Self-Management Interventions among Asian Persons with Chronic Disease: A Systematic Review

Somsak Thojampa Ph.D, RN.

Abstract

The U.S. National Center for Health Statistics defined disease to be chronic when lasting three months or more. Chronic disease generally cannot be prevented by vaccines, or cured by medications, nor do they just disappear. With the increasing incidence of chronic disease, self-management is seen to be one of the techniques used to appropriately address the problem. It is important to acquire skills and knowledge to achieve goals for better quality of life. The aim of this paper is to identify the major diseases of chronically-ill patients and to determine the self-management interventions adopted by patients diagnosed with a chronic disease. The researcher utilized systematic integrative literature review using content analysis technique. Due to diverse potential findings, the review utilized a certain degree of limitations as criteria for selection. A multi-staging strategy was developed to identify the significant and relevant review literatures. Key words such self-management, chronic disease; interventions were used to retrieve significant literatures. PubMed, CINAHL, Cochrane library and Thai databases were utilized for literature retrieval. The literatures are published from June 2006 to December 2012 and were published internationally. A total of 14 literatures systematically reviewed based from the research intentions. Findings revealed that the common chronic diseases among Asians include diabetes mellitus, chronic heart diseases, arthritis, sedentary-acquired problems like obesity and hypertension. The review also identified self-management interventions such as increase of active exercises, improvement of dietary control to sodium intake, takin medications religiously as prescribed, weight monitoring, cognitive improvement and counseling, improved self-care and behavioral changes. It is recommended that further studies be made to identify more independent actions to improve intervention program for an improved outcome to patients with chronic diseases.

Keywords: interventions, self-management, chronic disease
Introduction

According to the Centers for Disease Control and Prevention (CDC), chronic diseases such as obesity, type 2 diabetic mellitus (DM), cerebrovascular accident (CVA), heart disease, arthritis and asthma are the leading causes of morbidity and mortality in United States (US) (Centers for Disease Control and Prevention, 2014). According to Sharma, (2013) the prevalence rates of chronic disease like DM, hypertension, obesity and CVA are also high and it is one of the major health problems in Asia.

Self (care) management is very important to help persons with chronic illness to achieve their goal of better quality of life (QoL). The person plays a key role in self-care due to his or her responsibility for many behavioral choices every day. More concretely, persons with chronic illness have to control their diet, smoking, drinking, medication administration, exercise and follow up for visits at the clinic or hospital.

Self-management is not a single task, and not a simple task either. It involves persons' ability to monitor and track their medical conditions and to adjust his or her behavioral responses required to maintain an acceptable quality of life (QoL) (Newman, et al., 2004).

Self-management is inescapable to some extent when the person is living in a local community; it is a question of how, not whether, the person should manage his or her disease.

In Western developed countries like the USA, self-management is more focused on the individual’s “self-made” effort to control further development of his or her chronic illness (Mulder, 2000). However in Asia, due to differences in living conditions, economics, poor health care delivery, culture, and most importantly religious impact, self-management by persons with chronic illness has its own characteristics or attributes. For example, Buddhism is the dominant religion in Thailand. Most Thai people believe in Buddhism. Many Thai people rely on Buddhism values to guide them when they deal with health issues and their behavioral control (Lundberg & Rattanasuwan, 2007). Every aspect of Thai people’s life is influenced greatly by Buddhism, which in some cases, may conflict with the western “self-management” concept and the accepted self-management practices in the West. Also, Asian culture emphasizes more on the “community” aspect of the self-management. A patient is not alone in his or her “self-management” process. The patient’s family members, health volunteers, nurses in the local health care facility (such as community health centers in Thailand), health care providers (HCP) in the regional hospitals and private clinics all have a role in patient care. So there is a community support in the self-management process.

The aim of this paper is to systematically review methods and effectiveness of various self-management intervention programs for persons with chronic disease. The intervention programs selected are expected to have positive outcomes in the form of behavioral change, well-being, and clinical outcomes for persons with chronic diseases with particular focus on those living in Asia.

