Self-Management Program for Hypertension and Its Behavioural Outcomes: A Literature Review

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Abstract: Hypertensive care in the community involves a non-pharmacologic treatment focusing on lifestyle modification. To formulate the applicable, effective, and efficient program, it is important to gain a better understanding about self-management program in changing behaviours. Systematic search methods were utilized to identify intervention studies about self-management program for hypertension people living in community. Several databases and universal case entry website are being used. The results of this study is described in four sections; self-management concepts and related theory, components, outcomes, and measurement of self-management program. Self-management concept is underpinned from the psychological and behavioural science literature based on notion of an individual's ability to control and manage health effectively. There are numerous variation of the strategy and duration used in the programs. Mostly, the outcome of the study that focused on the behavioural measured the changes of physical activities, diet, and smoking. To assess those behavioural changes, various measurement were used. In conclusion, self-management concept, components, outcomes, and measurement may have been different between one study to another. However, it is revealed that the programs have a significant influence in behavioural changes. It is expected that those programs can be applied by nurses as a strategy to manage hypertension in community.

1 INTRODUCTION

The estimated prevalence of hypertension is increasing globally in the last two decades. In long-term projection, it is predicted that by year 2025, 29% of adults suffer from hypertension worlwide. In other words, about 1.56 billion people would have hypertention by next decade (Egan, 2018). The prevalence of hypertension in Indonesia among people over 35 years age is more than 15.6% (Healthy Life Journal, 2010). In addition, approximately 8 million deaths each year are blood pressure related, with rates rising by 56.1% from 1994 to 2004 in the worldwide (Sood, Reinhart & Baker, 2007).

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) describes the relationship between blood pressure and cardiovascular disease as continues, consistent, and independent of other risk factors. Beside, this committee also identify blood pressure relationship with myocardial infarct, heart failure, stoke, and kidney disease. Risk of CKD (Chronic Kidney Disease) increases with the extent and duration of continuous high blood pressure (Eskridge, 2010).

Hypertension care involves having a structured non-pharmacologic treatment plan including counselling about behavioural changes (National Institute for Health and Clinical Excellence, 2011 as cited in Bradbury, Morton, Band, Woezik, Grist, McManus, et al., 2018). In studies, the behaviours that often related with hypertension are diet modification, weight control, alcohol use, smoking, and physical activity (Xue, Yao & Lewin, 2008; Hall, Rodin, Vallis & Perkin, 2009; Park, Song, Cho, Lim, Song & Kim, 2010; Matlock, Bosworth, Giger, Strickland, Harrison. Coverson, et al. 2009). Person with hypertension should be encouraged to adopt these behaviours, especially for those who have additional risk factors for cardiovascular disease and diabetes mellitus.

Some reviews had been conducted, the result has shown that counselling and education reduces risk

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factors in high-risk hypertension, but lifestyle changes are not easily achieved. Therefore, person based approach is regarded as one way to help the client in improving their rehabilitative behaviour (Bradbury, et al., 2018). One of person based approach that has been popular today is self management. Self-management program have been widely reported as one way to promote the ability in managing behaviour and health outcome for several chronic conditions. It emphasizes the clients' role in preventing and therapeutic health caring activities that consists of organized learning experiences that is designed to facilitate the health-promoting behaviours.

2 METHODS

Several database were involved to meet the objectives of this study; PubMed, CINAHL, Science Direct, and ProQuest. Moreover, the authors also use universal case entry website such as Google-scholar and other official websites. The numbers of keyword are used to obtain information for this study: self-management program, behaviour, community, hypertension, and self-management behaviour. The research is limited to period 2000-2018, except for the concept of self-management which the authors take from earlier period.

The selected studies needed to be aimed at self management of hypertension and also describe how to develop the program to achieve the objective of each study. All articles and other sources that relevant to the topic were retrieved. For article, researcher only uses full text to be reviewed. Only articles written in English were included. There was no limit of setting of articles. Overall, more than 1000 artcles were found through those databases. Howewer, most of those articles were exluded after reading the title and abstract. The authors red carefully the included articles and extracted the given information. The data then was organized into several items to be compared and described systematically.

