

# Effectiveness of the Participatory Health Promotion Program for Improving Health Outcomes of Elderly with Non-Communicable Diseases in Municipalities, Thailand: An Experimental Study

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## Abstract

**Objective:** The objectives of this study were to evaluate the effectiveness of a participatory health promotion program for elderly with non-communicable diseases (NCDs) in municipalities, Thailand.

**Methodology:** This experimental study was conducted among elderly who suffering from diabetes and/or hypertension. The total samples of 84 of elderly with NCDs, of which 40 patients from 2 health centers were randomly allocated to the experimental group, whereas 44 from other 2 health centers were randomly allocated to a control group. Data were collected at baseline and 3 months after the implementation of a participatory health promotion program. The analysis of co-variance (ANCOVA) were used to determine effectiveness of the health promotion program.

**Results:** The results indicated an effectiveness of the participatory health promotion program. After adjusting the baseline and controlling other covariates, the experimental group demonstrated improving of outcomes including reduced triglyceride (adjusted mean different = -32.15, 95% CI: -57.28 to -7.02) and increased HDL (adjusted mean different = 4.01, 95% CI: 1.11 to 6.89).

**Keywords:** *Elderly health care, Municipality, Non-communicable disease, Participatory health promotion program, Self-management.*

## Introduction

The most common diseases among elderly in Thailand were hypertension, diabetes, arthritis/degeneration, emphysema, cardiovascular diseases, myocardial infarction, and paralysis<sup>1</sup>. More than 60% and 10% of the elderly aged 80 years old and over suffering with high blood pressure and diabetes, respectively. About 56% of the elderly reported that they had chronic diseases such as diabetes, high blood

pressure. 37% of males and 42% of females elderly reported of having 2 or more chronic diseases<sup>1-3</sup>. Regarding social problems, it was found that the rate of dependency of the elderly population towards 100 working people was 25.4 people in 2016 and expected that in 2027 and 2137 the rates will increase to 40.4 people and 54.95 people respectively. While 10% of the elderly living alone in the municipality<sup>1, 4</sup>. The policy recommendations were to increase the effectiveness of health promotion and disease prevention in the elderly, especially the on diabetes, hypertension, falls and mental health. We should enhance the role of local administrative organizations in developing a seamless health service system in the context of the area<sup>1, 5</sup>.

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Thailand has been in the process of rapid urbanization. A municipality is a local administrative

organization which responsible for managing development in its area. One of its authority and duties is to promote the development of women, children, youth, the elderly and the disabled. Nonthaburi Municipality locates in the vicinity of Bangkok. The total population is 255,315 people, with 149,383 households<sup>6</sup>, of which 21.8 % were the elderly population<sup>7</sup>. NCDs especially hypertension and diabetes, were found among more than 80% of these elderlies. Both diseases common risk factor: overweight, hyperlipidemic, inappropriate health behaviors especially dietary, exercise, stress management, and taking medications as prescribed by the doctor. It was recommended that self-care for the elderly with chronic health problems should focus on maximizing independence, vigor, and life satisfaction. Health promotion in this population is vital to prevent complications and decrease risks that reduce life quality<sup>8</sup>.<sup>9</sup>. In addition, an effective health promotion model should be relevant with the environmental and economic context with create a balance between the need to use resources for health development and other developments<sup>8</sup>. The NCDs policy in 2017 of the Ministry of Public Health states that those with hypertension and diabetes must be able to control the diseases. One important measure to achieve that goal is community participation<sup>10</sup>.

Nonthaburi Municipality has 6 public health centers providing health promotion services, disease prevention, medical treatment, and rehabilitation. There are unclear system and network between the community and public health centers for promoting self-care of these patients<sup>7</sup>. There were limited roles of patients to plan and set goals for their self-care with medical personnel. The health personnel team need to develop skills in health behavior modification. There were recommended that increasing supports for patients to take care of themselves together with the participation of the community would result in the reduction and prevention of risks that lead to better health outcomes of the patients. Therefore, this study aimed to evaluate the effectiveness of the developed health promotion program for elderly with NCDs.