Method

Self-management intervention programs were identified by searching database such as Pub Med, CINAHL, Cochrane library and Thai databases such as ThaiLis or Thai Digital Collection (TDC) database from Thailand. Three keywords clusters were used: self-management; chronic disease; intervention. The search was conducted both in English and in Thai. The initial search resulted in 6855 articles from all the databases mentioned above. Since filters were set up to
ensure that the search is relevant to the topic of this paper, only those articles published in peer-reviewed journals were selected. The number of related articles was reduced dramatically by using restrictions for publication-type such as excluding editorials. The number of articles were also reduced quite substantially when certain keywords, such as pediatric were used. With the publication year filter set to “from 2005 to 2014”, the search results were reduced to 1758 articles. Furthermore, after geographical restriction to Asia was applied, the results reduced to 64 articles. Finally, when the restriction to use self-management as intervention (must have intervention) was applied, the results were reduced to 14 articles, which formed the basis of this systematic review.

**Study Selection**

Studies were included if it used a self-management intervention program for one of the chronic diseases such as DM, hypertension, Asthma, obesity, arthritis, heart disease, stroke, and cancer in Asia and if the authors described the outcome (behavioral and clinical) of an effective self-management intervention for at least one of the chronic diseases.

**Results**

From the 1758 articles that were in the results of my initial search, fourteen were selected. These fourteen articles described 14 independent studies, all were from Asia, including Thailand, Japan, Korea, Taiwan and Hong Kong. Sample characteristics, the details of intervention programs and reported behavioral as well as clinical outcomes are summarized in Table 1.
<table>
<thead>
<tr>
<th>Author, year</th>
<th>Sample characteristics</th>
<th>Groups: Intervention group and control group</th>
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<tr>
<td>Chodchoi (2007)</td>
<td>n=147.5&lt;sup&gt;6&lt;/sup&gt; 65.8 +/-10.2 years old males=23.8%, type 2 diabetes Thai (diabetes patients for at least 6 months)</td>
<td>1) Experimental group (n=75) 2) Control group (n=72)</td>
<td>6 months; pre-intervention and post-intervention test, check up</td>
<td>Learning: Experimental group received 1 small group diabetes education class (120 min), 4 small group discussions (90 min/group), 2 individual home visits from researchers (4 min) and a patient education manual; control group received usual nursing care</td>
<td>Quality of life (0-100) increased 9.82 in group 1 compared to 0.67 in group 2.</td>
<td>HbA1c(%) lower 0.68% in group 1 compared to 0.07% in group 2; CHD risks lower 4.83% in group 1 compared to 1.24% in group 2</td>
<td>Not mentioned</td>
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<td>Deesiang (2008)</td>
<td>n=40.5&lt;sup&gt;6&lt;/sup&gt; 45-54 years old males=20%, type 2 DM Thai</td>
<td>1) Experimental group (n=20) 2) Control group (n=20)</td>
<td>10 weeks; Week 3, 6 and 10 follow up</td>
<td>Learning: Health education on diet, exercise based on self-management method, test LDL-C, total cholesterol at each follow up</td>
<td>Not reported</td>
<td>No significant difference in LDL-C cholesterol levels</td>
<td>Not mentioned</td>
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<td>Junchai (2012)</td>
<td>n=40.5&lt;sup&gt;6&lt;/sup&gt; 40-65 years old males=32.5%, type 2 Diabetes Thai</td>
<td>1) Experimental group (n=40) one group only</td>
<td>13 weeks; Pre-tests, post-tests design</td>