The results of this literature review are described in four separate sections: self-management concepts and its related theory, components of self-management program for person with hypertension, outcomes of self-management program for hypertension, and measurement of behavioural outcomes from self-management person with hypertension

3 FINDINGS

3.1 Self Management Concept and Related Theory

Self-management concept for chronic condition is underpinned from the psychological and behavioural science literature based on notion of an individual's ability to control and manage health and illness effectively. Individual's perception of own ability affects their choices and behaviour, and it consequently dictates them to achieved or avoid desired goal (Bradbury, et al., 2018). Most of health behaviour-change programs are based on Kanfer's Self-regulation and Bandura's Social Cognitive Theory (SCT). Self-regulation assumes that behaviours of human in daily life consist of chain of responses that built up previously; therefore a response is automatically appearing. However, in specific condition changes are required. When changes are very important to be performed, self regulation will be needed. The process focuses in attention and continues decision making among new changes future (Kanfer & Goldstein, 1991).

Meanwhile, social cognitive theory (SCT) assumed that behaviour change is influenced by several factors such as number of interacting psychosocial, environment, and behavioural factors. The process focuses on the importance of own ability to control behaviours and how environment or individual change can produce changes in behaviours. The success in initiating and maintaining changes is depends on own ability to regulate behaviours and utilize the environment toward the changes. Intervention based on this theory is often related with self-efficacy that is believed in enhancing/encouraging people to reach their goals through changes (Pinto & Floyd, 2008).

From two theories above, we can conclude that behaviour changes happen in human life in particular situation. It requires own ability and the process can be influenced by several factors, such as interacting psychosocial, environment, and behavioural factors. Therefore, self-management program is regarded as one way to meet the behaviour change of particular conditions in human life such as chronic disease.

Self-management concept has been widely defined in various meanings. It is different with health education and promotion, because it assists participant in self-efficacy and self-management behaviour in managing diseases. This concept is often promoted in chronic diseases including hypertension, asthma, diabetes, etc. (Lorig &

Holman, 2003; Warsi, Wang, LaValley, Avorn, & Solomon, 2004). Similarly, Lorig and colleagues focused the self-management primarily on chronic condition compared to risk and protective factors of a disease (Ryan & Sawin, 2009). Self-management emphasizes the importance of the clients' responsibility by encouraging rehabilitative experiences to increase responsibility for their behaviour, deal with the environment, and plan for the future (Kanfer& Goldstein, 1991). Self-management is a process of changing several aspect of own behaviours. The process consists of goal selection, information collection, information processing and evaluation, decision making, action, and self-reaction (Creer, 2000).

Self-management refers to the ability of a person in chronic condition to manage the symptoms, treatment, physical and psychosocial consequences, and lifestyle changes. Its efficacy is including the ability to monitor one's condition and to affect the cognitive, behaviour, and emotional responses which is important to maintain the quality of life (Sol, Bijl, Banga, and Visseren, 2005).

Nodhturft (2000) as cited in Embrey (2006) stated that the objectives of self-management are cognitive symptom management, problem solving, decision making, and promoting healthy behaviour. Meanwhile, Kanfer and Goldstein (1991) described three outcomes of self-management: 1) to help the client to get the more effective interpersonal cognitive and emotional behaviour; 2) to change clients' perception and evaluative attitudes towards problems; 3) to alter stressed or hostile environment, or to cope by accepting it as inevitable things.

Kanfer and Goldstein (1991) initiated three stages of self regulation in self-management; 1) self monitoring, 2) self evaluation, and 3) self reinforcement. Meanwhile, the self regulation that proposed by Bandura that is regarded as Social cognitive Theory as cited in Ryan & Sawin (2009) includes goal setting, self-monitoring, reflective thinking, decision making, planning and action, self evaluation, and cognitive responses associated with health behaviour change. Similarly, Creer (2000) stated that the self-management process consists of goal selection, information collection, information processing and evaluation, decision making, action, and self-reaction.

3.2 Components of Self-Management Program

Each study has different contents, duration, and strategies of intervention to be applied in the self-management program. It depends on the framework that they used and the objectives of the study. In this part, reviewer presents content, duration and strategy in detail.

