range covers every 10 years, starting from 21 years old up to 80 years old with a total sample of 807 samples.

2.2. Research Instruments

All participants answered and filled out a structured questionnaire which asked about socio-demographic characteristics, physical health, risk behaviors, and their status of preparing for retirement. Socio-demographics were age, gender, marital status, number of family children or older, education level, occupation, and position of occupation. Physical health consisted of current body weight, height, ability to lead an active life, and status of physical health. Behavioral risks included meals, exercise, smoking, alcohol use, work, quality of sleep, relaxation time, and family history disease. The status of preparing for retirement was ascertained by asking how suitable participants could manage by themselves, what have they done about planning and how long have they been retired.

The majority of the items in the research questionnaires included physical health dimensions which were adapted from previous studies, such as (1) Quality of Well-being Scale (QWB)1970, McMaster Health Index (McM) 1976, Sickness Impact Profile (SIP) 1976, Health Insurance Experiment Survey (HIE) 1979, Nottingham Health Profile (NHP) 1981, Quality of life Index (QLI) 1981, Functional Status Questionnaire (FSQ) 1986, Dartmouth Function Charts (COOP) 1987, European Quality of Life Index (EOROQOL) 1990, Duke Health Profile (DUKE) 1991, MOS Functioning and Well-Being Profile (FWBP) 1992, Short Form Health Survey – 36 (SF36) 1993, World Health Organization Quality of Life (WHOQQL-BREF) 1997, EuroQol Instrument (EQI) 1999, World Health Organization Disability Assessment Schedule (WHODAS) 2000, The EuroQoL-6D (ED - 6D) (The EuroQol Group, 1999) to fit the

context of the study. Each questionnaire is derived from prior empirical studies and modified to fit the context of this study. Prior to administering the survey questionnaire, a pilot test was conducted with thirty samples from differing ages that were selected on the basis of age and were neither gender nor occupation specific; however, samples understood what preparing for aging in Thailand was and this represented the sample frame. The validity of the questionnaire was validated by an external expert. It was adjusted if the score was less than 0.5 in the Item Objective Congruence Index method. The reliability of the questionnaire was tested with the reliability of Cronbach's alpha of 0.80.

2.3. Statistical Analysis

This research was used to analyze the connections or relationships between the data in the correlation research and Regression. Cronbach's alpha was used to evaluate the reliability of each questionnaire included in the framework of this research. The questionnaire data were analyzed in order to find the mean, standard deviation, the Pearson correlation coefficient. Descriptive statistics (means, standard deviations, frequencies, and percentages) were used to describe the general characteristics of the participants.

3. RESULTS

A total of 807 samples responded to the study with reliability. Among them, 287 (35.6%) were male while 520 (64.4%) were female. The age range of this study was arranged as follows: 21-30 years 218 (27%), 31-40 years 167 (20.7%), 41-50 years 127 (15.7%), 51-60 years 105 (13.0%), 61-70 years 162 (20.1%) and 71-80 years 28 (3.5%). Among the total of 807 samples, 336 (41.6%) were single, 341 (42.3%) were married or lived together, 19 (2.4%) were married but did not live together, 32 (4.0%) lived together but were not married, 64 (7.9%) widowed, and 15 (1.9%) divorced. Partner's income was mostly less than 30,000 baht with 136 participants (16.7%). The number of people living alone with a child was 292 (36.2%) and living with seniors was 132 (16.4%). The data were analyzed in order to find for both quantitative and qualitative factors in Physical Health. The results are in Table **1**.

Table 1. Quantitative and qualitative physical health factors.

Quantitative Physical Health Dimension	Qualitative Physical Health Dimension	KMO	IE	% V
Age – Range	PHD: Health Satisfaction (PHD-HS)	0.836	2.835	40.50
Body mass index (BMI)	PHD: Health Awareness (PHD-HA)	0.836	1.883	26.90
Nutrition behavior (NB)				
Exercise period time (EPT)				
Smoke behavior Pack-Year (SB-PY)				
Drinking behavior Alcohol-Week (DB-AW)				
Work hour- per day (WH-PD)				
Sleep period time (SPT)				
Relax / Holiday period time (HPT)				
Family History disease (FHD)				
Ability to do daily routine (ADR)				

Notes: IE = Initial Eigenvalues, % V = % of Variance, PHD = Physical Health Dimension

Table **1** shows the Physical Health Factors. The samples were analyzed in order to find which resulted in 13 factors; both quantitative and qualitative (Table **1**). Quantitative factors in Physical Health Dimension composed of AGE, BMI (Body mass index), NB (Nutrition behavior), EPT (Exercise period time), SB-PY (Smoke behavior Pack-Year), DB-AW (Drinking behavior Alcohol-Week), WH-PD (Work hour- per day), SPT (Sleep period time), HPT (Holiday period time), FHD (Family History disease) and ADR (Ability to do daily routine). Qualitative factors in Physical Health Dimension were PHD-HS (Health Satisfaction) and PHD-HA (Health Awareness). Simple descriptive statistics consisting of means, standard deviations, and correlations among the variables of physical health indicators are reported in Table **2** and the variables of quality health factors are reported in Table **3**. Most variables are in relationship.

