

Factor Analysis of Happiness of Elderly with Disabilities in Khon Kaen Smart City, Thailand

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ABSTRACT

The purpose of this article is to analyze the components of creating happiness for elderly people with disabilities in the city of Khon Kaen, using quantitative research methodology. Data was collected 384 disabled people aged 60 and above who receive livelihood allowance, and the sample size was determined using 384 people. The data was presented using descriptive statistics and analyzed using exploratory factor analysis with the principal axis factoring and varimax rotation techniques. The results revealed that the components of happiness for elderly people with disabilities in Khon Kaen consist of eight factors. The component that has the most weight is a “Happy society”. Therefore, building good relationships in society and family should be promoted to promote happiness in the elderly with disabilities. All components together accounted for 69.233% of the total variance and could be used to explain the creation of happiness for elderly people with disabilities in the Khon Kaen Smart City, Thailand.

Keywords: Happiness, Elderly with disabilities, Factor Analysis, Smart City.

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1. INTRODUCTION

The changing demographic structure in Thailand is leading towards an aging society in the 21st century, with a projected increase of 20.0% of the population aged 60 years and above in 2021, and a further increase of 28.0% in 2031. The government has planned policies and strategies to address this situation, such as the National Elderly Plan 2 (2012-2021), which focuses on preparing for a high-quality elderly population in the National Strategy for 20 years (2018-2037). There are also plans to develop and promote the quality of life for the elderly by encouraging post-retirement employment and creating opportunities for social equality. The government is preparing the Thai population in terms of health, economy, society, and environment, emphasizing the development of potential to support the aging society that will occur in the future (Office of the National Economic and Social Development Council 2018).

Given the truth of the wisdom of life that the older one gets, the greater the risk of illness, disability, or impairment increases. According to the report on the situation of persons with disabilities in Thailand by the Department of Empowerment of Persons with Disabilities (2016), in line with the Survey of Persons with Disabilities in 2017, it was found that Thailand has a population of approximately 3.7 million persons with disabilities, or 5.5% of the total population. The majority of this group are the elderly,

accounting for 20.6% (of the total population), or it could be said that there are 812,825 elderly persons with disabilities, representing 49.5% of persons with disabilities nationwide.

Khon Kaen province plays a significant role as a central city for economic, educational, and medical development. In conjunction with the Thai government's policy to drive smart city development under the 20-year national strategic plan (2017-2036), the 12th National Economic and Social Development Plan, and the Thailand 4.0 model in 2017, Khon Kaen province is promoting smart city development according to its development master plan (Khon Kaen Community Foundation, Next Decade 2022). To support this, the Khon Kaen Smart City Development Company Limited (KKTT) was established with registered capital of over 200 million baht, in cooperation with the government, including local administrative organizations and other private sector groups. On May 8, 2018, the Thai Cabinet approved Khon Kaen province to be the only province in Thailand included in the "Smart City" and "Mice City" development plan for the period of 2018-2021, to drive sustainable development of the province with a population of over 1.8 million people and an annual growth rate of 2.09 percent. When considering only the elderly population, which amounts to 279,606 people or 15.5 percent of the total population (The Bureau of Registration Administration, 2020), there are up to 18,316 elderly persons with disabilities who are receiving disability benefits. This accounts for 6.6 percent of the elderly population, with 10,856 elderly persons registered as disabled persons with the Provincial Office for Social Development and Human Security (Khon kaen Provincial Statistical Office 2016) in order to receive various benefits in accordance with the Disabled Persons Empowerment Promotion Act and the Rehabilitation of Disabled Persons Act. This indicates that elderly persons with disabilities in Khon Kaen province have real access to rights and are able to live independently in society and enjoy lasting happiness together.

Nevertheless, the research conducted on the vulnerable population in Thailand classifies the population into 3 categories: (1) people at the border, who could be marked or treated with double standards by the society or obstructed from the society by one way or another, poor people, stateless people, small ethnic group, cross-national laborers, orphans, transgender people, sex-transformed people, prostitutes, drug users, ex-prisoners, etc.; (2) people who have health requirements but have limited access to health care services, e.g., people who have no health security, people living in a remote area, etc.; and (3) people at risk of being neglected or maltreated if not receiving long-term health care, e.g., the elderly, physically disabled people, mentally disabled people, house-ridden patients, bed-ridden patients, etc. From the review of literature from abroad and synthesis of the studied cases in Thailand, it was found that there are a lot of research studies conducted on the vulnerable groups mentioned above, but there has been limited number of studies on the elderly with disabilities, who can also be classified as a vulnerable group in at least 2 out of 3 of the above-mentioned categories. In other words, studies were separately performed on the elderly and on the disabled people. Thus, the researcher found it interesting to study the factors that build happiness in life of the disabled elderly who live in the city that is being developed into a smart city. Therefore, the research team became interested in studying the "Components of creating happiness of Happiness of Elderly with Disabilities in Khon Kaen Smart City, Thailand." The results of the study are expected to be beneficial to the Khon Kaen Municipality, the Office of Social Development and Human Security of Khon Kaen Province (Ministry of Social Development and Human Security, Thailand), as well as the elderly service centers in the area in terms of determining the operational

guidelines and project activities that meet the basic and essential needs and promote the happiness of elderly people with disabilities.