<td>Learning and planning: Health education and self-management program including lecture, group discussion, demonstration, modeling, practice, behavioral goal setting, self-follow up, self-reinforcement, assessing performance</td>
<td>Knowledge of self-management in diet, exercised: increased from 10.97% to 19.57%</td>
<td>Not mentioned</td>
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<td>Keiko (2010)</td>
<td>n=128.5&lt;sup&gt;6&lt;/sup&gt; 46.8 years old males=27.38% chronic disease (including arthritis and systemic lupus erythematosus), and cardiovascular disease/dyslipidemia (CVD/D); Japanese</td>
<td>Not divided group</td>
<td>0,36 months evaluation of Japan Chronic Self-management Program (JCDSMP)</td>
<td>Learning: CDSMP is a patient centered educational program for the self-management of chronic condition. It offers workshops that involve weekly 2.5 hour sessions over six consecutive weeks. The workshop content includes healthy eating, exercise, cognitive symptom management.</td>
<td>Cognitive symptom management: increased from 1.26 to 1.65; Stretching: increased from 26.11 to 35.23; Self-efficacy: increased from 5.45 to 5.97; Satisfaction with daily living: increased from 5.60 to 6.27.</td>
<td>DM: HbA1C decreased from 7.6 to 7.2; Rheumatic disease: C-reactive protein decreased from 1.4 to 0.7 mg/dl; Erythrocyte sedimentation rate decreased from 38.3 mm to 24.5mm; CD/D: SBP decreased from 139.3 to 131.6 mmHg, DBP decreased from 82.3 to 80 mmHg</td>
<td>Not mentioned</td>
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| Ruengkajorn (2011) | n=19  
μ= 58.83 years old  
male=41.17%  
Asthma;  
Thailand | One group only  
(pre-test; post-test) | Total of 5  
month;  
36th month, 5th month | Learning and Planning: Self-management program  
technique; home visit follow-up, evaluation by  
questionnaire | Self-reporting significant  
improvement in self-management behavior and  
asthma controlled  
achievement | Not reported | Not  
mentioned |
| Yeon-Hwan (2012) | n=47  
μ= 77.4 years old  
male=27.7%  
Hypertension;  
Korean seniors in  
nursing homes | 1) Intervention  
group (n=23)  
2) Control group  
(n=24) | 8 weeks;  
follow up interview | Learning: weekly education  
sessions plus individual  
counseling | For group 1: self-care  
behavior; 62 to 75.7;  
Exercise self-efficacy: 460 to 563.9  
(22.6% increase); medication  
adherence: 9 to 23 (156%  
increase) | For group 1: SBP:  
127.6 to 120.0 mmHg;  
DBP: 70.7 to 69.2  
mmHg | Not  
mentioned |
| Wattanakol (2011) | n=68  
μ= 46.7 years old  
male=41.2%  
Hypertension,  
Thai | 1) Intervention  
group (n=34)  
2) Control group  
(n=34) | 10 weeks;  
(pre-, post-test),  
No follow up | Learning and Planning: self-management program  
no diet and exercise for blood pressure  
control. | Self-management behavior on  
diet and exercise: 75.5 to  
130.06 (72.2% increase) | SBP: 131.29 to 110.29  
mmHg;  
DBP: 84.74 to 73.91  
mmHg | Not  
mentioned |
| Chan (2011) | n=600  
μ= 72.57 years old  
for group 1, 76.05 years old  
for group 2  
male=73.18% for  
group 1, 17.11% for  
group 2  
Chronic diseases;  
Hong Kong seniors | 1) Intervention  
group (n=302)  
2) Control group  
(n=298)  
Note: these are total numbers at  
6 month follow up | 6 weeks self-management program;  
6 month follow up | Learning, Planning and Practice:  
6 group sessions (2.5 hours  
each sessions) | For group 1: Exercises –  
stretch increased 11.6 min  
aerobic increased 18 min;  
Cognitive symptom  
management increased 0.37;  
Self-efficacy in managing  
diseases in general increased  
0.49; self-efficacy in  
managing symptoms  
increased 0.50 | For group 1: disability  
decreases 0.02;  
social/role activities  
limitations decreased  
0.14; energy increased  
0.13; psychological  
well-being increased  
0.16; depressive  
symptom decreased  
0.24; health distress  