The standardized chronic disease self-management program (CDSMP) was done in a study in China population, Victoria and Queensland, Australia. The content of the program consists of diet, exercise, medications, fitness, emotion management, problem-solving skills, and communication with health professionals, which are the keys to a better quality of life in persons with chronic illness (Siu, Chan, Poon, Chui, and Chan, 2005; Swerisson, Belfrage, Weeks, Jordan, Walker, Furler, et al. 2006; Kendall, Catalano, Kuipers, Posner, Buys & Charker, 2007). Almost similarly, the contents of the program of self-management are physical activity, DASH diet, salt, alcohol, smoking, and medication management (Xue, Yao, & Lewin, 2008; Bosworth, Olsen, Grubber, Neary, Orr, Powers, et al., 2009). In addition, Bosworth, Olsen, Grubber, Neary, Orr, Powers, et al. also focus on home blood pressure monitoring. Differently, the contents of program in Netherland are maintaining physical condition, recognizing symptoms, taking action, coping with negative emotions, and giving and seeking social support from partners, neighbors, and colleagues (Scheurs, Colland, Kuijer, Ridder & Elderen, 2003). A self-management program for diabetes mellitus patient has different content in the intervention. In a study about DM, the self management content is anxious temperament, self-management behaviour, and quality of life (Hall, Rodin, Vallis & Perkin, 2009).

Several study focus on one behaviour as the outcome. In as study about the use of self-management strategies, the content of the program focused on promoting physical activity (Saelens, Gehrman, Sallis, Calfas, Sarkin & Caparosa, 2000). Self-management knowledge and skill was also applied in a program about health improvement and prevention study. The content of the program covered individual lifestyle that consists of diet, physical activity; and group lifestyle that consists of educational and physical activity practice based on self-management strategies (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010).

Strategy of intervention is important thing to be discussed, because it can draw how researchers run the program from the beginning until the end. The information that is contained in this part can be useful for those who need to know what strategy can be used in further research. One of strategy that was used in a program of health improvement and

prevention study is self-management knowledge and skills. This program offered sessions for individual and lifestyle education for group. The self-management strategy was applied in the group session, which consists of goal setting, self-monitoring, developing practical skills, and problem solving to promote positive dietary and physical activity changes and weight loss. The total session counted for six sessions during nine months period (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010).

In a study that conducted in a cardiac patient club in Shanghai, the participants attended group treatment session. The participants were delivered into six small groups with 10-12 patients per group. There are four sessions where the participants need to be attended. In the first session, each group were given educational talk, in accordance with a self-management manual for hypertension, introduction of goal setting, and the exercise of using digital blood pressure metre. Moreover, in the end of the session they were given booklets about hypertension, lifestyle change, compliance of medication, diary to record their daily blood pressure, and action plan (a set of goal sheets which the patient set out and record the success with weekly goals).

The second session was conducted one week after the first one. The meeting was opened by doing the feedback from practice of the goal from previous week. After that, the participants got explanation about physical activity, DASH diet, salt, alcohol, and smoking. Further, they were invited to do patient led exercise session, followed by explanation about calculating body mass index (BMI). At the end of the session, participants set new goals for the one following week. The third session was done one week after second session. The contents were about managing the medication and food energy calculation. The last session was conducted two weeks after the third one. The content is about giving feedback from the previous goals and encourages maintaining change (Xue, Yao, & Lewin, 2008).

Differently, in a study about Chonic Disease Self Management Program (CDSMP) that was conducted in Chinese population, Victoria and Queensland, Australia, the procedure of the program took time for six weeks. The program was done by a trained professional leader and a trained lay leader. They acted as the role models in the sessions. During the sessions, participants were helped to tell their experience and master self-management behaviours. The session spent time for 2.5 hours once a week. They learned how to set goals that they belief and confident that they will complete. After that, the progresses of fulfilling the goal were monitored by peers in weekly timeframe. It was used further for reviewing, sharing, and group problem solving (Siu, Chan, Poon, Chui, and Chan, 2005; Swerisson, Belfrage, Weeks, Jordan, Walker, Furler, et al. 2006; Kendall, Catalano, Kuipers, Posner, Buys & Charker, 2007).