2. CONCEPT OF HAPPINESS OF DISABLED ELDERLY

The concept of “happiness” has emerged since the ancient Greek. From the viewpoint of philosophers and Westerners like Aristotle (350 B.C.E), happiness is regarded as something that leads to the ultimate goodness, including intellect, knowledge, and virtue. It, therefore, means ‘existing’, good actions, and self-sufficiency, as these are the utmost goal of man’s life (Reece, 2019). Later, the happiness concept was internationalized and categorized as belonging to a social population. Economists use the concept in their studies of consumer groups, from the belief that man is attempting to seek satisfaction and avoid any action that leads to agony or self-dissatisfaction. “Advantage” is thus the term used with the concept of happiness (Mill and Oskar 1957; Bennett 2010), and together means something that leads to benefits, satisfaction, goodness, and happiness, including protection against or avoidance of the feeling of disturbance, agony, evil, and unhappiness. Therefore, according to the principle of advantage, “happiness” is acceptance of activities that bring about happiness while the activities not bringing happiness are rejected (Stokes 2012).

Despite a general reticence amongst many sociologists to engage imaginatively with the issue of happiness, there have been some recent studies that explore well-being in sophisticated ways (Frawley, 2016; Hyman, 2014, Jugureanu et al., 2014; Abbott and Wallace, 2012). The Dutch Sociologist Ruut Veenhoven has been at the forefront of this work on subjective well-being exploring how we can conceptualize and research happiness sociologically (1999; 2008; 2016). He has undertaken many quantitative studies that have examined issues popularized by economists and psychologists around the sources or correlates of well-being such as income, aging, culture, and so on. Many other sociologists are working in specialist fields who also conduct surveys into well-being or quality of life and have tended however to follow the lead of other disciplines and research wellbeing using large-scale surveys that abstract from the everyday experiences of happiness and the interpersonal processes that underpin it. Following the more traditional approach to wellbeing the studies concentrate on the pathologies of modernity (Edgell 2002; Brint 2015; Standing 2014).

Presently, academicians see the importance of measuring happiness from informants’ viewpoints rather than measuring happiness from their perspectives. The concept of happiness therefore covers different dimensions, including physical, psychological, spiritual, economic, social, and cultural aspects. The concept is useful in enhancing the happiness of the people in the country, which leads to continuous development. A research study was conducted on the happiness of the elderly in the Northeast of Thailand by Dusadee Ayuwat, Jongrak Hong-ngam, Kesinee Saranritthichai, Rakchanok Chamnanmak, and Wanichcha Narongchai (2018), who found that their happiness is derived from 4 components: (1) healthiness – the elderly are healthy, is not sick, does not have a congenital disease, can help oneself and can do household chores; (2) security – the elderly are secure in terms of economy and accommodation, holds an occupation, earns income, has money to use without trouble and without having to depend on the children, has savings, and has balance income and expense; (3) strong family – the family members love and live in unity, supporting and assisting one another, obeying and following what the elderly says; and (4) social empowerment – the elderly feels safe in life and asset, is respected by and has good relationship with people in the community. When the levels of happiness of the elderly

were taken into account, the study found that overall, the level of happiness of most of the elderly in the Northeast (52.8%) was high, whereas the levels of happiness of 36.7% and 10.5% of the elderly were at the medium and low levels. It was noted that the overall happiness of the elderly in the urban and rural areas was at a close proportion, i.e., 51.5% of the elderly in the urban area and 53.4% of the elderly in the rural area had a high level of happiness, while 37.9% and 36.2%, respectively, have a medium level of happiness. When classified by the 4 components, and from the average per total score, it was found that 81.4% of the elderly were happiest from having strong families, while 79.4% were happiest from social empowerment. The happiness of the elderly in terms of healthiness and security of life scored lower than the overall happiness of the elderly, i.e., at 74.4% and 71.6%, respectively. Thus, it can be concluded that the concept of happiness was derived from a theological basis and has extended into sciences, economics, and social science, which contain certain similarities, especially in creating happiness for people in the society. The happiness concept is an ever-interesting concept in the academic circle.

