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Interaction of Ability Level of Daily Living Activities, Transportation to Hospital, and Income on the Health Care Needs of Elders from the Local Administrative Organization in the Lower Southern Region of Thailand

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Abstract

The study aimed to determine a three-way interaction between the ability level of daily living activities, transport to the hospital, and income on the health care needs from local administrative organization in the lower southern region of Thailand. A multi-stage random sampling technique was used to enroll 6,006 elderly people as study participants. A questionnaire was provided to assess the participants' ability to complete daily living activities independently and the needs of health care among elders. The item objective congruence (IOC) index values for the questionnaire were between 0.67 and 1.00. The reliability (Cronbach's alpha) of care needs and ability level of daily living activities were 0.894 and 0.967, respectively. Descriptive statistics and three-way ANOVA were used to analyze these data.

There was a significant interaction between the ability level of daily living activities, transport to the hospital, and income with the needs of health care in elders at the lower Southern region ($F = 3.106$, $p = 0.003$). Most of the elderly participants needed assistance doing their daily living activities. Some participants reported relying on public cars, service cars, or friend's car as their means of transportation to get to the hospital. In addition, some participants reported having insufficient income and being in debt. Thus, the local administrative organization should develop services to provide for the health care needs of elders with chronic diseases and low income. The organizations may also need to innovate new and different activities to serve the specific needs of elders in their community.

Keywords: Ability of daily living activities, Travel to hospital, income, Local administrative organization

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Background

The Thai Ministry of Public Health implemented the policy on universal health coverage for all Thais.The health care package includes 4 parts, including health promotion, disease prevention, medical treatment and rehabilitation, as holistic care. These were continuously done in Thai health care service. This health policy focuses on establishing and maintaining good health, as opposed to only repairing poor health. Moreover, this policy states that people should have health knowledge and concern for their self-care [1].

Presently, there is a growing number of Thai elderly people. Many elders are at risk for both health problems and economic difficulties such as poverty. The Thai Ministry of Public Health reported that in 2014, there were 9.2 million elders with health problems such as hypertension (41%), diabetes (10%), arthritis (9%) and disability (6%) [2]. Roughly one-third of elderly (34.3%) had income below the Thai national poverty line [2]. Furthermore, researchers also reported that increasing age has been linked to inability to complete living activities, health problems such as illness, and need for rehabilitation following injuries.

In 2000, the Thai Parliament passed legislation granting authority to the local administrative organization to establish and schedule activities that aid and improve the quality of life for the elderly, women, and underprivileged [3]. In response, local administrative organizations have worked closely with communities to initiate programs that care for the elders in their local communities [4]. They have set up activities to promote elderly physiological and mental health, social activities, economic well-being, and continuing education and self-development [5, 6].

Elders can benefit from government support including health care, organized social activities, and financial help such as an elderly living allowance payment. Furthermore, elders could use training to manage their finances and to develop new occupational skills [7, 8]. Social group participation (for example, elderly club) and family support are also important for elders [7,9] The government provides some assistance through their facilities and medical benefit schemes. However, elders with very low income may still be unable to afford comprehensive or certain health care services like accessibility to hospitals and medical expenses that are not covered, even though Thailand has universal health coverage. Elders with chronic illnesses need the holistic care and assistance which includes social care, health care, economic support, and the management of environment that can impact an individual's medical treatment and living expenses [10]. Although the government has various projects to support the elders, there may still be unmet needs impacting the daily life of many elders. For example, some elders have disabilities that prevent them from independently doing all of their daily activities. Thus, these elderly people need support from a caregiver or family members.

The researchers were interested in the role of local administrative organization in responding and providing for elderly needs, ability to perform daily activities independently and access to transportation to the hospital as other important factors affecting health care needs. We also investigated how an elderly person's ability to perform daily living activities, their access to transportation to the hospital, and the sufficiency of their personal income influenced the health care needs of elderly people in lower southern region of Thailand.

Research objectives

The research aimed to study the interaction between ability level for performing daily living activities independently, transportation from home to the hospital, and income with the health care needs of elders from local administrative organization in lower southern region in Thailand.

