



FACTORS RELATING PHYSICAL ACTIVITY AMONG OLDER PEOPLE WITH HYPERTENSION IN BANTUL, INDONESIA

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ABSTRACT

Physical activity can bring significant health benefits to people of all age, extend years of active independent living, reduce disability, and manage blood pressure for older people. Hypertension that considered one of early signs of risk factor leading to chronic diseases need to be controlled with adequate physical activity. Identifying the factors relating physical activity within a theoretical framework is a prerequisite to increase physical activity. The aim of this study was identifying factors relating physical activity among older people with hypertension in Bantul, Indonesia. A cross-sectional design was used to achieve the aim. Participants were purposively recruited from four Primary Health Center in Bantul, Indonesia. A total of 174 older people with hypertension were recruited and were asked to complete five questionnaires during a face-to-face interview with researcher at the activity setting. Pearson product moment correlation and Spearman's Rank analyses were employed for analyzing data. The results showed that age, education level, income, living arrangement, perceived barrier, perceived self efficacy, and social support were significantly associated with physical activity. Meanwhile, gender was not significantly associated with physical activity. In conclusion, adequacy of physical activity can be reached by decreased of perceived barrier, increased of perceived self efficacy, and social support. Intervention program on low education, older age, low income, and living alone group should be focused for target intervention.

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KEYWORDS: Physical activity, Barriers, Self efficacy, Social support, Older people, Hypertension.

INTRODUCTION

Statistically the rates have continued to increase unchecked for various chronic diseases which are the major cause of mortality and disability worldwide. [World Health Organization \(2008\)](#) claimed that without action to address these causes, the complications from chronic diseases will likely to increase by 17% annually. One of early signs of risk factor leading to chronic disease is hypertension. Prevalence of hypertension is expected to increase every year. Based on report by the [Indonesia Ministry of Health \(2012\)](#) of Indonesia the prevalence of hypertension in 2008 in Indonesia was 37.4% of the total population aged 18 years and over and by 2012, this has increased to 41%. The high number of hypertension cases is related to several factors, such as inadequate physical activity ([Huai et al., 2013](#)).

Physical activity (PA) is defined as any bodily movement produced by skeletal muscles that result in energy expenditure ([World Health Organization, 2008](#)). Physical activity aimed at effectively managing hypertension is expected to have an impact on population health. Physical activity has significant influence to control blood pressure ([Fagard and Cornelissen, 2007](#)). Previous study has established that if hypertension control was optimized, cardiac mortality would decline by 49% and cerebral vascular mortality by 62% ([Lewanczuk, 2008](#)). In spite of physical

activity having shown many benefits to individual health, many people are not concerned of its benefits. Based on [World Health Organization \(2008\)](#), it was estimated that 31% of adults and older people were insufficiently engaged in physical activity (28% in men and 34% in women), while in the South East Asia, statistic has shown 15% of men and 19% of women were insufficiently engaged in physical activity, and in Indonesia, the statistical records of physical activity that did not meet WHO's guideline was 31.9 % of male population and 27.9% of female population ([Rahajeng and Tuminah, 2009](#)). Previous findings have revealed the factors relating with physical activity were personal factors including gender, age, and income ([Lee, 2006](#); [Lin et al., 2010](#)) and barriers to perform physical activity ([Patel et al., 2013](#)). In addition, self-efficacy is yet one of the great factor of relating physical activity in older people ([Smith et al., 2007](#)). Bandura & King stated self-efficacy is a primary determinant of behavior self efficacy behavior ([Aylaz, 2012](#)). Study of social support factor also looked into the role of others in facilitating physical activity and found that social support could also predict physical activity amongst older people ([Lee, 2006](#); [Phantapak, 2009](#)). However, inconsistency findings still found in previous research ([Shaw and Spokane, 2008](#); [Kanyoni and Philips, 2009](#)). Moreover, overall increased attention to physical activity among young people is evident but there are relatively few studies of physical activity focusing on older people with hypertension ([Lee, 2006](#)) and research reflecting aspects of physical activity in a theoretical framework is still limited as for Bantul, Indonesia. Identifying the factors relating physical activity within a theoretical framework is a prerequisite to devise guideline leading towards developing interventions with the objective of increasing physical activity. Therefore, with Health Promotion Model (HPM) by [Pender et al. \(2011\)](#) as guideline, the current study was purposed identifying the relationship among personal factors, perceived barrier, perceived self efficacy, and social support to physical activity among older people with hypertension in Bantul, Indonesia.

