Original Article

Effectiveness of a Home Visit Programme by Youth Volunteers on Health-Related Quality of Life and Depression among Elderly Persons: Results from a Cluster Randomized Controlled Trial in Rural Thailand

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Objective: The present study aims to evaluate the effectiveness of home visits programme by a youth volunteer on the health-related quality of life and depression among elderly persons living in a rural community.

Materials and Methods: A cluster randomized controlled trial was conducted in 9 villages of a rural community in the Northeast of Thailand. Sample size calculation required 154 for intervention and 154 for control. The intervention program consists of the home visit program by a youth volunteer for 18 weeks, while the control group received conventional care by their families and children. The study tool was a questionnaire consisting of 3 parts: general information, depression [TGDS] and health-related quality of life using the Thai version of EQ-5D-5L (EQ-5D VAS and EQ-5D index). Data collection was conducted by trained interviewers. Statistics used were frequencies, percentages, means, SD, medians, IQR, 95% CIs, Pearson's Chi-Squared, and repeated measurement ANCOVA.

Results: The home visit program by youth volunteers had an effect on health related quality of life among elderly persons living in a rural community in the part of self-health perception in overall health status (EQ-5D VAS) and depression [TGDS]. This study found the score of EQ-5D VAS among the intervention group was higher than the control (p<0.001) and found the score of TGDS among the intervention group was lower than the control after intervention. In addition, this study also found that the EQ-5D VAS score was increased, while the depression score (TGDS) was dramatically decreased among the intervention groups.

Keywords: Home visit programme, Health-related quality of life, Elderly persons

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Thailand is rapidly entering into what we call the elderly society. Thailand's population projection shows the number of Thai elderly will increase from 10 percent in 2000 to 38 percent by 2050[1]. In addition the average life expectancy of Thai people (male/female) has increased from 71.3/78.2 in 2014[2] to 72.0/78.8 in 2017[3]. As a result, the demand for long-term care has increased[4] and health management has been looked upon as a way to deal with these challenges with elderly quality of life promotion as a goal.

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Quality of Life [QoL] is defined as an individuals' perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns[5]. Quality of life is a broad concept and is influenced by health, psychological and social variables, and social circumstances[6]. In health economics, quality of life measures have become the standard means of assessing the results of heath care interventions[7]; measures in clinical practice ensure that treatment and evaluations focus on the patient rather than the disease[8]. Health Related Quality of Life [HRQoL] becomes an important public health surveillance, and indicators of unmet needs and intervention outcomes are increasingly used as an

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outcome in clinical trials, effectiveness research and quality of care research[9]. It has reflected the gap between our expectations of health and our experiences[10]. Changes in HRQoL predict mortality in older adults[11].

Various studies which are mainly concerned with health among the community elderly show that the programs that improve the quality of life outcome include home visits and care by nursing home residents[12], physical exercise[13], health education programs[14], neighbourhood environment[15], music interventions[16], social activities[17] and social support[18]. However, little is known about the effectiveness of a youth home visit program.

Home visit programs by Youth Volunteers were developed by applying the concept of Positive Youth Development [PYD][19] that encourages youth to be involved in positive activities and volunteering as a protective factor to reduce the likelihood of engaging in problem behaviours such as school truancy and drug abuse[20]. There is some evidence that youth volunteers can provide benefit and contribute to an improved quality of life for elderly persons living in the community[21] as well as possibility study results about volunteering indicate it may help in maintaining and improving some of the elder adults' quality of life[22]. Thus, the present study aims to study the effectiveness of home visit programs by youth volunteers on the health-related quality of life among elderly persons in rural areas of Thailand. The Anticipatory Outcome attempts to contribute evidence for promotion of community interventions for QoL improvement.

Materials and Methods

Study design

A cluster randomized controlled trial [RCT] was conducted among elderly persons living in the study area in Mai-na-piang Sub-district, Wangyai District, Khon Kaen province, Thailand which consists of 9 villages.