There is also a study that compares the outcome for group who received different interventions. The first group received tailored behaviour self-management intervention two times a month, the second group received home blood pressure monitoring intervention three times a week, and the third received combined intervention of first and second group. The first group focuses on adherence, dietary pattern, weight loss, reduce sodium intake, physical activity, smoking cessation, and moderation of alcohol intake. The monitoring is delivered by a single nurse during bi-monthly telephone calls. The second group records their blood pressure that they take three times a week in a log. Meanwhile, the third group did both interventions (Bosworth, Olsen, Grubber, Neary, Orr, Powers, et al, 2009).

Meanwhile, a study by Scheurs, Colland, Kuijer, Ridder & Elderen (2003) conducted 5 weeks program that contained 5 sessions. Each session spent time for two hours. It provides several steps: introduction the self-management tasks; sharing beliefs, emotions, experience, and barriers; action plans; and goal attainment. The intervention is for group which consists of 6-8 participants. The sessions were conducted two times a week.

From the result above, we can see that there are various strategies were used to run the self-management programs. Mostly, the programs were separated into several sessions in a period of time. Each session contains different content and methods one another. We cannot assume which strategy is better, because each study have different outcome to be achieved and it also depends on the framework that conceptualized the studies.

Several studies that used the standardized Chronic Disease Self-Management Program (CDSMP), spent time of six week for intervention (Siu, Chan, Poon, Chui& Chan, 2005; Swerisson, Belfrage, Weeks, Jordan, Walker, Furler, et al. 2006; Kendall, Catalano, Kuipers, Posner, Buys & Charker, 2007). However, each study has different timeframe of follow up. Study by Siu, Chan, Poon, Chui, and Chan followed up the measurement in one week following the intervention. Differently, study by Swerisson, Belfrage, Weeks, Jordan, Walker,

Furler, et al. conducted the follow up on the six months after the program. Meanwhile, study by Kendall, Catalano, Kuipers, Posner, Buys & Charker did the follow up four times in 12 months period; at 3,6,9, and 12 months. Similarly with a study by Swerisson, et al., the follow up of study by Hall, Rodin, Vallis & Perkin (2009) was held on the 6 six months after the treatment.

A study about health improvement and prevention study which used self management knowledge and skills did the follow up on the nine months counted from the beginning of the program. During the nine months, there were 6 time group session done (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010). Meanwhile, in a randomized trial of self-management program, the intervention was conducted for 5 weeks that contained of 4 group treatment sessions. The follow up was held on 1 month and 4 months after ending the treatment (Xue, Yao, & Lewin, 2008). Similar in duration of intervention, a study by Scheurs, Colland, Kuijer, Ridder & Elderen (2003) also took time for 5 weeks. Differently, a randomized control trial about self-management intervention took time for 24 months. The evaluation of blood pressure was held every 6 months over 24 months. There were four groups attended the program. Each group received different intervention and duration of intervention. The tailored behaviour self-management group accept the intervention two times a month, home blood pressure monitoring group did the monitoring of blood pressure three times a week, and combined group did both of intervention that first and second group did (Bosworth, Olsen, Grubber, Neary, Orr, Powers, et al., 2009). Similar duration of intervention, study by Saelens, Gehrman, Sallis, Calfas, Sarkin & Caparosa (2000) also completed the assessment after 24 months. The follow up was held twice; 1 year and 2 year after ending the intervention.

3.3 Outcomes of Self-Management Program

Studies about self management in various kinds of disease have various outcomes to meet the objectives of the study. Most of the outcomes tend to be clinical/physical outcome, the others tend to be behavioural, psychological, social outcome, and some also have for the quality of life.

In detail, the primary outcomes of self-management in chronic condition are; 1) health status ; including self-related health, health-related quality of life, disability, pain, fatigue, shortness of breath, and psychological well being, 2) health behaviour; including exercise, cognitive symptom management, adherence, 3) health care use, and 4) self-efficacy (confidence) to self-care (Foster, Taylor, Eldridge, Ramsay & Griffiths, 2009).