decreased 2;  
pain and discomfort  
decreased 0.43;  
shortness of breath  
decreased 0.14; total  
physical visits  
decreased  
1.29 emergency room  
visits decreased | Not  
mentioned |
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<td>Lee (2011)</td>
<td>n=51, μ=47 years old for group 1, 45 years old for group 2, males=0%, Obesity, Korean middle aged women</td>
<td>1) Self-management Group (n=27), 2) Structured exercise group (n=24)</td>
<td>12 weeks, follow up assessment (questionnaire, body composition, blood test)</td>
<td>Learning, Planning and Practice: For group 1, home based intervention: walking at convenient time and place; keep healthy diet; group workshops; phone counseling and SMS messages. For group 2, three 1 hour walking class per week at health center.</td>
<td>For group 1: Exercise: 24.76 increased to 45.24 min/day; exercise frequency a so increased; Diet: improved healthy diet; Breakfast: improved. For group 2, Exercise: increased from 22 to 66 min/day; frequency also increased, Diet: slightly improved; breakfast: small improvement.</td>
<td>For group 1: Weight 67.56 decreased to 65.65 kg; BMI: 28.14 decreased to 27.09; Body fat: 26.92 decreased to 24.28 kg. Glucose: 105.43 decreased to 96.10; cholesterol:211.73 decreased to 201.73; SBP: 125.70 decreased to 120.81 mmHg. For group 2: weight: 70.25 decreased to 67.15 kg.; BMI: 27.84 decreased to 26.62; Body fat: 27.20 decreased to 24.22 kg; glucose:98.70 decreased to 97.73; cholesterol 2015.38 decreased to 191.08; SBP 123.33 decreased to 118.33 mmHg.</td>
<td>Very satisfied/satisfied: for group 1: 96.2%; for group 2: 94.5%</td>
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<td>Keeratiyutawong (2006)</td>
<td>n=81, μ=27.60 years old, males=26%, type 2 diabetes; Thai</td>
<td>1) Intervention group (n=40), 2) Control group (n=41)</td>
<td>5 sessions; 3, 6 months follow up</td>
<td>Learning: For group 1: Five educational sessions: cognitive improvement and skill training</td>
<td>For group 1: Knowledge increased from 21.5 to 27.3; DSCA increased from 88.3 to 101.6; DQOL increased from 71.3 to 76.1; Diet increased from 30.7 to 32.5; Exercise increased from 7.1 to 8.4.</td>
<td>For group 1: Glycosylated hemoglobin A1c (GHB): 8.93 decreased to 8.6</td>
<td>Not mentioned</td>
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<td>Chen (2013)</td>
<td>n=162, μ=51.3 years old for group 1, 52.55 years old for group 2, males=49.92% for</td>
<td>1) Tele-healthcare group (n=59), 2) Control group (n=103)</td>
<td>18 months (three 6 month periods)</td>
<td>Learning, Planning and Practice: Tele-healthcare program</td>
<td>Group 1: improvement in: A/A of Diabetes Educators 7 self-care behavior: being active, healthy eating, taking medications, healthy coping,</td>
<td>Decrease of HbA1c from 708 to 7.68</td>
<td>Not mentioned</td>
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| Michiko (2009) | n=65 | 1) Intervention group (n=42); 2) Control group (n=23) | 12 months | Learning and Planning: Group 3 received less than 30 minutes of monthly 1-to-1 interviews based on the intervention program and bi-weekly telephone calls from a nurse educator throughout the 12 month period. | Self-efficacy (score): 75.97 to 85.97; Quality of life (score): 3.07 to 3.33; Dietary stage: 2.24 to 1.87; Exercise stage: 2.05 to 1.77 | Group 1: body weight 60.49 kg to 58.90 kg; waist circumference: 86.24cm to 84.50cm; fasting blood glucose: 175.6 mg/dL to 161.1 mg/dL; HbA1C: 7.44% to 6.85%; Total cholesterol: 201.7 to 197.4 mg/dL. | 94.9% of group 1 has good impression of participating; 94.6% said bi-weekly phone call contacts by the nurse is good; 100% thinks the method of interviewing by the educator is good; 100% thinks educator’s attitude is good. But 84.6% of group 1 thinks the contents of...
Study characteristics