3. METHODOLOGY

This research used a quantitative research design, with a defined population of disabled individuals aged 60 years and above who have at least one type of disability, including 7 types of disabilities: (1) visual impairment, (2) hearing or speech impairment, (3) physical or motor impairment, (4) mental or behavioral impairment, (5) intellectual impairment, (6) learning impairment, and (7) autism, as well as individuals with multiple disabilities, and registered for a livelihood allowance, totaling 1,020 individuals in the Khonkaen Municipality area (Khonkaen Municipality 2019). The sample size was determined to be 384 using the formula for sample size calculation by K.V. Krejcie and Morgan (1970), and a stratified random sampling technique was employed from the database system of Khonkaen Municipality, which included 4 administrative districts and 4 residential groups, namely, allocated villages, urban communities, semi-urban communities, and slum communities. Data were collected using a questionnaire, which is a research tool developed from the qualitative data and theoretical concepts, presented by descriptive analytics, along with tables showing basic statistics and percentages and Exploratory Factor Analysis (EFA) to identify the patterns of correlations among a set of happiness variables. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the data for EFA (Dziuban and Shirkey, 1974). EFA was first performed unrotated, using maximum likelihood extraction and eigenvalues > 1 (O'Connor, 2000.) Additionally, the EFA result was performed with varimax rotation and enforcing thirty-four-factors solution to test the theoretical structure of the HAPPINOMETER (Kittisuksathit et al. 2012). All analyses were performed using SPSS statistical software packages.

4. RESULTS

4.1. Demographic information about the Disabled Elderly in Khon Kaen Smart City

From the sample group of 384 disabled elderlies in Khon Kaen, 96.6% were already registered as disabled persons. According to the 2007 Act of Promotion of Quality of Life of the Disabled, most of the disabled elderly under the study (52.9%) were in the third category of disability, i.e., physical disability, whereas 25.8% had a hearing or communicating impairment. It was noted that over 6.0% of the disabled elderly had

redundant disabilities. Nearly two-thirds became disabled from illness. Illness during the age range of 51-70 years, in particular, accounted for 44.9%, and from the age of 70 years and older accounted for 37.2%, with the average age of the elderly who became disabled from illness being 62.9 years and the highest age being 90.0 years. The second cause of disability was found to be from accidents, at 17.5%. It was also found that more than 8.1% of the disabled elderly became disabled from old age. Most of the disabled elderly (45.3%) were able to help themselves, 42.1% were able to partly help themselves, and as high as 12.6% were not able to help themselves at all (Tables 1-3).

As for the general characteristics of the disabled elderly in Khon Kaen Smart City under this study, most (59.9%) were females, and 40.1% were males. The age range of 39.6% was 71 – 80 years, and that of 32.6% was 60 – 70 years. The highest age was 98.0 years, and the average age was 75.1 years. The majority, three-thirds, completed primary education, followed by high school/ vocational certificate at 8.3% and 7.3%, respectively. Most, 59.6%, were married, while 28.4% were widowed / divorced. Most of the disabled elderly (47.7%) lived in a family with 1-3 members, while 40.1% and 12.2% lived in a family with 4-6 members and more than 7 members, respectively. The average number of members per family was 4 people and the maximum number of members found was 11.0 people. Most were found living with children and grandchildren (23.1%), followed by living with the spouse, children, and grandchildren at 18.8%, and with children only at 18.5%. It was noted that as many as 6.2% lived by themselves, which could have had an impact on the degree of their happiness (Tables 1-3).

Concerning the congenital diseases of the disabled elderly in Khon Kaen, it was found that as high as 74.1% had a congenital disease or a health problem besides being disabled. The most frequent disease found was hypertension, which was also chronic, at 42.9%, followed by diabetes, at 24.5%, while 13.5% had complications from pressure sores and allergies at a similar proportion, and 5.4% were equally found having stiffened joints, osteoporosis, lung infection, lupus, dermatitis, Alzheimer, or thyroid. The majority of the disabled elderly held the universal health scheme rights at 76.1%, followed by the government official health insurance at 19.7%. However, 2.4% were found to have no health care security at all. When being sick, they had to pay for the medical bill, which could have an impact on their happiness (Tables 1-3).

