

Self-management approaches among hypertensive residents in nursing homes in Malaysia

Wei TM, Omar MS

Wei TM, Omar MS. Self-management approaches among hypertensive residents in nursing homes in Malaysia. *Malays Fam Physician*. 2017;12(3);8–17.

Keywords:

Older people, hypertension, health, knowledge, perception

Authors:

Marhanis Salihah Omar

(Corresponding author)

RPh, BPharm (Hons) (UKM),
MCLinPharm (UKM), PhD (Australia)
Faculty of Pharmacy,
Universiti Kebangsaan Malaysia,
Jalan Raja Muda Abdul Aziz,
50300 Kuala Lumpur,
Malaysia
Email: marhanis@ukm.edu.my

Tan Mei Wei

BPharm (Hons) UKM
Faculty of Pharmacy, Universiti
Kebangsaan Malaysia,
Jalan Raja Muda Abdul Aziz,
50300 Kuala Lumpur,
Malaysia

Abstract

Introduction: The prevalence of hypertension in Malaysia is increasing and an effective management of hypertension is important to reduce cardiovascular morbidity and mortality.

Objective: To determine the knowledge, awareness and perception towards hypertension among residents in nursing homes as well as the roles of caregivers in hypertension management.

Method: A face-to-face survey with 200 hypertensive residents and 30 caregivers from 24 nursing homes in Kuala Lumpur and Selangor, Malaysia was conducted.

Result: Of all the hypertensive residents, 90.5% ($n = 181$) knew that lowering their blood pressure could improve their health. Most residents strongly believed that taking antihypertensive drugs is important for keeping their high blood pressure under control ($n = 162$, 81%). Taking medication was perceived as the most important factor in controlling the high blood pressure (58%, $n = 116$) compared to lifestyle or diet modification. The majority of the caregivers reported that they played a major role in managing hypertension, especially with regards to medication-taking task (66.7%, $n = 20$).

Conclusion: The knowledge, attitude and perceptions of hypertension play a relatively major role in the self-management of hypertension. The role of caregivers also needed to be recognised in managing hypertension in nursing homes.

Introduction

The high prevalence of hypertension has been reported from various regions around the world.¹ The National Health and Morbidity Survey reported that the prevalence of hypertension in Malaysia in adults increased from 42.6% in 2006 to 43.5% in 2011.² Hypertension is the most common risk factor for coronary artery disease, peripheral arterial disease, end-stage renal failure, stroke and all-cause mortality.³ The complication of hypertension could be prevented by lowering blood pressure, leading to a significant reduction in cardiovascular morbidity and mortality rates.⁴ Therefore, the management of hypertension is important for the overall reduction of cardiovascular morbidity and mortality.⁵

Antihypertensive medication and lifestyle modification are essential for the prevention of high blood pressure.⁶ Self-management interventions have beneficial effects on people with chronic conditions.⁷ Hypertension self-

management behaviours, including medication adherence, self-blood pressure monitoring and lifestyle modifications involving diet and exercise, are recommended and have been shown to result in a significant reduction in blood pressure.⁸

The number of hypertensive patients is rising drastically due to the increasing aging population.² Age is a major risk factor for the development of hypertension and older people are more likely to have their blood pressure uncontrolled.⁹ The development of blood pressure education programs to improve hypertension management is needed because patients' knowledge and perceptions of hypertension play a relatively major role in the self-management of high blood pressure, which is necessary for optimising successful health outcomes.^{2,10} The patients with higher awareness towards hypertension were demonstrated to have significantly better medication and follow-up compliance than patients without this awareness.¹¹

Every year, there is an increase in the number of older people who cannot care for themselves and have to stay in nursing homes.^{12,13} Hypertension is common among nursing home residents and they are treated with antihypertensive drugs, more frequently than any other medications.¹³ In older people, the prevalence of hypertension is high, but disease awareness and self-management measures are found to be low.¹⁴ Therefore, this study is aimed at determining the knowledge, awareness and perception towards hypertension among hypertensive residents in nursing homes. In addition, the roles of caregivers in hypertension management are also examined in this study.