Table 2. The statistics of physical health factors.

Indicators	Mean	SD	AGE	BMI	NB	EPT	SB-PY	DB-AW	WH-PD	SPT	HPT	FHD	ADR	PHD-HS	PHD-HA
1.AGE	44	15.30	-	.21**	.12**	.07*	-.06	.09**	.32**	.19**	-.05	.15**	.20**	.37**	-.18**
2.BMI	23.96	4.27		-	.00*	.05*	-.03	-.05	.01	.07	-.01	.11**	.04*	.08*	.13**
3.NB	4.24	0.86	-	-	-	.02*	.01	.07	.12**	.01	-.03	.02	.04*	.01*	.11**

(Table 4) contd.....

Indicators	Mean	SD	AGE	BMI	NB	EPT	SB-PY	DB-AW	WH-PD	SPT	HPT	FHD	ADR	PHD-HS	PHD-HA
4.EPT	1.84	0.87	-	-	-	-	.09*	.03	.02	-.07	.10**	.04*	.14**	.16*	-.05
5.SB-PY	4.86	0.60	-	-	-	-	-	-.02	.02	-.05	-.06	.01*	-.06	.02*	-.09*
6.DB-AW	4.75	0.86	-	-	-	-	-	-	.12**	.02	-.01	.04*	-.06	.02*	-.01
7.WH-PD	4.13	1.24	-	-	-	-	-	-	-	.12**	.09*	.21**	.13**	.16**	.09*
8.SPT	4.23	1.02	-	-	-	-	-	-	-	-	.12**	-.05	.02	-.07*	.09*
9.HPT	1.89	0.32	-	-	-	-	-	-	-	-	-	.02	-.00	.01*	.15**
10.FHD	4.51	1.14	-	-	-	-	-	-	-	-	-	-	.11**	.08*	.01
11.ADR	3.18	0.56	-	-	-	-	-	-	-	-	-	-	-	.26**	.04
12.PHD-HS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.00
13PHD-HA.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3. The scales of physical health dimensions.

Physical Health Dimension	Index	Standard	Scale	Physical Health Dimension	Index	Standard	Scale
Body Mass Index (Adapted from WHO of Asian BMI)	< 16.0	Too Slim	2	Domain meal (Adapted from WHO: Essential Nutrition Actions)	Morning		5
	16.9 – 18.4	Underweight	4		afternoon		4
	18.5 – 24.9	Normal	5		Evening		3
	25.0 – 29.9	Overweight	3		Midnight		2
	>30.0	Obesity	1		No eat		1
Total duration of exercise (hour per week) (Adapted from American college of sports medicine. (2000))	0	Do not suitable	1	Smoking (Pack-Year) (Adapted from American Cancer Society)	0	Do not smoke	5
	<1.49	Do not enough	2		.01 – 9.99	Very Low risk	4
	1.50 – 7.50	Suitable for general	3		10.00 – 19.99	Medium risk	3
	7.51 - 9.00	Suitable for young	4		20.00 – 29.00	Medium risk	2
	>9.01	Suitable for sportsman	5			High risk	1
Total alcohol use (frequency per week) (Adapted from WHO: Alcohol use Disorder Identification)	0	Very low risk	5	Total working hour per day (Adapted from International Labour Organization)	<6	Under Standard	1
	0.5	Low risk	4		6-7	Low Standard	5
	1	Medium risk	3		8-9	Suitable	5
	2 – 4	High risk	2		10-12	High standard	5
	>5	Very high risk	1		>12	Over standard	1
Relax Behavior (day per week)	1 – 2	Suitable	5	Family History Disease **	No Disease	Good	5
	0	Unsuitable	1		Have Disease	No Good	1
Sleep Period Time (hour per day) (Adapted from National Sleep Foundation)	<5	Not Recommended	1	Ability of Routine Activity (Adapted from ADL: Katz Index of Independence in Activities of Daily Living)	Very Heavy Activity		5
	5 – 6	Maybe Appropriate	3		Medium Activity		4
	7 – 9	Recommended Range	5		Normal Activity		3
	10 – 11	Maybe Appropriate	4		Low Activity		2
	>11	Not Recommended	2		Cannot Activity		1

** (Adapted from WHO: Chronic disease and their common risk factors) *Meaning of scale 1 – 5: 5-Excellent, 4-Very good, 3-Good, 2-Bad, 1-Very bad

Table **2** shows Physical Health Factors concerning Mean, SD, and Correlations. The mean age of the samples was 44 years old, SD was 15.30 and there were correlations with BMI, NB, DB-AW, SPT, WH-PD, FHD, ADR, PHD-HS, PHD-HA. Other Physical Health Factors correlated with some factors in Table **2**. PHD-HS correlated with AGE, BMI, NB, SB-PY, DB-AW, EPT, HPT, FHD, ADR and PHD-HA. If AGE, BMI, NB, SB-PY, DB-AW, EPT, HPT, FHD, ADR and PHD-HA (Health Awareness) score well, PHD-HS (Health Satisfaction) will also score well.

The scales of Physical Health Dimensions have been described in Table **3**.