Research framework

In this study, we used the concepts from the innovation care for chronic conditions framework (ICCCF) [11]. These concepts guide care for patients with chronic illness, including infectious and non-infectious diseases under policy with the goal of keeping them healthy. This framework also envisions the patient's family as a care center, which provides preparation and inspiration. The patient's families need to facilitate the acquisition and exchange of health information. Health information needs to be shared between the patient, family, community, and health care team. Consequently, if the framework is followed correctly, then ideally patients with chronic diseases receive well care.

Our research's conceptual model also incorporated Maslow's hierarchy of needs theory. In Maslow's theory, all humans have the need and desire to fulfill physical, emotional, safety needs, and also to seek meaning of things for themselves. There are 5 hierarchical steps including: Step 1: physiological needs, Step 2: safety needs, Step 3: belongingness and love needs, Step 4: esteem needs, and Step 5: self-actualization needs [12]. The local administrative organizations can use their authority to promote the quality of life for people in its community. They can support health promotion and social support for elders to fulfill these different needs. In addition, they have the responsibility to support the community by providing effective health promotion and social support for elders. This responsibility is outlined in laws on social welfare for children, women and elders. These laws are found in Thai Parliament policies from 2002, and Thai constitution policy from 2007 in column 5 session 53, 78, 80 and 84. This requirement is also specified in health regulations passed by the Thai Parliament in 2002, which was the first health regulation in Thailand following session 13(3), 18(8) 47 and 48(4).

Figure 1 contains the research framework that we used in our study. It integrates both the WHO's innovation care for chronic conditions framework (ICCCF) and Maslow's hierarchy of needs theory.

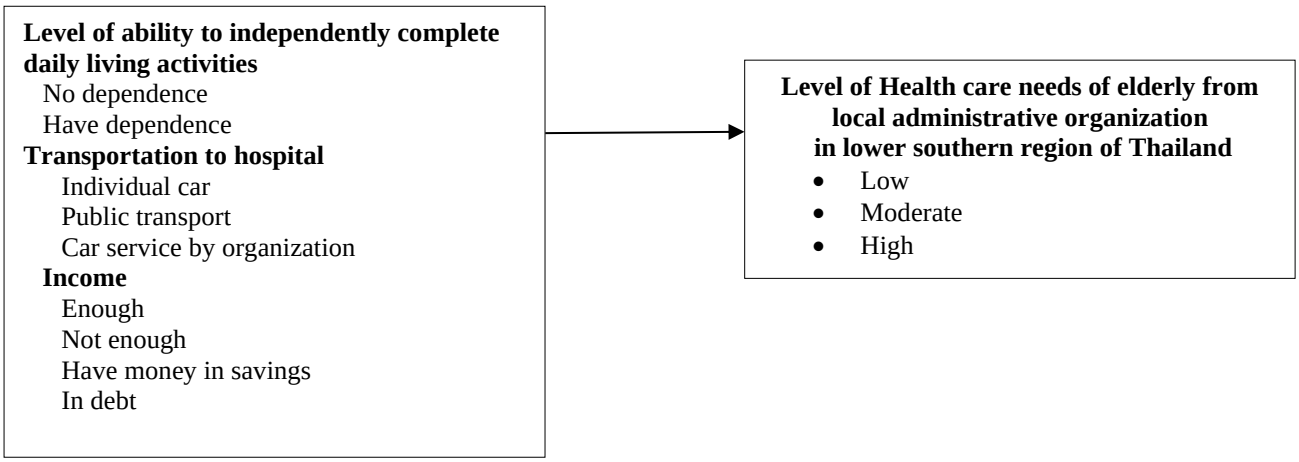

Figure 1 Research framework

Research methodology

This study involved descriptive research and three-way ANOVA data analysis.

Population and study samples

The underlying population from which we sampled from included 600,684 elders that were over 60 years old and who lived in 7 provinces of Thailand's lower southern region. These seven provinces included Trang, Phatthalung, Songkhla, Satun, Pattani, Yala and Narathiwat [13].

The study participants included the 6,006 elders living within the 7 provinces of Thailand's lower southern region. The sample size was calculated by using the ratio of sampling 1 percentage of the population per 100,000 population [14]. Given that there were about 600,600 elders in the lower southern region [13] and using the proportion of elders in each province, we calculated that the study sample should contain 6,006 elders. We conducted multistage random sampling through the following steps: 1) sampling 25% of the districts in each province, 2) sampling 25% of the subdistricts in each district, and 3) random sampling elderly people as participants without replacement.