**Objective:** To evaluate the effectiveness of the participatory health promotion program in improving health outcome of elderly with NCDs in municipalities, Thailand.

## Method

This experimental study was conducted among elderly who suffering from diabetes and/or hypertension.

The sample size was calculated with the G\* Power program<sup>11</sup>. When assigned effect size at 0.55<sup>12</sup> alpha at 0.05 and power of test at 0.80 with on tail test, a sample size of the experimental and control group were 42 people in each group. In order to prevent the loss of samples, therefore, it was added to each group of 45 people, including a sample group of 90 people. Inclusion criteria were people aged 60-80 years old who were diagnosed with hypertension and/or diabetes by physician, able to communicate with researcher, voluntarily participate in the study and could be followed for 12 weeks. The study samples were 45 elderly with HT and/or DM who were randomly selected from 2 health center to an experimental group and another 45 patients who were randomly selected from other 2 health centers to a control group. After baseline data collection the experimental group received an intervention which was a health promotion program developed from the contribution of stakeholders and the suggestion of experts as an empowerment learning process, focused on how to help patients become more knowledgeable and take control over their bodies, disease, and treatment. The program initiated with building relationships with the elderly, learning about diabetes and hypertension, risk level, sharing self-care experience and determining alternatives for behaviour modification, dietary for diabetes and hypertension patients, forming a team for peer-assisted, setting self-care goals, making the next appointment. It aimed to inspire, inform, support and facilitate their efforts to identify and attain their own goals. The health record book was used for an individual to record their health data, learning, goals setting and planning for self-care, appointment, and having essential health knowledge. Instruments were a structured questionnaire, physical checkup and laboratory tests. The total samples who were completed data at the 12 weeks were 84 participants, 40 in the experimental group and 44 in the control group.

Both descriptive and inferential statistic were used for data analysis. Categorical data were analyzed presenting frequency distribution and percentage. Means, standard deviations, medians were analyzed for continuous data. An intention-to-treat protocol was used to determine the effectiveness of the participatory health promotion program. Mean difference with adjusted based line between the experimental and control groups were analyzed by the analysis of covariance (ANCOVA) presenting adjusted mean difference and 95% CI of the outcome variables.

## Results

**Demographic and Socioeconomic Characteristics of Elderly with NCD:** There was a total of 84 participants that completed the study protocol, of which 40 participants were in the experimental group whereas there were 44 in the control group. Majority of the elderly in control group were female (51.5%), married (68.1%) with the average age of  $68.2 \pm 5.44$  years old. In the experimental group 72.5% were females, married (45.0%) with the average age of  $68.9 \pm 5.39$  years old. More than half of both groups finished primary education (61.4% in control) and (52.5% in experiment). Most of them were unemployed/housewife (control =62.8%) and (experiment = 60.0%). The median monthly income

of the control group was 12,000 Baht (min: 600, max: 40,000), which not much different with that of the experimental group of 11,000 Baht (min: 600, max: 100,000).

**Effectiveness of the participatory health promotion program for elderly with NCDs:** After 3 months, the ANCOVA showed that the mean difference after adjusting the baseline data between control group and experimental groups of Triglyceride was reduced. In addition, HDL was increased when controlling age, gender, occupation, income, and economic status (Table 1).