Table **3** shows the Physical Health Factors with scales. The scales of the Physical Health dimensions have many factors and steps for evaluating the Physical Health of each person and their description in Table **3**. For example, if the BMI ranges from 18.5 to 24.9, the person will scale 5, meaning they have excellent Physical Health in body weight.

Table **4** shows Physical Health Behavior Score of the Thai population (PHBS). Total physical health score is based on the inclusion of all 10 physical health factors and that full scores 50, but not included age, PHD-HA (Health Awareness) and PHD-HS (Health Satisfaction).

Samples of Thai people have scored a physical health behavior score ranging from 28 to 46 that full score 50. That showed fewer than 60% of PHBS in this study was about 0.6%. Score 70 – 79% of PHBS was about 31.5%. Mostly more than 80% of PHBS was about 61.3%.

Table 4. Physical health behavior score of the Thai population.

Physical Health Behavior (Full Score 50)	Frequency	Percent	Percent of Full Score	Frequency in each range (percent)	Percent
28	4	0.5	56.0	5 (0.6%)	0.6%
29	1	0.1	58.0		
30	1	0.1	60.0	53 (6.6%)	6.6%
31	8	1.0	62.0		
32	13	1.6	64.0		
33	15	1.8	66.0		
34	16	2.0	68.0		
35	43	5.3	70.0	254 (31.5%)	31.5%
36	34	4.2	72.0		
37	45	5.5	74.0		
38	58	7.1	76.0		
39	74	9.1	78.0		
40	58	7.1	80.0	435 (53.9%)	61.3%
41	58	7.1	82.0		
42	112	13.8	84.0		
43	108	13.3	86.0		
44	99	12.2	88.0		
45	36	4.4	90.0	60 (7.4%)	
46	24	2.9	92.0		
Total	807	100			

4. CONCLUSION, DISCUSSION AND RECOMMENDATIONS

Physical health factors are both quantitative (AGE, Body mass index, Nutrition behavior, Exercise period time, Smoke behavior, Drinking behavior Alcohol-Week, Work hour- per day, Sleep period time, Holiday period time, Family History disease, Ability to do daily routine) and qualitative (Health Satisfaction and Health Awareness). Physical health score is based in 10 quantitative physical health factors. If physical health score is high, it will be meaning that good physical health in the current. If an assessor understands and realizes his current physical health that will be improve and develop to good physical health in the future. Quantitative physical health factors are the most important in a long life and should do regular and continue.

The result of this paper is that the survey gathers demographic, socioeconomic data, as well as data of physical health behaviors [19]. The baseline survey was conducted in 2016. The study provides an excellent tool to evaluate the impacts of retirement on physical health [14]. First, it has panel indicators and so reveals health changes that can occur both before and after adjustment of their deportments. Second, it contains substantial details on individuals' deportments and activity patterns, such as exercise, daily diet, quality of sleep, and behaviors of smoking and usage alcohol [23]. Third, it contains a wide range of health measures, including self-reported health, as well as more objective health indicators [19]. A physical health structural model is estimated using these indicators to evaluate, identify and prepare the effects of retirement on individuals' objective and subjective health measures [19, 42]. The model exploits mandatory physical health to obtain individuals' evaluations. The other studies show some factors were affected in health or health after retirement. This paper's model accounts for the effects of individuals who are identified and self-selected at middle age or working age before reaching mandatory aging. The physical health score is a comparison in each dimension of physical health with imperative retirement as a personal consultant.

This paper aims to estimate the physical health effects of a good quality retirement. The paper studied activities and deportments of physical health affecting the Thai self-sufficient population. It also brought those physical health factors to create a measurement score to prepare for self-sufficient and achievement aging, both in the current and the future. It

contributes to the existing literature by using a very comprehensive data set: in every range age of Thai population not only aging retirement population

In this study, the paper investigated the Physical Health Behavior Score (PHBS) concerning physical indicators as measurements of estimated retirement physical health in both the current and the future. All of the physical indicators were very important in preparing various age-ranges, such as BMI. If a person has an appropriate body mass index, regular exercise, nutrition behavior, sleep period time, work-hour, holiday period time, ability to do their daily routine and a low risk of smoking or drinking, they will not have any chronic diseases and they will delay any generative diseases. Most of the current Thai people samples have high scores for their Physical Health Behavior Score, which means that most Thai people are healthy. However, these samples were smaller than all Thai people at the present time. Although physical health indicators were easy to monitor, the same person may not realize affect of factors that can influence their real physical health. This paper found major propositions to support for preparing for retirement in holistic care, because physical health factors accounted for a significant portion of the variance in planned retirement holistic care in personal physical health for the total sample. Nonetheless, each personal physical health (some diseases or health problems) might affect one's mental health and most mental health problems might affect one's physical health as well. The current good physical health scores cannot fully correspond to future physical health if Thai people are not aware of continuing physical health. All people who practice an emotionally and physically healthy lifestyle are more likely to experience a longer, happier life. One does not need more money to enjoy or cover a successful or healthy retirement. All pre-retirees should more concerned about the question that "How do I make sure that I remain physically active in retirement?" (Society of actuaries, 2017)

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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