3.3.1 Physiological Outcomes

A study by Xue, Yao, and Lewin (2008) presents several outcome measurements, such as measure blood pressure, weight, height, and waist circumference, biochemical test, and health related quality of life (HRQOL). Similarly, a study by Park, Song, Cho, Lim, Song, and Kim (2010), also measure health related quality of life (HRQOL) as one of the outcomes of the study. Differently, one of outcomes in a study measure self-reported health status by assessing two components; Physical Component Summary and Mental Health Component Summary (Scheurs, Colland, Kuijer, Ridder & Elderen, 2003). Health distress, disability, illness intrusiveness, social role/activity limitation, depression, pain severity, shortness of breath and fatigue also also physiological outcome. These outcome were measured by using self-rated instrument (Swerisson, Belfrage, Weeks, Jordan, Walker, Furler, et al. 2006)

Meanwhile, a study by Bosworth, Olsen, Grubber, Neary, Orr, Powers, et al. (2009) only measure blood pressure (BP) using a digital sphygmomanometer digital (BPTRU automated non-invasive BP monitor, Model BPM-100) to obtain the outcome. The authors compared BP in four group who accept different type of interventions; usual care, behavioural intervention, home BP monitoring, and combined home BP monitoring and behavioural.

3.3.2 Psychological Outcomes

There are several kinds of psychological outcomes are included in the self-management program. Themost common of psychological outcomes is self efficacy (Scheurs, Colland, Kuijer, Ridder & Elderen, 2003; Kendall, Catalano, Kuipers, Posner, Buys & Charker, 2007; Siu, Chan, Poon, Chui, and Chan, 2007; Park, Song, Cho, Lim, Song, and Kim, 2010). It is believed that self-efficacy is the most important condition where one's confidence can carry out behaviour that is needed to meet the goals (Sol, Bijl, Banga, and Visseren, 2005). A study by Kendall, Catalano, Kuipers, Posner, Buys & Charker stated that besides self-efficacy there are three domains for psychological outcome; mood,

personality, and thinking, because these domains can be affected by cardiovascular disease .

A different psychological outcome was measure in a study. Besides measure self efficacy, the researcher also added coping strategies as psychological outcome. The coping strategies measurement has six dimensions, they are diverting attention, reinterpreting pain sensations, catastrophizing, ignoring sensations, praying or hoping, and making coping self-statements. This strategies are important, because the change mechanism of coping underlies adjustment to illness and disability (Siu, Chan, Poon, Chui, and Chan, 2007).

3.3.3 Behavioural Outcomes

One of the most common behavioural outcomes of hypertension program is physical activity. It is believed that by doing physical activity, the persons who suffer from hypertension may get controlled blood pressure, get more energy, and feel fresh. Consistency of physical activity is necessary to obtain health benefits (Saelens, Gehrman, Sallis, Calfas, Sarkin & Caparosa, 2000). Physical activity is defined as activity that is performed intentionally to raise the blood pulse for at least 30 minutes in several choices of activity such as cycling, walking, or swimming (Drevenhorn, Kjellgren & Bengston, 2007). Sometimes, physical activity also called exercise. One of behavioural domains of a study in a Chinese population is exercise. In this study, the physical activity that is measured covered walking, swimming, and relaxation (Siu, Chan, Poon, Chui & Chan, 2007). Meanwhile, in a study in Sweden, the researcher separated physical activity into three levels; 1) no regular exercise, 2) intermediate, when participants practice twice a week by cycling/walking to work place ≥ 5 km; or once a week by cycling/walking to work place ≥ 3 km, and 3) high, when participant practice a regular exercise more than twice a week. These levels were measured before and after the participants attending the intervention to assess the effect of the program (Drevenhorn, Kjellgren & Bengston, 2007).

Differently, in a study by Park, Song, Cho, Lim, Song, and Kim (2010), the three kinds of physical activity are walking, moderate, and vigorous activity. The total weekly physical activity MET-minutes/week was estimated from the reported minutes within each kind of activities per week. The higher level of physical activity was indicated by higher score from the estimation. Similarly, the level of the physical activity was estimated by computing the physical activity MET-minutes/week that is the sum of walking, moderate, and vigorous activity (Xue, Yao & Lewin, 2008).

Physical activity is also one of outcomes of a study in Australian. However, in the article there is no explanation about it. There is only brief information about how they get the data of physical activity from clinic record audit (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010). Similarly, there is also no explanation about physical activity that is used to assess the effect of the program in a study by Hall, Rodin, Vallis & Perkin (2009).