Study participants

The study population was elderly persons with the inclusion criteria being 60 years old and over, and having lived in the study area for more than 6 months. The exclusion criteria were the elderly persons who are dependent, severely disabled, and unable to participate in activities and communicate with others. The sample size calculation used a cluster randomized controlled trial formula[23]. To detect a significant level of 0.05, power of the test as 90%, multiplying the design effect by 1.5 and adding 10% for loss from follow-up, the total sample size was 316 elderly persons, 158 elderly persons for intervention and 158 elderly persons for control.

The cluster unit of this study was a village. The number of clusters was calculated by N_c/m[23] (N_c is sample size required by group number and m is average older population from the study area). From the database of Mai-na-piang Sub-district Health Promotion Hospital 2016, the average number of the elderly persons was 98 per village (cluster), thus the number of clusters required was 140/98 = 1.42 or 2 clusters each for intervention and control. Using free randomization software[24] a random selection from a total of 9 clusters chose clusters No. 3 and No. 6 for intervention and clusters No. 2 and No. 7 for control.

Intervention

The study intervention was a home visit by youth volunteers who were in grade 6 to 9 in an extended primary school who were trained by the research team for 3 days and 2 nights covering 7 areas of knowledge which are (1) What and Who is ageing? Ageing situation in Thailand and its impact (2) Limitation and changing in older persons (3) Youth and volunteer spirit to brighten the community future (4) Sharing, giving and sacrifice (5) Mission possible - How to take care of older persons (6) Helping each other work as a team and (7) Be ready-set a work plan together. After the training course, youth volunteers were assigned for home visit to the same 6 to 7 elderly persons' households for 18 weeks and were monitored by the researchers' teams. The elderly persons in the control group received conventional care by their family and children.

Data collection and data analysis

The study outcome was measured by the questionnaire which consisted of 3 parts (1) for general information, and (2) for depression, which was called the Thai version Geriatric Depression Scale [TGDS] and has been examined for reliability (Cronbach's alpha 0.82), sensitivity (93%) and specificity (63%)[25]. This tool consists of 15 yes/no items. If the respondent answers "Yes" in item numbers 2 to 4, 6, 8 to 10, 12 and 14 to 15 he will get 1 mark each and if the respondent answers "No" in item numbers 1, 5, 7, 11 and 13 he will get 1 mark each. The total score from 6 to 11 reflects moderate depression, and if the total score is higher than 11 the score represents severe depression and the respondent needs to meet a psychologist[25]. (3)

Health-related quality of life was measured using the Thai version of the EQ-5D-5L developed by Mahidol University[25] which consists of 2 parts: EQ-5D index has five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) and EQ-5D VAS, a visual analog scale for self-health perception in overall health status. The scale ranges from 0 to 100. Several studies examining the measurement properties of the 5L have found that it is a reliable and valid measure[26,27]. Well trained interviewers collected data before and after the intervention in the groups of intervention and control. Statistics used were frequencies, percentages, means, SD, medians, IQR, 95% CI, Pearson's Chi-squared, and repeated measurement ANCOVA.

Ethical consideration

Ethical approval for the study was obtained from Khon Kaen University (HE581160). Upon invitation to take part in the study, the participant provided a written informed consent. Participants' personal information was kept.

Results

The present study allocated 4 clusters with 100% response rate for the intervention group and 98.73% for the control group. The mean age of the elderly persons sample was 71 to 72 years old, the percentage of females was higher than males, half of them were married, living with their family, had completed primary school or lower and were still working.

In terms of the elderly person's health, this study found half of them having morbidity, having regular exercise and regularly being able to participate in community activities. Means of key outcomes (TGDS, EQ-5D VAS and EQ-5D index) at the baseline stage shown in the intervention group are higher than in the control group. For statistical considerations, there were no significant differences in demographic character