METHOD

A. Design

A cross-sectional study design was used.

B. Sample

Purposive sampling technique was used to recruit the participants. 174 older people with hypertension were selected from four Public Health Centers (PHCs) in Bantul, Indonesia. All participants met the following inclusion criteria: age 60 years old and over, diagnosed with hypertension, independence in activity daily living (score of Katz index are 6), and willingly volunteer to participate in this study

C. Data Collection

After ethical approval and permission letter was granted, participants who diagnosed with hypertension and received treatment at PHC were recruited to be participants. The activity of PHC especially in geriatric clinic was followed. Participants willingly volunteer to participate were asked to sign two identical informed consent forms. The questionnaires were completed by one-on-one interview using the prepared questionnaires and required approximately 40-45 minutes of his/her time. The weight, height, and blood pressure of participants were measured by measurement tool. After finished the interview, the questionnaires were checked and saved in sealed envelope. A gift was given to each participant as gesture of appreciation of their participation at the end of this data collection activity. Data were collected on July 14th, 2014 until August 30, 2014. A total of 174 questionnaires were obtained.

D. Measurement Tools

Data were collected via use of 5 questionnaires which were translated into Indonesian language including:

1. Personal Factors

Demographic Data Survey Form was used to assess personal data that includes, gender, age,

educational level, income, and living arrangement

2. Perceived Barriers

Barriers to Exercise Scale (BES) developed by Melillo *et al.* (1997) were used to assess barriers to perform physical activity (Melillo *et al.*, 1997). BES Assessment Sheet contains 13 items each of which is assigned a Likert scale of 1 to 4; 1 = strongly disagree, 2= disagree, 3 = agree, and 4 = strongly agree. The BES score was obtained by summing scores of all 13 items which could range from 13 to 52. The higher the scores indicate the greater perceived barriers to physical activity. The reliability with Cronbach's alpha was .721.

3. Perceived Self Efficacy

Perceived Self-Efficacy for Exercise Questionnaire (PSEEQ) developed by Chinuntuya (2001) was used to assess on numerical basis perceived self-efficacy to perform physical activity (Chinuntuya, 2001). PSEEQ consists of 12 items, ranging from 0 (cannot do) to 10 (certain can do). A total score of perceived self-efficacy for physical activity, with possible ranging from 0 – 120, was computed by summing all items. Higher score indicated higher perceived self efficacy. The reliability with Cronbach's alpha was .923

4. Social Support

Social Support for Exercise Questionnaire (SSEQ) developed by Chinuntuya (2001) was adopted to assess social support for physical activity (Chinuntuya, 2001). SSEQ comprises of 11 items from each respective older people's family and friends with regard to physical activity. Family and friends was assessed as two separate entities with scores of 1 (never), 2 (sometime), and 3 (often) except question number 3 (1=often, 2=sometime, 3=never). The total score for the social support (combined scores of family's support and friends' support) was determined by summing all items across the board. The higher the total score is the greater the indication of one's social support for performing physical activity. The reliability with Cronbach's alpha was .884

5. Physical Activity

Physical Activity was measured by the Self -reporting of Physical Activity Questionnaire (SPAQ) which was originally developed by Visuthipanich (2009). SPAQ was modified based on the culture of Indonesia people. Modified of SPAQ contains 34 questions including light, moderate, and vigorous activity. Subsequently, the total hours per week in each activity was calculated. The amount of involvement time was assigned a pre-assigned value, whereby: 0-1 hour = 0.5; >1-3 hours =2; > 3-5 hours = 4; >5-7 hours = 6; >7-9 hours = 9; and >9 hours = 10. If duration of involvement was not indicated, the value number was 0. The weekly score of energy expenditure was calculated by multiplying the total hours of the respective activity performed over the previous seven days by the Metabolic Equivalent value ($MET-Hr/wk = Total\ hr./wk \times MET$). Physical activity was classified based on WHO guideline in to adequate ($MET \geq 100$) and inadequate ($MET < 100$). The reliability with Cronbach's alpha was .703.