Research tools

We created the study questionnaire after conducting a literature review and research on "current problems and care needs of older adults in the lower southern region of Thailand." [15][15] We divided our questions asked about the health care needs of elders from local administrative organization into three parts, including:

Part 1: Personal demographics including gender, age, transportation from home to the hospital and the income. Each question had 4 answer choices.

Part 2: Ability to independently complete daily living activities (ADL) by using the Barthel's ADL Index to interpret the score for ability to independently complete activities of daily living. This section included 10 questions from 10 activities. The scores were ranged from 0 to 20. We interpreted the score using the Barthel ADL Index [16].

Score	Interpretation using Barthel ADL Index
0 – 4	Completely dependent
5 - 8	Severely dependent
9 – 11	Moderately dependent
12 – 20	Independent

For our study, we created a dichotomous variable that divided the ability level to complete daily living activities independently into 2 groups based on the Barthel ADL Index score:

Scores	Interpretation
0 – 11	Dependent: requires assistance to complete daily living activities
12 – 20	Independent: able to independently complete daily living activities

Part 3: Health care needs from local administrative organization for elders in lower Southern region of Thailand. All 14 questions had a response with a 4-level scale (ranging from 0 to 3 score). The mean score of the 14 questions was calculated and then categorized into one of 3 levels of health care needs from local administrative organization using the formula below [17].

$$\text{Level} = \frac{\text{High score} - \text{low score}}{\text{Number of intervals}}$$

Mean score	Interpretation
0.00– 1.00	Low level of care needs
1.01– 2.00	Moderate level of care needs
2.01– 3.00	High level of care needs

Quality of questionnaire

The content validity of the study questionnaire was analyzed by 3 experts including a nursing lecturer from nursing department at Burapa University, the director of social welfare division at Khorupchang municipality in Songkhla province, and a nursing lecturer who has expertise on health promotion. This panel of experts generated an item objective congruence (IOC) index score for each question on the questionnaire. The IOC for the questions ranged from 0.67 and 1.00.

We also tested the reliability of the questionnaire with 30 elders belonging to an elderly member club at the Boromarajchonni Nursing College, Songkhla. Reliability was analyzed using Cronbach's alpha coefficient [18]. The reliability (Cronbach's alpha) of questions about health care needs from local administrative organization and about the ability to complete daily living activities (ADL) independently was 0.894 and 0.967, respectively.

Data collection

We sent the official letters to region 12's senior medical officer and Trang provincial chief medical officer requesting permission to collect data from elderly participants in their communities. Then, we met with the officers to explain the research methodology and data collection plan. The elders who could read and write Thai language received the self-reported questionnaire. Elders that who could not read were interviewed using same questionnaire by the research team. We checked data integrity of all research questionnaires before analyzing the data using SPSS statistic package. All 6,006 questionnaires were completed and returned back, yielding a 100% response rate.

Data analysis

The analysis of data was done by using the descriptive statistics (including mean and standard deviation) were used to analyse demographics and health care needs from the local administrative organization among the elderly participants from the lower southern region of Thailand. We analyzed the relationship between ability to independently complete daily living activities, access to transport to hospital, and sufficiency of income on influencing the level of health care needs of elders from a local administrative organization in lower southern region of Thailand using three-way ANOVA. We also checked to see if the following assumptions were true. The normality of the data was checked by using normal probability plot. The data showed a normal distribution [19]. Furthermore, we tested for the homogeneity of variance was using Levene's test. The variance was not homogeneous ($p<0.001$). The p-value less than 0.05 is defined as statistically significant.

Ethical approval

This research was approved by human research ethics committee of Boromrajchonni Nursing College, Songkhla. The human research ethics reference number was BCNSK 25-22/2560. In order to protect the rights and confidentiality of study participants, we provided the following information to study participants: 1) name and contact information of researcher, 2) study objectives and research benefits and risks, 3) process of data collection, and how we are protecting anonymity of study participants, 4) data confidentiality, 5) plans for future presentation of overall results. Study participants had right to accept or reject participation in any of the research tasks. Participants could also withdraw from the research at any time. All study data will be destroyed within 1 year after the research has published.