In conclusion, from the studies above we can see that physical activity is one of the most common behavioural outcomes of hypertension program is physical activity. There are various kinds of activity were used to enhance the physical activity such as cycling, walking, swimming, relaxation, and vigorous activity. Several standards were used to determine the level of this behaviour to examine the effect of self-management programs .

Several studies about hypertension use dietary behaviour to assess the effect of the intervention. However, from the literature about self management program, there is only few researches use it as outcome. In a study in Shanghai, diet was assessed by asking the intake of food items that participants consumed in the last three months before intervention, one month after intervention, and four months after intervention. The food items that asked consist of red meat, vegetables, and fruits. The calculation is counted per day (Xue, Yao & Lewin, 2008). Differently, diet behaviour was assessed by using Daily Living Diary by asking the participant to fill out 3-4 days of their food intake for each week, including weekend (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010). There is also a study which has diet as one of outcomes. The diet habits were assessed before the program and 15 months after the program. The habits that was assessed are reducing the intake of energy-rich food, choosing light dairy products and low-fat cheese, choosing cooking fat high in mono- and/or poly-unsaturated fat (olive or rape oil), eating fish more often, eating chicken rather than pork and beef, choosing bread and cereals rich in fibers, cutting off visible fat, choosing low-calorie delicatessen products, eating more fruit, vegetables and root vegetables and distinguishing between weekdays and special occasions (Drevenhorn, Kjellgren & Bengston, 2007).

Smoking has strong relationship with cardiovascular problems, including hypertension. In

a 13 years cohort study in Mediterranean, Spain, the researcher identified and estimated risk factors which increase the risk of cardiovascular disease. From the study it is known that smoking behaviour is the leading risk for cardiovascular events such as angina pectoris, stroke, and acute miocard infarc. Therefore, it is important to promote healthy life by avoiding smoking (Huerta, Tormo, Gavrila, & Navarro, 2010).

Smoking is one of behavioural outcomes of self-management program. However, only few articles of self-management programs have this behaviour as the outcome. In a study by Drevenhorn, Kjellgren & Bengston (2007), the smoker and non smoker were identified before the intervention and 15 months after intervention. As the indicator of the effect of intervention, the researcher compared and counted the number of smokers who stop smoking in 15 months after intervention. Similarly, the number of smokers who stop smoking is also the indicator of the effect of intervention of a study in a cardiac patient club in Shanghai. In the baseline, the participants were asked if they had smoked in the last four weeks. After attending the 5 weeks self-management program, they were asked again in the next four months follow up (Xue, Yao & Lewin, 2008).

A study Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al. (2010) also had the same indicator of smoking. The difference thing compared to previous study is the time frame of follow up. This study conducted follow up after 12 months after the intervention.

3.4 Measurement of Behavioural Outcomes

To assess the effects of self-management programs, several measurements were used in various studies. Most of them used the measurement in the baseline and in the end of the program or in the follow up in particular time after finishing the program. The explanations that are presented in this part are measurements of physical activity, diet, and smoking. Actually, physical activity is interchangeable with exercise; and diet is related with weight control and food modification. Therefore, in this part, reviewer only presents these three kinds of behavioural outcome.

3.4.1 Physical Activity

Several studies used International Physical Activity Questionnaire (IPAQ) to measure it (Xue, Yao & Lewin, 2008; Park, Song, Cho, Lim, Song, & Kim, 2010). This measurement is widely use in surveillance and studies in the worldwide. IPAQ short form is a tool that is designed primarily for population surveillance and as an evaluation tool in intervention studies for physical activity among adults. It has been developed and tested for use in adults (age range of 15-69 years). This tool assesses physical activity that undertaken a comprehensive set of domains including leisure time physical activity, domestic and gardening (yard) activities, work-related physical activity, and transport-related physical activity. There are three levels of physical activity are proposed; low, moderate, and high. The questionnaire must cover these three levels to be asked to the samples (IPAQ group, 2005).