Tables 1-3 Percentage of the disabled elderly in Khon Kaen Smart City, classified by the general characteristics

General Characteristics	Percentage	General Characteristics	Percentage
Registration as a Disabled Person		Gender	
Registered	96.6	Male	40.1
Not registered	3.4	Female	59.9
Total	100.0 (383)	Total	100.0 (384)
Category of Disability (Order) (As per the Act)		Age (Years)	
1 Visibility impairment	8.1	60 – 70 years	32.6
2 Hearing or communicating impairment	25.8	71 – 80 years	39.6
3 Disability in physical movement	52.9	81 – 90 years	25.2
4 Psychological or behavioral disability	3.1	90 years and over	2.6
5 Intellectual disability	3.6	Total	100.0 (384)
6 Learning disability	0.5	Mean = 75.1 years S.D. = 8.5	
8 Redundant disability	6.0	Max.= 98.0 years Min. = 60.0 years	
		Highest Education Level	
		Primary level	74.5

Total	100.0 (384)	Secondary level	7.3
Cause of Disability		High school/Vocational certificate	8.3
Disability from birth	5.0	Vocational diploma	2.3
Disability from accident	17.5	Bachelor's degree and higher	2.9
Disability from illness	65.8	Others (uneducated)	4.7
Disability from old age	8.1	Total	100.0 (384)
Disability from occupation	2.1	Marital Status	
Unidentified cause and other	1.6	Single	12.0
Total	100.0 (383)	Married	59.6
Degrees of Disability		Widowed/divorced	28.4
Cannot help oneself	12.6	Total	100.0 (384)
Can partly help oneself	42.1	Number of Family Members Living Together	
Can help oneself	45.3	1 – 3 members	47.7
Total	100.0 (380)	4 – 6 members	40.1
Congenital Disease or Health Problem		7 members or more	12.2
No	25.9	Total	100.0 (384)
Yes	74.1	Mean = 4.0 persons	S.D. = 2.0
Total	100.0 (371)	Max. = 11.0 persons	Min. = 1.0 persons
Rights for Health Care Service		Chronic Diseases	
Universal health scheme	76.1	Hypertension	42.9
Official health insurance	19.7	Diabetes	24.5
Social security	1.0	Cholesterol	9.0
Other rights (VHV's rights)	0.8	Heart disease	5.6
No insurance	2.4	Ischemic stroke	3.4
Total	100.0 (376)	Joint infection from gout	3.1
		Others	10.4
		Total (Number of answers)	100.0 (522)

4.2. Happiness of Elderly with Disabilities in Khon Kaen Smart City, Thailand.

The happiness of the disabled elderly in Khon Kaen Smart City could be analyzed on the part of the provincial policy and the ways of living of the disabled elderly. The well-being condition owing to the family's well-being, in particular, has an impact on the happiness and the degree of happiness of the disabled elderly. The happiness of the disabled elderly in Khon Kaen is divided into 4 components: a sense of belonging, strong families, subsistence allowance welfare, and social empowerment. The analysis showed that the overall happiness of most of the disabled elderly in Khon Kaen (61.5%) was at a high level, scoring 87 – 129 points, while 35.4% showed a moderate level of happiness (44 – 86 points) and 3.1% showed a low level of happiness (0 – 43 points). The average score was 89.0, with the maximum score of 129.0 (Table 4).

When the happiness in the life of the disabled elderly was based on the average percentage per total score, it was found that 65.4% of the disabled elderly in Khon Kaen had overall happiness. Seventy percent (70.0%) were happiest with their strong families, while 67.0% and 63.6%, respectively, were happy with their sense of belonging and social empowerment. It was noted, however, that the happiness from receiving subsistence allowance welfare of 61.3% of the disabled elderly was the lowest. This could be from insufficient allowance and welfare, which had an impact on their ways of living (Table 5).

When considering the happiness of the disabled elderly (DE), by category, in terms of sense of belonging, it was found that the majority of the DE were happy with

being able to eat meals normally (51.9%, SenseofBe5). Following this, the DE were happy with being able to take care of their health and follow doctor's orders, as well as feeling satisfied with their quality of sleep, with most happiness levels of 48.8% and 45.8% respectively (SenseofBe4, 6). In terms of subsistence allowance, it was found that the DE was happy on most and more levels with receiving an elderly allowance and felt that these allowances were sufficient for their needs (90.3% and 74.8% respectively, SubWel1,2). However, it is noteworthy that 50% of the DE did not feel happy because they were unable to work to generate income for themselves (SubWel3) and did not have a caregiver to assist them (PA) (SubWel4). (Table 6).

In addition, in the item of strong families, it was found that the DE was happy to receive care/attention from family members (StrongFam1) and felt that life was safe when staying at home (StrongFam6) at most and more level, sum at 86.5% and 83.3% respectively. It is worth noting that more than one-third of the DE are not happy (never) and have low levels of happiness when they do not engage in activities with family members (StrongFam4) and do not have many opportunities to relax and relieve stress (StrongFam7). In terms of social empowerment, it was found that the majority of the DE are happy with their safe living environment and property, sum at most and more level 76.9%. (Table 6).