E. Ethical Approval

Approval to conduct the study was granted by Ethics Review Board Committee for Research Involving Human Research Subjects, Boromarajonani College of Nursing Nopparat Vajira. Each of the potential participants were informed of the study's objectives and provided information regarding what would be involved as a participant. In addition, they were informed: their participation was voluntary; they could withdrawal their participation at any time without need to provide reason and with no consequences; and, their anonymity and confidentiality would be kept. Those willing to participate were asked to sign 2 form of consent before taking part in the study. Result of this study was provided as total picture. Files of hard copy documents were kept securely locked up in the filing cabinet and personal computer with access protected by password was used to analyze the data in keeping with security of the data.

F. Data Analysis

Data analysis was performed using Statistical Package for the Social Sciences (SPSS Version

16.0) for Windows. Descriptive statistics were used to characterize the sample and to examine the distribution properties of the variables. Cronbach's alpha coefficient was used to examine the reliability of the measurement tools. Pearson product moment correlation and Spearman's rank were used to identify the relationship between independent and dependent variable.

RESULT

A. Characteristic of the Participants

Of the 174 participants, all of the participants (100%) completed the study. The average age of participants was 66 years (SD = 5.73), 81 (46.6%) were female. Twenty six (16.1%) participants were not had formal education and ten participants (5.7%) lived alone. More than half participants had enough income (77.6%).

B. Physical Activity among Older People with Hypertension

Table-1. Physical activity based on MET per week ($n=174$)

Level of physical activity	Number	Percent (%)
Inadequate (<100)	77	44.3
Adequate (≥ 100)	97	55.7
Mean = 116.10, SD 58.71, Range 3.75-248.75		

Table 1 showed more than a half of participants reported adequate physical activity based on WHO guideline.

C. Factors of Physical Activity

Table-2. Min-max, mean, and SD of physical activity's factors ($n=174$)

Variables	Min-max	Mean	SD
Perceived barrier	16-44	32.49	4.67
Perceived self efficacy	12-120	56.71	23.54
Social support	22-66	35.89	7.56

Based on table 2, perceived barrier score were 16-44 with mean 32.49 (SD 4.67), perceived self efficacy score were 12-120 with mean 56.71 (SD 23.55), and social support score were 11-66 with mean 35.89 (SD 7.56).

D. Correlation between Physical Activity and Its Factors

Table-3. Correlation between gender, age, education level, income, living arrangement, perceived barrier, perceived self efficacy, social support with physical activity ($n=174$)

Factors	Physical activity	
	r	p
gender	.013	.751
age	-.284	.005*
education level	.252	.001*
income	.209	.008*
living arrangement	.164	.030**
perceived barrier	-.286	.002*
perceived self efficacy	.292	.000*
social support	.279	.001*

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

According to table 3, personal factors including age ($r=-.284, p<.01$), education level ($r=.252, p<.01$), income ($r=.209, p<.01$), and living arrangement ($r=.164, p<.05$) were statistically significant associated with physical activity. However, gender ($r=.013, p>.05$) was not statistically significant associated with physical activity. Other variables including perceived barrier ($r=-.286, p<.01$), perceived self efficacy ($r=.292, p<.01$), and social support ($r=.279, p<.01$) were statistically significant associated with physical activity.