The validity and reliability of IPAQ already tested in several studies. In a study that has purpose to test the validity and reliability of IPAQ, the result show Spearman's rho clustered around 0.8, and Criterion validity had a median rho of about 0.30 (Craig, Marshall, Sjostrom, Bauman, Booth, Ainsworth, et al., 2003). Moreover, a study in a Spanish population shows the IPAQ has a good reliability coefficient for total physical activity (r=0.82, P<0.05), vigorous activity (r=0.79, P<0.05), moderate activity (r=0.83, P<0.05), and time spent walking (r=0.73, P<0.05). Total time spent on work-related physical activities (r=0.92, P<0.05), on household-related activities (r=0.86, P<0.05), and leisure-time physical activities (excluding walking) (r=0.82, P<0.05) showed good reliability coefficients (Vinas, Majem, Hagstromer, Barba, Sjostrom, & Cordona, 2010).

IPAQ is not the only one measurement that was used to measure physical activity. Several study used self-administered questionnaire that developed according to the conceptual framework that they used. For example, in a study about evaluation of the chronic disease self-management program in a Chinese population, the physical activity is one part of self management behaviour. The researcher measured the physical activity by using an instrument of the self-management course devised by Lorig, et al. (1996). The instrument covers four domains of behaviour; exercise, cognitive symptom management, use of community services, and communication with physician. The questionnaire has 26 items using 4-5 point scale, where the samples were asked to indicate their behaviours. This questionnaire demonstrated acceptable to high internal consistency (α = .72-.91) and acceptable test-retest reliability (r =.65-.80). These values were

obtained from the pilot study (Siu, Chan, Poon, Chui, and Chan, 2005).

There is also a study in Sweden that used a simple measurement for physical activity. They measure the level of exercise in the baseline and in the follow-up after 15 month, and then compared it, whether there is significant shift or not. The three levels of exercise consist of no regular exercise, intermediate vigorous exercise, and high vigorous exercise. However, in the article the authors did not mention the details of the tools that they used; its validity and reliability (Drevernhorn, Kjellgren, & Bengston, 2007). Differently, in a study about health improvement and prevention study (HIPS) for preventing vascular disease that used self-management knowledge and skill in the program, the physical activity was measured by using clinical record audit in the hospital during 12 months. Similarly as the study in Sweden that explained before, the article of this study there is no detail explanations about the tool that was used, its validity and reliability (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010).

In a study conducted in Canada, physical activity was measured by using The Physical Activity Scale for the Elderly (PASE). This instrument was developed and validated specifically to measure physical activity in older adult. The. It had good test-retest reliability over 3 to 7 weeks period (Hall, Rodin, Vallis & Perkin, 2009). Actually, PASE is used for the elderly, but the study by Hall, Rodin, Vallis & Perkin used it participants of this study ranged from 29 to 79 years. There is no explanation why they chosen it as the tool. Moreover, in the article the author did not mention the value of instrument validity and reliability.

3.4.2 Diet

From the articles that are reviewed, some of studies have diet as the behavioural outcome. Similarly with physical activity, diet is also measured by various kinds of measurements. The instrument for diet as behavioural outcome that was used in a study in Sweden is food habit. The limit of satisfactory blood lipid was set for the study as the indicator of the program. In the intervention, the sample were given simple advice about distributing food throughout the day, reducing the intake of energy-rich food, choosing light dairy products and low-fat cheese, choosing cooking fat high in mono- and/or poly-unsaturated fat (olive or rape oil), eating fish more often, eating chicken rather than pork and beef, choosing bread and cereals rich in fibers, cutting off visible fat, choosing low-calorie delicatessen products, eating more fruit, vegetables and root vegetables and distinguishing between weekdays and special occasions. Then, the follow up were held to assess whether the satisfactory effect on blood lipid is achieved or not (Drevernhorn, Kjellgren, & Bengston, 2007).

Differently, in a study about HIPS program for preventing vascular disease, the diet behaviour was measured by using daily living diary. However, the authors did not mention clearly how the use the tool and the validity and reliability of the tool (Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010). Meanwhile, diet behaviour was measure using validated food frequency questionnaire (FFQ). In this study, the samples were asked about their diet in the last three months, and then it was compared in two times of follow up. The first follow up was in 1 month after ending the treatment, and the second follow up was in 4 months after ending the treatment (Xue, Yao & Lewin, 2008).