Table 4 Percentage of the disabled elderly in Khon Kaen Smart City, classified by the overall degrees of happiness in life

Degrees of Happiness in Life	Percentage
Low (0 – 43 points)	3.1
Medium (44 – 86 points)	35.4
High (87 – 129 points)	61.5
Total	100.0 (384)
Mean = 89.0 points S.D. = 21.6 Maximum = 129.0 points Minimum = 0.0 points	

Table 5 Descriptive statistics of the happiness in life of the disabled elderly, classified by the aspects of happiness in life

Happiness in Life	Mean	S.D.	Maximum	Minimum	Average Percentage per Total Score	Questions
Overall happiness in life	89.0	21.6	129.0	0.0	65.4	34
Sense of belonging	26.8	5.8	39.0	0.0	67.0	10
Subsistence allowance	24.5	7.7	40.0	0.0	61.3	10
Strong families	19.8	6.5	28.0	0.0	70.7	7
Social empowerment	17.8	6.8	28.0	0.0	63.6	7

Table 6 Percentage of the disabled elderly [DE] and descriptive statistics of the happiness in life score, categorize by items on term

Variable Code	Happiness in Life	Percentage of the disabled elderly					Mean	S.D.
		Most	More	Less	Least	Never		
Sense of Belonging								
SenseofBe1	DE feel satisfied with your life feel calm, and have hope (not a burden to others).	33.9	44.5	12.6	5.1	3.9	2.99	1.01
SenseofBe2	DE accept your physical appearance (disabilities).	35.5	44.0	12.9	4.4	3.3	3.04	0.97
SenseofBe3	DE have good concentration in various activities.	34.2	38.0	18.3	5.9	3.6	2.93	1.04
SenseofBe4	DE can take care of your health and follow medical advice.	48.8	35.5	7.7	5.1	2.8	3.22	0.99
SenseofBe5	DE can eat regularly.	51.9	29.0	12.9	4.6	1.5	3.25	0.95
SenseofBe6	DE feel satisfied with your sleep.	45.8	28.5	15.2	8.2	2.3	3.07	1.07
SenseofBe7	DE have enough energy to do daily activities.	30.3	38.3	16.2	9.5	5.7	2.78	1.14
SenseofBe8	DE are satisfied with your current housing situation.	38.3	33.7	17.0	6.7	4.4	2.94	1.10
SenseofBe9	DE have negative feelings such as feeling lonely, sad, depressed, hopeless, and anxious often*	6.7	8.7	24.7	33.2	26.7	1.35	1.15
SenseofBe10	DE experience physical pain that prevents you from doing what you want to do*.	5.1	10.0	22.6	34.4	27.8	1.30	1.13
Subsistence Allowance								
SubWel1	DE receive a living allowance and an elderly allowance.	67.9	22.4	5.9	1.3	2.6	3.51	0.87
SubWel2	DE feel that the living allowance is sufficient for their expenses.	50.9	23.9	11.3	9.3	4.6	3.07	1.19
SubWel3	DE can work to generate income for their self	15.4	18.5	9.0	8.0	49.1	1.43	1.59
SubWel4	DE have a personal assistant (PA) to take care	15.4	21.1	8.7	8.0	46.8	1.50	1.59

Table 6 Percentage of the disabled elderly and descriptive statistics of the happiness in life score, categorize by items on term (Cont.)

Variable Code	Happiness in Life	Percentage of the disabled elderly					Mean	S.D.
		Most	More	Less	Least	Never		
	Subsistence Allowance							
SubWel5	DE can use public health services as needed.	41.4	35.2	10.5	4.1	8.7	2.96	1.21
SubWel6	DE need to receive medical treatment to be able to live day by day *	10.0	20.3	9.0	25.4	35.2	1.44	1.40
SubWel7	DE have received assistance in obtaining disability aids such as wheelchairs and shared equipment.	27.5	29.0	13.9	11.6	18.0	2.37	1.44
SubWel8	DE have sufficient disability aids/equipment for daily living.	30.6	31.6	13.4	9.5	14.9	2.53	1.39
SubWel9	DE have used convenience facilities within the home (rice cooker, hot water kettle).	39.3	36.8	11.6	5.4	6.9	2.96	1.16
SubWel10	DE have received assistance in improving the living conditions to be suitable for daily living.	30.8	37.8	15.2	6.7	9.5	2.74	1.23
	Strong Families							
StrongFam1	DE have received care and support from family members.	53.2	32.6	6.4	5.4	2.3	3.29	0.96
StrongFam2	DE have had conversations and consultations with them, feeling like a part of the family.	42.2	35.0	12.1	5.9	4.9	3.03	1.10
StrongFam3	DE have received encouragement from your family (<i>expressing love, hugs, compliments</i>).	41.1	30.1	17.2	9.3	3.3	2.94	1.12
StrongFam4	DE have participated in activities with family members	28.5	26.7	15.7	15.7	13.4	2.41	1.39
StrongFam5	Their grandchildren listen to and follow DE advice.	31.6	31.4	21.3	8.2	7.5	2.71	1.20
StrongFam6	DE feel safe at home.	47.6	35.7	9.5	4.9	2.3	3.21	1.20
StrongFam7	DE have had opportunities to relax and relieve stress (<i>going out/traveling</i>).	26.5	24.2	15.2	15.2	19.0	2.24	1.47
	Social Empowerment							
SocEm1	DE have participated in community cultural and charitable events.	19.0	30.8	15.7	15.4	19.0	2.15	1.40
SocEm2	DE have shared household goods/food with neighbors.	18.3	28.5	23.4	13.6	16.2	2.19	1.32