Table 1. Baseline characteristics of sample in control and intervention groups

Characteristics	Control (n = 156)	Intervention (n = 150)	*p*-value
Mean (SD) age (years)	72.29 (7.81)	71.26 (7.67)	0.253
Gender			
Male	58 (46.8%)	66 (53.2%)	0.224
Female	98 (53.8%)	84 (46.2%)	
Marital status			
Single/widow/separated	62 (57.9%)	45 (42.1%)	0.074
Married	94 (47.2%)	105 (52.8%)	
Living arrangement			
Living alone	5 (62.5%)	3 (37.5%)	0.509
Living with family	151 (50.7%)	147 (49.3%)	
Education level			
Completed primary school or lower	152 (51.0%)	146 (49.0%)	0.617
Completed secondary school or higher	4 (50.0%)	4 (50.0%)	
Working status			
Working	88 (47.1%)	99 (52.9%)	0.085
Not working	68 (57.1%)	51 (42.9%)	
Morbidity			
Yes	68 (47.6%)	75 (52.4%)	0.261
No	88 (54.0%)	75 (46.0%)	
Exercise			
Yes-regular exercise	142 (51.4%)	134 (48.6%)	0.815
No-rare exercise	14 (53.8%)	12 (46.2%)	
Participation in community activities			
Regularly participated	40 (44.4%)	50 (55.6%)	0.140
Rarely to sometimes participated	116 (53.7%)	100 (46.3%)	
Thai TGDS mean (SD) score (15)	2.70 (1.51%)	3.05 (2.60%)	0.155
EQ-5D VAS mean (SD) score (15)	70.28 (18.56%)	72.12 (23.88%)	0.304
EQ-5D index	0.84 (0.16%)	0.86 (0.18%)	0.399

between intervention and control groups (Table 1).

Multi-level analysis was conducted to determine differences between intervention and control group for the study at baseline, 9th week and 18th week. For TGDS, there were significant differences between intervention and control groups in the 9th-week follow-up (p-value <0.001) and in the 18th-week follow-up (p-value <0.001). For EQ-5D VAS there were significant differences between intervention and control group in the 18th week (p-value = 0.043) (Table 2).

A repeated ANOVA determined that there were differences within intervention and control groups for TGDS at baseline, 9th week and 18th week. The present study found statistical significance within the group when classified by group in the part of the TGDS* group (p<0.001) and EQ-5D VAS* group (p = 0.020) (Table 3).

The present study also found differences within groups between time points in the intervention and control groups. Depression score [TGDS] and EQ-5D index was dramatically decreased with respect to time while the EQ-5D VAS score was increased (Figure 1).

Discussion

The health-related quality of life was measured in 2 parts: EQ-5D VAS and EQ-5D index. This study found that the EQ-5D VAS was statistically significant between intervention and control groups at the 9th and 18th weeks. This was due to the intervention by the youth volunteer home visit program in which the majority of activities were to support the elderly in terms of health education, caring for the elderly and acting as the elders' descendants, which has a positive effect on the elders' quality of life. Several studies have indicated that visits by friends or relatives, having close friends for emotional support, and the perception of help being available if sick or disabled is associated with better HRQoL, and particularly with better mental health among older adults[28]. In addition, Serap Unsar et al (2016) found that participants living with their spouses and children had better social support family subgroup scores compared to those living alone[28].

However, this study did not find statistical significance between the intervention and control groups in terms of EQ-5D index, due to the youth volunteers only being trained for a few weeks after the home visit for the elderly persons according to the program schedule and somehow not being confident to visit and advise the elders, as in Thai culture they

Table 2. Multi level analysis for differences between intervention and control group for the outcome study at 9th week and 18th week

Outcome	Baseline			9th week follow-up			18th week follow-up		
	Mean (SD)		Mean diff. (95% CI):	Mean (SD)		Mean diff. (95% CI):	Mean (SD)		Mean diff. (95% CI):
	Intervention	Control	*p*-value	Intervention	Control	*p*-value	Intervention	Control	*p*-value
EQ-5D VAS mean (SD) score (15)	70.28 (18.56)	72.12 (23.88)	-2.52 (-7.32, 2.27) 0.304	71.12 (15.14)	71.67 (13.65)	-0.54 (-3.79, 2.70) 0.742	74.29 (13.84)	70.80 (16.08)	3.48 (0.117, 6.86) 0.043*
EQ-5D index	0.84 (0.16)	0.86 (0.17)	-0.164 (-0.054, 0.021) 0.399	0.84 (0.16)	0.87 (0.15)	-0.032 (-0.067, 0.002) 0.069	0.84 (0.22)	0.85 (0.21)	-0.016 (-0.065, 0.031) 0.515
TGDS mean (SD) score (15)	2.70 (1.51)	3.05 (2.60)	-0.35 (-0.82, 1.28) 0.155	2.26 (1.17)	3.70 (2.65)	-1.44 (-1.91, 0.97) <0.001*	2.15 (1.77)	4.08 (2.80)	-1.92 (-2.45, -0.39) <0.001*