DISCUSSION

This study highlights the importance of various factors that influence physical activity among older people with hypertension in Bantul, Indonesia. The decrease of physical activity with increasing age was expected and consistent with other previous studies (Poolsawat, 2006; Milanović *et al.*, 2013). Changes in physical status are one of the factors. Which influence personal health promotion behavior (Pender *et al.*, 2011). However, findings of the current study reported that gender was not statistically significant associate with physical activity. This finding was different from previous study that stated female and male had differences in physical activity level (Kanyoni and Philips, 2009; Pender *et al.*, 2011). This inconsistency was explained by deterioration of physical activity as increasing age in both male and female. Moreover, female tended to do household activity and male tended to do exercise activity.

The current study showed that educational level was related to physical activity. Older people with higher education had more chance to get information about physical activity. Furthermore, the adequacy of income had association with physical activity in older people with hypertension. This result consistent with Lee (2006), explained that people with adequate income would perform physical activity better than people with inadequate income (Lee, 2006). Adequacy income influenced the social and financial status of older people, which related to physical activity performance of older people. Then, physical activity also related to living arrangement of older people. Older people who living alone tended to perform physical activity less than older people who living with family. This finding was consistent with previous study (Lin *et al.*, 2010; Noosorn and Saengngern, 2013). Most of the older people in Bantul, Indonesia was lived with their family, and got support to perform activities.

The other factors that had association with physical activity in older people with hypertension were perceived barrier, perceived self efficacy, and social support. The older people who perceived more barriers for physical activity tended to have less physical activity. This finding supported by Patel *et al.* (2013), concluded that perceived barrier were strong associate with physical activity (Shaw and Spokane, 2008). Perceived barrier were relevant elements in explaining health behavior (Moschny *et al.*, 2011). Moreover, the older people who perceived higher self efficacy reported higher physical activity score also. When the judgment of abilities to accomplish physical activity increased, the confidence to perform physical activity would be increased. Smith *et al.* (2007) described self efficacy was the greater factor that influencing physical activity performance (Smith *et al.*, 2007). However, the self efficacy could be not influence physical activity without support from other (Lee, 2006; Aylaz, 2012). Social support was a factor relating physical activity. Support from other influenced older people to accept and participate in health promoting behaviour. This finding was consistent with Lee (2006), reported older people needed support from family and others to increased their confidence and to facilitate them to perform health promoting behavior (Lee, 2006)

CONCLUSION

This result of study supported Pender *et al.* (2011) that health behavior, especially physical activity was influenced by perceived barriers, perceived self efficacy, and social support. Reporting perceived barrier, self efficacy, and social support were strongly associate with physical activity although physical activity significantly declined with advancing age and influenced by education level, income and living arrangement. Therefore, it is importance that all professional interacting with older people with hypertension in group with less physical activity through related factors to improve physical activity in older people.

RELEVANCE TO CLINICAL PRACTICE

The findings of this study could be viewed as references to implement strategies to raise physical activity among older people with hypertension in Bantul, Yogyakarta. The findings provided guiding evidence of how to devise intervention program as well as program to overcome various barriers, improve self-efficacy, and induce social support to promoting physical activity and preventing the chronic disease among older people. Result of this study also provided information on particular group that should be focused for target intervention to raise physical activity

LIMITATION

This current study has reached its aims. However, this current study has limitations. First self-reported measures were representing 7 days of activity that might be different with 7 days later. The purposive sampling technique may not be representative of all older adults.

CONTRIBUTION

This study contributes in the existing literature by identify factors relating physical activity among older people with Hypertension in Bantul, Indonesia including age, education level, income, living arrangement, perceived barrier, perceived self efficacy, and social support. It is important to develop appropriate intervention to improve physical activity in older people.

ACKNOWLEDGMENTS

The authors would like to express gratitude to the: older people in Bantul, Indonesia for their participation, Boromarajonani College of Nursing Nopparat Vajira an affiliated institution of Kasetsart University for the support and Directorate General of Higher Education, the Ministry of Research, Technology, and Higher Education of the Republic of Indonesia for the funding.

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