Results and discussion

Results

Personal demographics

Most elders were female (61.6%). The average age was 69 years old, with most participants (52.9 %) between ages 60 to 69 years old. Sixty two percent of elders were married. Almost all of the elders (84.3%) needed assistance from a caregiver (Table 1). More than half (59.4%) reported having sufficient income. Otherwise, 32.0% participants reported having insufficient income, followed by 3.4% in debt. Most of elders (71.9%) reported having access to a private car to go to the hospital.

Table1 Personal demographics for elders living in southern Thailand (n = 6,006)

Personal information	Number	Percentage (%)
Gender		
Male	2305	38.4
Female	3701	61.6
Age ($\bar{x}$ = 68.98, S.D.= 7.12, Min= 60 years, Max= 94 years)		
60 – 69 years old	3178	52.9
70 – 79 years old	1928	32.1
80 years old and over	900	15.0
Status		
Married	3725	62.0
Widowed	2022	33.7
Divorced	72	1.2
Single	187	3.1
Ability level for daily living activities		
Independent	945	15.7
Dependent	5061	84.3
Type of transport to hospital		
Personal car	4317	71.9
Public car	980	16.3
Service car	420	7.0
Friend's car	289	4.8
Income		
Sufficient	3566	59.4
Insufficient	1920	32.0
Monetary savings	314	5.2
Debt	206	3.4

Factors related to health care needs of elders from local administrative organization

Among the elders who were depended on caregivers to complete activities of their daily living, elders who went to hospital by other people's car and have had debt had the highest mean score for care needs from the local administrative organization ($\bar{x}$ = 2.66, S.D.= .33). The independent elders, particularly elders who went to hospital by their own or public car and have debt, had the highest mean score for care needs from the local administrative organization ($\bar{x}$ = 2.88, S.D. = .16) (Table2).

Table 2 Mean score of health care needs of elders from local administrative organization in lower southern region of Thailand, stratified by ability level of daily living activities, transport to hospital and income

Ability level of daily living activities	Type of Transport to hospital	Income	n	$\bar{x}$	S.D.
Dependence	Personal car	Sufficient	2402	2.38	0.67
Dependence	Personal car	Insufficient	918	2.40	0.69
Dependence	Personal car	Monetary savings	245	2.43	0.68
Dependence	Personal car	Debt	121	2.43	0.74
Dependence	Public car	Sufficient	380	2.37	0.76
Dependence	Public car	Insufficient	392	2.37	0.69
Dependence	Public car	Monetary savings	16	2.34	0.82
Dependence	Public car	Debt	42	2.35	0.81
Dependence	Service car	Sufficient	149	2.56	0.62
Dependence	Service car	Insufficient	120	2.63	0.48
Dependence	Service car	Monetary savings	15	2.63	0.20
Dependence	Service car	Debt	17	2.60	0.72
Dependence	Friend's car	Sufficient	123	2.35	0.75
Dependence	friend's car	Insufficient	108	2.16	.73
Dependence	friend's car	Monetary savings	8	2.29	.55
Dependence	friend's car	Debt	5	2.66	.33
Independence	Personal car	Sufficient	357	2.34	.64
Independence	Personal car	Insufficient	235	2.47	.56
Independence	Personal car	Monetary savings	27	2.21	.63
Independence	Personal car	Debt	12	2.71	.53
Independence	Public car	Sufficient	56	2.31	.66
Independence	Public car	Insufficient	84	2.39	.61
Independence	Public car	Monetary savings	3	2.79	.19
Independence	Public car	Debt	7	2.88	.16
Independence	Service car	Sufficient	22	2.56	.68
Independence	Service car	Insufficient	36	2.48	.64
Independence	Service car	Monetary savings	0	.00	.00
Independence	Service car	Debt	61	2.52	.65
Independence	Friend's car	Sufficient	18	2.49	.72
Independence	Friend's car	Insufficient	27	2.22	.79
Independence	Friend's car	Monetary savings	0	.00	.00
Independence	Friend's car	Debt	0	.00	.00

The ability of daily living activities, transport to hospital and income had significantly interaction with care needs from local administrative organization in elders at lower southern region ($p < 0.01$). (Table 3)

Table 3 Three - way ANOVA analysis results comparing the care needs of elders from local administrative organization at lower southern region of Thailand stratified by ability level to complete daily living activities independently, type of transportation to hospital, and sufficient income

Deviation	SS	df	MS	F	Sig
Ability level of daily living activities	0.564	1	0.564	1.235	0.267
Type of transportation to hospital	7.608	3	2.536	5.552	0.001
Income	0.376	3	0.0125	0.274	0.844
(Ability level of daily living activities) x (Type of transport to hospital) x (Income)	9.930	7	1.419	3.106	0.003
Statistical errors	2729.667	5976	0.457		
Total	37200.006	6006			

Levene's Test of Equality of Error Variances F= 3.295, 7.357; Sig= .002, < .001

Discussion

This study found a significant three-way interaction between the ability to perform daily living activities independently, type of transport to hospital, and income on the health care needs of elders from local administrative organization ($p < .01$).