Table 6 Percentage of the disabled elderly and descriptive statistics of the happiness in life score, categorize by items on term (Cont.)

Variable Code	Happiness in Life	Percentage of the disabled elderly					Mean	S.D.
		Most	More	Less	Least	Never		
Social Empowerment								
SocEm3	DE have gained necessary information about daily life from people in the community	25.2	34.7	13.9	8.7	8.5	2.68	1.19
SocEm4	DE can always ask for help from your neighbors.	29.0	29.3	24.2	10.3	7.2	2.63	1.21
SocEm5	DE feel accepted by the community as a part of it.	29.8	41.6	16.5	7.2	4.9	2.84	1.08
SocEm6	DE feel comfortable traveling around (transportation).	20.8	37.5	16.5	10.3	14.9	2.39	1.32
SocEm7	DE live in a safe environment for your life and property.	35.0	41.9	13.4	4.6	5.1	2.97	1.06

4.3. Factor Analysis of Happiness of Elderly with Disabilities in Khon Kaen Smart City, Thailand.

The factor analysis in this study was conducted using exploratory factor analysis (EFA), which analyzed the components of 34 variables to identify the patterns of correlations among a set of happiness variables. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the data for EFA and performed EFA with varimax rotation. The details are as follows:

4.3.1 The Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity Measure

The EFA of Bartlett's test of sphericity indicates that if it is statistically significant, hypothesis 1 is accepted, which means that all variables are related and can be analyzed as components. The results of the analysis of the interrelationships between variables based on the preliminary agreement of the factor analysis, as shown in Table 2, reveal that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) is equal to 0.895, indicating that the interrelationships between variables are suitable for factor analysis (Hair et al. 1988). Additionally, the Bartlett's Test of Sphericity has a statistically significant value at the level of 0.000, indicating that hypothesis 1 is accepted, which means that all variables are related and can be analyzed as components. (Table 7)

In examining the Extraction values for each variable, it is found that each variable has a value greater than 0.300, indicating that each variable has suitable properties and can be used to analyze the components, as shown in Table 7.

Table 7 the KMO and Bartlett's test of sphericity analysis

Statistic	Results
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.895
Bartlett's Test of Sphericity Approx. Chi-Square	7982.806
df	561
Sig.	0.000
n	389

4.3.2 Factor loading

Factor loading refers to the correlation between the components and the factors (observed variables), which were analyzed using varimax rotation and a thirty-four-factor solution enforced to test the theoretical structure of the Happiness (Brenner,1975; Scanlon, 1993). The new components have been re-categorized according to the HAPPINOMETER tool (Kittisuksathit et al., 2012), in order to the happiness of the elderly with disabilities. Therefore, the results of the factor loading analysis refer to the new components and factors presented in Tables 8 and 9, as detailed.

Component 1: Happy Society is composed of 7 factor (observed variables), with the highest factor loading values being SocEm3 (0.827), SocEm4 (0.803), SocEm5 (0.771), SocEm7 (0.664), SocEm2 (0.636), SocEm1 (0.621), and SocEm6 (0.593).

Component 2: Happy Family is composed of 6 factor with the highest factor loading values being StrongFam2 (0.833), StrongFam3 (0.820), StrongFam1 (0.812), StrongFam5 (0.644), StrongFam6 (0.637), and StrongFam4 (0.611).

Component 3: Happy Body is composed of 6 factor with the weight of each variable as follows: SenseofBe5 with a weight of 0.784, SenseofBe6 with a weight of 0.736, SenseofBe4 with a weight of 0.594, SenseofBe8 with a weight of 0.507, SubWel9 with a weight of 0.447, and SubWel10 with a weight of 0.401.

Component 4: Happy Relax is composed of 3 factor with the weight of each variable as follows: SubWel3 with a weight of 0.717, SubWel4 with a weight of 0.670, and StrongFam7 with a weight of 0.645.

Component 5: Happy Heart is composed of 3 factor with the weight of each variable as follows: SubWel8 with a weight of 0.852, SubWel7 with a weight of 0.838, and SubWel5 with a weight of 0.472.