Even though all 14 studies were conducted in Asia, their sample characteristics are quite different. Three studies were conducted in Japan, two studies were conducted in Korea, two studies were conducted in Taiwan, and one in Hong Kong. There were six studies conducted in Thailand. Regarding the type of chronic disease, six were on diabetes mellitus, two on hypertension; two on general chronic disease; one on obesity, one on arthritis; one on asthma and one on chronic heart failure.

In all studies except one which did not have control group, the control group received the “usual” health care while the intervention group received self-management intervention program. For those studies in which the control group received any self-management information, the information delivered was restricted to what would normally be delivered during usual health care.

Twelve out of fourteen studies described group interventions for self-management, one study used one-to-one intervention method and one study used tele-healthcare program. The self-management intervention programs differed in content, format and implementation of setting. Most of the intervention programs included education sessions specific for the chronic disease under treatment. During the education session, program handout materials were distributed for the patient to follow the steps outlined in the instruction of the handout. In addition, there was variation of the follow-up after the intervention program. Some programs only did pre-test and post-test of the intervention, while other programs followed up at 3 months, 6 months or even 12 months after the intervention. Also, there were quite a few variations in the intensity of the interventions. For example, some studies only had one meeting with the intervention group at the beginning of the program, while other programs had a monthly meeting with the intervention group. Some programs only met in the hospital at the beginning and during a follow up meeting with the group. Other programs included home visits to patients. Most of the studies used traditional pen and paper to record their daily monitoring, but one study used a SMS messaging system to remind intervention group members to follow the self-management process. Another group used an advanced tele-healthcare method to record and monitor the critical medical indicator (blood glucose level in this case, measured and monitored by a 3G blood glucose meter which can upload the measured data automatically).

In this review, the studies selected can be summarized into three different intervention types: ‘learning’ (information/education), ‘planning’ (create a self-management plan), and ‘practicing’ (practice self-management behaviors). Among fourteen studies, six studies used the ‘learning’ intervention method, five studies used ‘learning and planning’ methods, and three used combination of all three methods.

Outcomes

Thirteen out of fourteen studies reported positive behavioral outcomes. Among them, nine studies reported an increase in exercise or being active; four studies reported improvement in dietary control such as lower sodium intake; four studies reported improved self-efficacy; four studies reported improved quality of life (QoL); two studies reported improvement in taking medication following doctor’s instructions; two studies reported improved cognitive symptom management; one study mentioned improvement in weight monitoring; one study reported improvement in self-care behavior. It is evident that exercise or physical activity is the most reported behavioral change outcome.
For clinical outcomes, eleven studies reported positive results, one showed no difference, and two studies did not report clinical outcomes.

Discussion

Author conducted this review to determine different self-management intervention programs methods and their effectiveness for individuals diagnosed with a chronic disease in Asia. Concerning behavioral outcomes, most studies measured exercise or physical activity. Overall, these self-management intervention programs are quite promising in terms of making positive behavioral change such as adequate exercise or physical activity. On the other hand, the impact on changing dietary behavior was not so pronounced. After educational sessions in the self-management intervention programs and frequent “reminding” by the health care professionals (HCP), the studies did not report increased attention by patients to their dietary control. Another unexpected finding is that only four studies mentioned significantly improved quality of life after the intervention programs. There were a total of five studies which reported improved self-efficacy or self-care behavior change after execution of the self-management intervention programs.

In general, this self-management intervention program review revealed that most self-management intervention programs under study demonstrated effectiveness resulting in positive behavioral change and clinical outcomes. Some experts believed that researchers often naively assume that there is a simple correlation between behavioral change and clinical outcome (Newman, et al., 2004). But some clinical indicators such as blood lab test results or blood pressure measurements can be influenced by multiple factors, not just by a single behavior. Another factor to consider is that behavioral changes were often measured by questionnaires which is self-reporting in nature, thus they are much more susceptible to bias. Other explanations for the reduced impact on clinical outcomes could be that the intervention period used in the studies maybe was too short.

There are several limitations in this review. In most of the articles reviewed, the self-management program was offered in addition to normal medical care. Extra time with HCP for a person with chronic disease in the intervention groups could potentially contribute to an overestimation of the program’s effectiveness. And no objective assessment and evaluation were conducted for the quality of each study.

This systematic review covers a wide range of chronic diseases including diabetes mellitus, obesity, hypertension, chronic heart disease, arthritis. It lists the self-management intervention programs developed for these specific chronic diseases in the specific population in five Asian countries. However, none of the reviewed studies addressed the major diseases of chronically-ill patients and to determine the self-management interventions adopted by patients diagnosed with a chronic disease.
Conclusion

The systematic review conducted for this paper showed that a self-management intervention program can be effective in improving the behavioral change outcomes for the patients with chronic disease in Asian countries. It also revealed that self-management intervention programs can result in direct and positive clinical outcomes.

Reference