Typically, elders have more health risks than younger people. In addition, many elders also have disabilities, particularly in Thailand [20]. Similarly, a previous study in elders at Srichompoo district in Khon Khean province in Thailand found that most elders have had chronic diseases [21] and low knowledge of health care, particularly among the elders who had personal illness [22]. In addition, most elders in southern Thailand stay at home alone. Some of them must care for their grandchildren because their children work in other provinces or neighboring countries [23]. Due to these responsibilities, these elders have limited ability to do independent activities and socialize with their friends. A previous survey of elders needs in local administrative organization at Lopburi province reported that the elders in this area needed to have an elderly club [5][5] and were interested in participating in recreational activities conducted by local administrative organization in Srisaket province [6]. The elders also needed facilities and support activities such as pouring water onto the elders' hands at the Songkran festival, Hari Rayor activities, and Morid day activities [4].[4] Unfortunately, some elders could not participate the social activities which were organized by the government agency or could not transport to hospital due to the ongoing violence and instability in the lower southern region

Most elders stay home and jobless. Many elders have insufficient income and also debt, even though all elders in Thailand receive support payments from government [24]. Another challenge is that some elders in Trang province are responsible for caring for their grandchildren, but do not receive support money from their children or family members [23]. Moreover, the elders without jobs tend to have low income and often have higher health risks than elders with high income. This pattern is confirmed by a study in the Nakorn Si Thammarat province [25]. Consequently, low income and personal illness results in elders needing more care from the local administrative organizations.

In 1999, the Thai parliament passed an act designating that the local administrative organization provide elderly care in the local communities. The regulation specified that local administrative organizations were in charge of the social welfare and life quality development for elders [3]. Local administrative organization are in close contact with community, and thus know about the problems and needs of local

elders [4]. The local administrative organization should also assist elders with saving and earning money, due to the high percentage of seniors experiencing poverty [4]. Furthermore, they should assist the elders in their community with finding occupations that help elders earn income utilizing the elders' skills and interests [7]. This process can reinforce that elders have knowledge and skill that they can use to be independent, and that they can also access health care services independently as well [21]. This will help elders not to rely completely on their family members for assistance all the time. The local administrative organization should also build the strong relationships between elder's family and community. Moreover, they should respond to the health care needs corresponding to the elder's actual health problems. These efforts could help elders to have a good quality of life. However, the local administrative organizations' ability to do all these activities also depends on the administration, budget, and level of participation from other agencies [26].

Therefore, local administrative organizations should consider which activities are most appropriate for the elders in their particular communities, and what limitations their elders have. This study was conducted in the southern region of Thailand. Challenges in this region included the presence of multiple cultures and languages, such as local Malayu language, strict religious activities, and an unstable, violent situation that been present for some time. These types of factors will impact the different health care needs from local administrative organizations in each area.

Conclusion

Most of the elderly participants in our study needed assistance doing their daily living activities. Some participants reported relying on public cars, service cars, or friend's car as their means of transportation to get to the hospital. In addition, some participants reported having insufficient income and being in debt. Thus, the local administrative organization should develop services to provide for the health care needs of elders with chronic diseases and low income. The organizations may also need to innovate new and different activities to serve the specific needs of elders in their community.

Recommendation

Local administrative organization should provide activities depending on the types of elders that live in their community. They should be proactive on improving economic status and social welfare of the elderly by assisting them with employment and savings programs. Ideally, seniors should receive training and preparation on saving money and self- discipline when they are younger to prevent income problems when they become elderly. In addition, elders should develop health literacy skills that can help them to prevent disease and incur costly disease treatment. These skills can also help them live independently and avoid being dependent on their family members for constant assistance with daily activities.

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