Component 6: Happy Brain is composed of 5 factor with component weights for each variable as follows: SenseofBe2 with a weight of 0.732, SenseofBe1 with a weight of 0.616, SenseofBe3 with a weight of 0.544, SenseofBe7 with a weight of 0.505, and SubWel6 with a weight of 0.493.

Component 7: Happy Soul is composed of 2 factor with component weights for each variable as follows: SenseofBe9 with a weight of 0.830 and SenseofBe10 with a weight of 0.827.

Component 8: Happy Money is composed of 2 factor with component weights for each variable as follows: SubWel1 with a weight of 0.779 and SubWel2 with a weight of 0.741.

Table 8 The number of factors, eigenvalues, percent of variance explained, and cumulative percent of variance explained for the Happiness

New Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1: Happy Society	11.169	32.851	32.851
2 Happy Family	2.765	8.132	40.982
3 Happy Body	2.147	6.316	47.298
4 Happy Relax	1.935	5.690	52.988
5 Happy Heart	1.684	4.953	57.941
6 Happy Brain	1.434	4.219	62.160
7 Happy Soul	1.391	4.090	66.251
8 Happy Money	1.014	2.983	69.233

Table 9 Factor loadings of happiness variables after orthogonal rotation using Varimax method.

Factor (observed variables)		Component and Factor loadings by using Varimax method.								Name of Component
		1	2	3	4	5	6	7	8	
1	SocEm3	.827								Happy Society
2	SocEm4	.803								
3	SocEm5	.771								
4	SocEm7	.664								
5	SocEm2	.636								
6	SocEm1	.621								
7	SocEm6	.593								
8	StrongFam2		.833							Happy Family
9	StrongFam3		.820							
10	StrongFam1		.812							
11	StrongFam5		.644							
12	StrongFam6		.637							
13	StrongFam4		.611							
14	SenseofBe5			.784						Happy Body
15	SenseofBe6			.736						
16	SenseofBe4			.594						
17	SenseofBe8			.507						
18	SubWel9			.447						
19	SubWel10			.401						
20	SubWel3				.717					Happy Relax
21	SubWel4				.670					
22	StrongFam7				.645					Happy Heart
23	SubWel8					.852				
24	SubWel7					.838				
25	SubWel5					.472				Happy Brain
26	SenseofBe2						.732			
27	SenseofBe1						.616			
28	SenseofBe3						.544			
29	SenseofBe7						.505			
30	SubWel6						.493			
31	SenseofBe9							.830		Happy Soul
32	SenseofBe10							.827		
33	SubWel1								.779	Happy Money
34	SubWel2								.741	

4.3.2 The total variance explained

The statistics of each component before and after factor extraction (total variance explained) using the principal component analysis method. This article examined the suitability of using the exploratory factor analysis (EFA) technique based on the results from Table 8, which showed that 8 components were extracted with initial eigenvalues greater than 1 for each component. In addition, the cumulative percent of the total variance explained for all 8 components was 69.233%. The percentage of variance explained for each component, in descending order, was as follows: Component 1 (32.851%), Component 2 (8.132%), Component 3 (6.316%), Component 4 (5.690%),

Component 5 (4.953%), Component 6 (4.219%), Component 7 (4.090%), and Component 8 (2.983%).

According to the HAPPINOMETER tool (Kittisuksathit et al. 2012), the 8 components have been re-categorized to measure the happiness of the elderly with disabilities. The Institute for Population and Social Research at Mahidol University in Thailand has been continuously studying and developing measures of happiness since 2008, starting with the creation of a happiness index for industrial workers. In 2010, they created a happiness measure for civil servants and further developed it into a "self-assessment survey: SELF-ASSESSMENT" along with an Excel program for analyzing happiness levels. Finally, they developed the HAPPINOMETER tool, which is widely used and applied to various target groups based on the Quality of Happiness assessed from individual-level social indicators. This measure assesses satisfaction and expectations and evaluates an individual's feelings about their living conditions. Additionally, happiness depends on each person's experiences. "Happiness" and "Satisfaction" play a significant role in the quality of life at the individual level, particularly for the disabled elderly (Brenner 1975; Scanlon 1993). Therefore, the results of the EFA for the 8 components and factors are presented in Table 10, as detailed.

Component 1: Happy Society - the disabled elderly have a good society with love and unity, support the organization and residence, and good social and environmental conditions.

Component 2: Happy Family - the disabled elderly having a warm and stable family, will be a good support at work.

Component 3: Happy Body - the disabled elderly have good health, a strong body, and a bright mind, knowing how to live life.

Component 4: Happy Relax - the disabled elderly being able to relax in various situations in life or Work-life balance.

Component 5: Happy Heart - the disabled elderly having access to social welfare and support in terms of information, material goods, and emotional well-being.