Table 3. Repeated measurements for differences within intervention and control groups for the study outcome at 9th week and 18th week

Variables	Sum of squares	df	Mean square	F	Sig.
EQ-5D VAS	154.908	1	154.908	0.616	0.433
EQ-5D VAS* group	1,382.359	1	1,382.359	5.495	0.020*
Error (EQ-5D VAS)	76,474.987	304	251.562		
EQ-5D index	0.004	1	0.004	0.184	0.668
EQ-5D index* group	5.194E-5	1	5.194E-5	0.002	0.962
Error (EQ-5D index)	6.806	303	0.022		
TGDS	5.506	1	5.506	2.818	0.094
TGDS* group	80.855	1	80.855	41.374	<0.001*
Error (TGDS)	584.324	299	1.954		

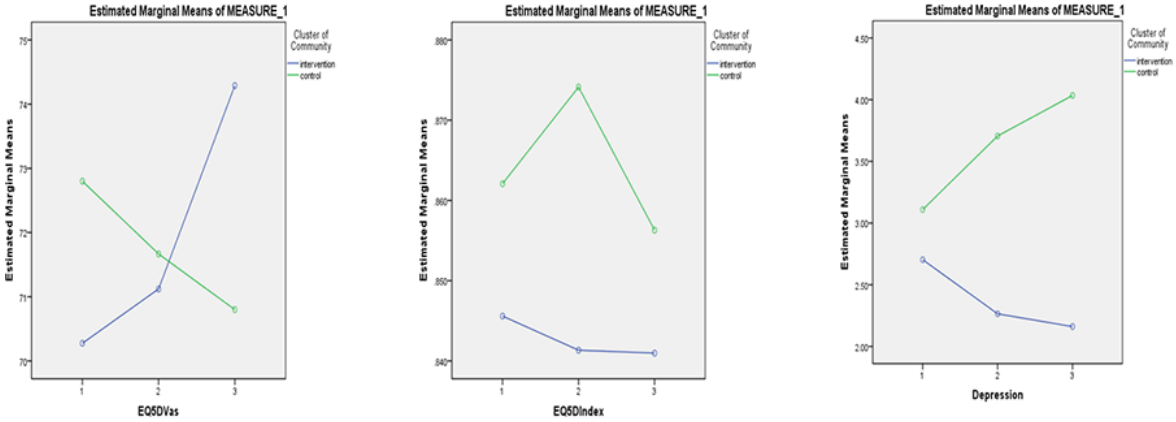

Figure 1. Plots of repeated measurements for within group between time point of intervention and control group.

have to respect them. Thus EQ-5D in the part of mobility, self-care, usual activities and pain/discomfort needs an intervention time and health professionals to help the elderly persons to improve.

In terms of depression, the present study found the effect of a home visit program by trained youth volunteers statistically significant between intervention and control groups. These results are confirmed by a study of Kerse N et al (2010) who conducted a home based physical activity program in improving function, quality of life and mood in older persons with depression symptoms[29]. In a study about implementing community integration, the home based treatment significantly reduced depressive symptoms and improved health status in chronically ill older people[30].

Conclusion

A home visit program by youth volunteers was effective in changing health related quality of life among elderly persons living in a rural community in terms of self-health perception in overall health status (EQ-5D VAS) and depression (TGDS). Based on the qualitative results, the next study should explore an inter-generational intervention and measure the contribution of the intervention on two populations, and focus more on the specific subgroup of elderly persons.

Limitations of the study

Some youth volunteers needed to travel from community to work with their parents in the city during the school holidays, and this made coverage of intervention less than expected. This study might have different findings if implemented in an urban context.

What is already known on this topic?

The elderly persons' characteristics and health related quality of life and depression score.

What this study adds?

The effectiveness of a home visit program by youth volunteers on elderly persons' health related quality of life.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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