**Table 1: Effectiveness of the Participatory Health Promotion Program for Elderly with NCDs**

Variables	Control (n=44)		Experimental (n=40)		Experimental comparison	
	Mean (S.D)	Mean Change from Baseline	Mean (S.D)	Mean Change from Baseline	Adjusted mean difference (95%CI)	P-value
<b>Triglyceride</b>						
Baseline	119.32(52.08)	-	153.30(76.63)	-	-	-
3 months	144.84(49.17)	20.94	121.30(66.20)	-39.33	-32.15(-57.28 to -7.02)	0.013
<b>HDL</b>						
Baseline	53.93(14.34)	-	52.02(15.42)	-	-	-
3 months	51.00(11.37)	-2.82	53.50(12.00)	1.36	4.01(1.11 to 6.89)	0.007
<b>Cholesterol</b>						
Baseline	202.50(36.09)	-	208.87(46.32)	-	-	-
3 months	196.43(58.39)	-1.80	196.15(40.58)	-13.72	-10.77(-31.40 to 9.85)	0.301
<b>LDL</b>						
Baseline	124.60(29.40)	-	133.04(58.35)	-	-	-
3 months	126.90(47.06)	4.08	118.44(36.40)	-15.47	-14.00(-32.88 to 4.87)	0.143
<b>HbA1c</b>						
Baseline	6.40(0.98)	-	6.34(0.79)	-	-	-
3 months	6.15(0.81)	-0.25	6.21(0.81)	-0.11	0.01(-0.11 to 0.32)	0.349
<b>Fasting plasma glucose</b>						
Baseline	118.36(19.59)	-	119.52(32.09)	-	-	-
3 months	104.88(30.60)	-13.46	107.50(29.31)	-10.84	2.45(-8.96 to 13.86)	0.669
<b>BMI</b>						
Baseline	25.29(2.97)	-	25.02(2.99)	-	-	-
3 months	25.26(2.88)	0.06	24.94(2.97)	-0.12	- 0.26(-0.82 to 0.29)	0.345
<b>Waist Circumference</b>						
Baseline	90.23(13.52)	-	87.23(9.16)	-	-	-
3 months	90.01(7.16)	0.52	87.01(8.66)	0.10	-1.92(-5.26 to 1.42)	0.256
<b>Systolic Blood Pressure</b>						
Baseline	132.79(17.52)	-	137.17(16.15)	-	-	-
3 months	139.18(20.26)	7.78	135.07(16.39)	-4.03	-6.15(-15.50 to 3.19)	0.193
<b>Diastolic blood pressure</b>						
Baseline	72.86 (8.21)	-	73.45 (9.22)	-	-	-
3 months	78.70 (12.79)	6.43	77.77 (9.67)	4.15	-0.37(-6.21 to 5.46)	0.898

## Discussion

The result indicated that the participatory health promotion program for elderly with NCD could help reduced Triglyceride and increased HDL after 3 months implementation. This result was similar to the finding from a study on the effects of a self-management support program for Thai people diagnosed with metabolic syndrome which found that swing arm exercise reduce of triglyceride and HDL. This could be due to the effectiveness of this health promotion program which included activities focused on how to help patients become more knowledgeable and take control over their bodies, disease, and treatment. This participatory health promotion program was in line with the suggested guideline from Foundation for Gerontology Research and Development Institute which stated that patients should be considered as patient center care by increasing the support them to be able to perform self-care management in the community as well as focusing on skill care development practices, sharing experience and lifelong learning<sup>1,13</sup>. Moreover, the support from local administration organization for budget on laboratory test and engaging in mobilization processes also influence the success of the program<sup>14, 15</sup>. This health promotion program was designed to improve participating and context of the areas<sup>16-18</sup>.

This study found no significant difference between the experimental and control groups in BMI, systolic blood pressure, diastolic blood pressure, waist circumference, HbA1C, cholesterol LDL. It was contrast with the results of the holistic health promotion program of the elderly<sup>19</sup> reported that the experimental group had significantly improvement on physical activity and exercise, BP, flexibility of shoulder, VO2max and QOL and BMI as well. This reason could due to difference of self-care behaviors as well as the different in evaluation criteria. The dietary habits also vary therefore it affected on BMI change as well as sugar level and HBA1C.

## Conclusion

The participatory health promotion program could help improve some help outcomes of elderly with NCD in the municipality areas. The participatory health promotion program for elderly with NCD focusing on the empowerment learning process and promoting self-management are effective to improve self-efficacy, self-care behavior, physical fitness, physical and mental health of the elderly. The municipality should continue with this program for the elderly as well as let them

reflect and set their own gals and strategies to improve their health behavior to achieve the preferable health outcomes.

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**Conflict of Interest:** Without

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