Component 6: Happy Brain - the disabled elderly having a sense of self-esteem and self-satisfaction, self-development to manage their daily lives independently.

Component 7: Happy Soul - the disabled elderly having morality, humility, and fear of one's actions, can manage their emotions and prevent them from leading to depression or mental health risks.

Component 8: Happy Money - the disabled elderly using money wisely, knowing how to save and use it effectively.

Table 10 The factors of the disabled elderly [DE] happiness, of new component after factor extraction (total variance explained) method.

Name of New Component		Detail of Factor (Observed Variables)		% of Factor Loading
1	Happy Society	SocEm3	DE have gained necessary information about daily life from people in the community	32.851
		SocEm4	DE can always ask for help from your neighbors.	
		SocEm5	DE feel accepted by the community as a part of it.	
		SocEm7	DE live in a safe environment for your life and property.	
		SocEm2	DE have shared household goods/food with neighbors.	
		SocEm1	DE have participated in community cultural and charitable events.	
		SocEm6	DE feel comfortable traveling around (transportation).	

Table 10 The factors of the disabled elderly [DE] happiness, of new component after factor extraction (total variance explained) method. (Cont.)

Name of New Component		Detail of Factor (Observed Variables)		% of Factor Loading
2	Happy Family	StrongFam2	DE have had conversations and consultations with them, feeling like a part of the family.	8.132
		StrongFam3	DE have received encouragement from your family (<i>expressing love, hugs, compliments</i>).	
		StrongFam1	DE have received care and support from family members	
		StrongFam5	Their grandchildren listen to and follow DE advice.	
		StrongFam6	DE feel safe at home.	
		StrongFam4	DE have participated in activities with family members	
3	Happy Body	SenseofBe5	DE can eat regularly.	6.316
		SenseofBe6	DE feel satisfied with your sleep.	
		SenseofBe4	DE can take care of your health and follow medical advice.	
		SenseofBe8	DE are satisfied with your current housing situation.	
		SubWel9	DE have used convenience facilities within the home (rice cooker, hot water kettle).	
		SubWel10	DE have received assistance in improving the living conditions to be suitable for daily living.	
4	Happy Relax	SubWel3	DE can work to generate income for their self	5.690
		SubWel4	DE have a personal assistant (PA) to take care	
		StrongFam7	DE have had opportunities to relax and relieve stress (<i>going out/traveling</i>).	
5	Happy Heart	SubWel8	DE have sufficient disability aids/equipment for daily living.	4.953
		SubWel7	DE have received assistance in obtaining disability aids such as wheelchairs and shared equipment.	
		SubWel5	DE can use public health services as needed.	
6	Happy Brain	SenseofBe2	DE accept your physical appearance (disabilities).	4.219
		SenseofBe1	DE feel satisfied with your life, feel calm, and have hope (not a burden to others).	
		SenseofBe3	DE have good concentration in various activities.	
		SenseofBe7	DE have enough energy to do daily activities.	
		SubWel6	DE need to receive medical treatment to be able to live day by day *	
7	Happy Soul	SenseofBe9	DE have negative feelings such as feeling lonely, sad, depressed, hopeless, and anxious often*	4.090
		SenseofBe10	DE experience physical pain that prevents you from doing what you want to do*.	
8	Happy Money	SubWel11	DE receive a living allowance and an elderly allowance	2.983
		SubWel12	DE feel that the living allowance is sufficient for their expenses.	

5. CONCLUSION

From the study of analyzing the components of happiness among elderly people with disabilities, it was found that the components of happiness for the elderly with disabilities consist of eight aspects. The aspect that had the highest weight was the first aspect, "Happy Society," which had a weight percentage of 32.851, consistent with Dusadee Ayuwat, Jongrak Hong-ngam, Kesinee Saranritthichai, Rakchanok Chamnanmak and Wanichcha Narongchai (2018) found that out of 4 components, 81.4% of the elderly were happiest from having a strong family. while 79.4 percent were most happy with social empowerment. This aspect includes variables such as (1) being informed about essential news and stories for daily life with people in the community, (2) being able to ask for help from neighbors anytime, (3) being accepted as part of the community by surrounding individuals, (4) living in a safe environment with safety in life and property, (5) sharing food and household items with neighbors, (6) participating in traditional community charity activities, (7) feeling comfortable when traveling, and (8) providing counseling or having a social role that makes the elderly feel important to society. Related organizations should focus on enhancing the happiness of the elderly, particularly in terms of establishing good relationships in the community, to increase the happiness of the elderly. From the study, it was found that the measurement model was appropriate with a KMO value of 0.895, and the cumulative percent of all eight components was 69.233, indicating that the relationship between variables was appropriate.

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