Food Frequency Questionnaire (FFQ) is commonly used for assessing diet and health in large epidemiologic studies. In the application, this instrument asks participants to report the size and portion of consumption in particular period (Fred Hutchinson Cancer Research Center, 2011). There is one study which assessed the validity and reliability of FFQ for hypertension. In the result, it shows that it has good relialibility (Kappa coefficients ranged from .79-.98) and validity (correlation coefficients varying from .19 (general sample)-.31 (female sub-sample)) (Ferreira-Sae, Gallani, Nadruz, Rodrigues, Franchini, Cabral, et al. 2009).

3.4.3 Smoking Cessation

Smoking is considered as one behaviour that has strong relationship with hypertension. Smoking cessation is the process of discontinuing or stopping the practice of inhaling a smoked substance. Based on the articles about self-management program for hypertension that are reviewed, there is no specific measurement is used to measure the smoking behaviour. In a study at 30 general practices in New South Wales, Australia, the smoking behaviour together with diet and exercise was measured using clinical record audit. The researcher counted how many sample stop smoking after getting the intervention (Drevernhorn, Kjellgren, & Bengston, 2007; Fanaian, Laws, Passey, McKenzie, Wan, Davies, et al., 2010). Similarly, a study in cardiac patient club in Shanghai also counted how many samples stop smoking after the intervention ending

and compared it to the baseline data about smoking habit in the last four weeks before intervention (Xue, Yao & Lewin, 2008).

Reviewer concluded that only few studies that focus on smoking as the behavioural outcome of self-management program for hypertension. Moreover, they only used smoking cessation as the measurement to see the effect of self-management on smoking behaviour. Therefore, it is necessary to do further research to improving the better care and treatment of hypertension by focusing on smoking behaviour.

4 DISCUSSION

This review presented an overlook of studies measuring the effectivity of self management program for people with hypertension. It is shown that self management progam for people with hypertension include a large diversity of concept, components, outcomes, and measurement.

Self-management has many definitions and concepts. This concept usually use to a research that focus on chronic illness person including hypertension. The concept emphasize clients responsibility in experiencing their health behaviour by dealing with environment, coping, and planning the future. To be succeeding in self-management, persons must be able to monitor the targeted behaviours, use objective measurement, and see clearly about the time period. In the process, self management has three stage; self monitoring, self-evaluation, and self-reinforcement.

In many studies, there are various contents, strategies, and duration of self-management program. It depends on the framework that used and the objectives of the study. Some of those were for individual, while some for group or community. It may take a long and short period of time.

Self-management program has shown good result in physiological, psychological, and behavioural outcomes. The outcomes may have different outcomes between one study to another. Some of them mixed physiological, psychological, and behavioural as the outcomes. The common physiological outcome including blood pressure, weight, biochemical, and quality of life. Psychological outcome including self-efficacy, mood, personality, thinking, and coping strategies. Meanwhile, the behavioural outcomes of self-management program consists of physical activity, smoking cessation, alcohol consumption, diet management.

The various measurements were used to assess the effects of the program. This review focuses only to the measurement of behavioural program. There are three most common behavioural outcomes that are used in studies; physical activity, diet, and smoking cessation. For physical activity, the measurement that have been used are the Physical Activity Questionnaire (IPAQ), comparison of the level from baseline and follow up, clinical record audit, and the Physical Activity Scale for the Elderly (PASE). For diet, there are blood lipid check, clinic record audit, and Food Frequency Questionnaire (FFQ). Meanwhile, for smoking cessation there is no specific instrument. Researcher only count and compare the number of smoker that stop smoking after attending the self-management program. Moreover, only few studies focus on smoking behaviour even though this behaviour has strong relationship with hypertension.

Hypertension is considered as one of diseases that must be prevented and treated. The care of it involves non-pharmacologic treatment especially related to behaviours. Smoking, alcohol consumption, weight, diet, physical activity and stress management are behaviours that have strong relationship with hypertension. However, it is not easy to change behaviour. Sometimes changes are not acceptable by people surrounding the hypertension person. In addition, to change behaviour itself is difficult.

Based on studies, self-management is one effective way to change behaviour in chronic disease including hypertension. It emphasizes own responsibility to manage their behaviours to meet the set goals. Therefore, providers and community must be alert and recognize about this strategy in order to help persons with hypertension in improving their health and quality of life. Moreover, this review can be used for those who want to develop a self-management program for hypertension in any setting

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