Methodology

A cross-sectional survey was carried out in 24 nursing homes in Kuala Lumpur and Selangor, which are registered with the Central Welfare Council of Malaysia or the Ministry of Social Welfare, Malaysia from April 2014 to December 2014. A total of 85 nursing homes were first identified and a random selection of 24 nursing homes was made based on the number of official approvals obtained from each nursing home. All the residents were informed regarding the purpose of the study by the researchers, who were assisted by the caregivers or management personnel. Participants were recruited by simple random sampling and informed consent was taken. Inclusion criteria were being diagnosed by their doctors as having hypertension, able to speak English or Malay and willing to stay in a nursing home for more than 3 months. Any hypertensive residents who were bedridden were excluded from this study. Participants' blood pressures were measured three times during the visit by a trained researcher and an average blood pressure reading greater than 140 mmHg systolic or 90 mmHg diastolic was considered to be uncontrolled hypertension.

The information on participants' hypertension knowledge, awareness and perception (KAP) was obtained from a validated questionnaire that consisted of 7 questions about hypertension knowledge, 3 questions about awareness and 6 questions about perception, which were designed for use in hypertensive populations.¹³ In addition, descriptive information related to hypertension management was obtained from the caregivers. The caregivers were eligible for this study if they were working in a nursing home for more than 3 months and could understand Malay and English. This study was approved

by Universiti Kebangsaan Malaysia Research Ethics Committee (UKM 1.5.3.5/244/NF-029-14).

The data that were collected was analysed using the Statistical Package for Social Sciences version 22 (IBM Corp., Armonk, NY). Data regarding KAP are presented descriptively to provide information on the characteristics of the study sample. Numerical data are expressed as the mean \pm standard deviation (SD) or percentage. The chi-square test was employed to evaluate the proportion of residents who achieved the target blood pressure (<140/90 mmHg) or uncontrolled blood pressure (>140/90 mmHg) in relation to their demographic characteristics and lifestyle habits. A *p*-value of less than 0.05 was considered to be significant.

Results

Of the 200 hypertensive residents recruited in this study, 124 (62%) had their blood pressure within the normal range, while 76 (38%) residents were categorised into the uncontrolled blood pressure group (**Table 1**). The average blood pressure was 134 mmHg systolic and 78 mmHg diastolic. The majority of residents (91.5%, *n* = 113) did not remember their last blood pressure reading. In this study, factors like age, gender, ethnicity, body mass index and level of education were associated with blood pressure control (*p* > 0.05). About 58.5% (*n* = 117) of the residents were prescribed with one antihypertensive drug and 59% (*n* = 108) of the residents had at least one co-morbidity, specifically diabetes mellitus, hyperlipidaemia or heart disease. Less than half of the residents (46.5%, *n* = 93) reported exercising regularly, and the mean exercise frequency was 5 times per week. Almost all of the residents (91.5%, *n* = 183) agreed about the importance of a healthy diet in managing their hypertension.

Most of the residents managed to provide the correct meaning of hypertension (59.5%, *n* = 119) and thought that hypertension was extremely dangerous to their health (71%, *n* = 142; **Table 2**). However, many of them could not answer specific questions about hypertension. For example, approximately 40.5% (*n* = 81) of residents correctly defined the two measures of blood pressure but most of them were unable to correctly identify between systolic and diastolic blood pressure. Almost all residents reported that they did

not receive any information regarding their blood pressure from their healthcare providers (70%, $n = 140$; **Table 3**). The residents also reported not being informed of the importance of keeping their blood pressure under control. Taking medication was believed to be very important for control of their blood pressure (81%, $n = 162$) and the residents also believed that changing their lifestyle could help in lowering their blood pressure (87%, $n = 174$; **Table 4**). More than the residents presumed that hypertension is an avoidable process of aging (59.5%, $n = 119$). With regards to their perceptions towards the most important factor in controlling their hypertension, the majority of residents opted more for medication use (58%, $n = 116$), followed by exercising (18%, $n = 36$) and changing their diet (7.5%, $n = 15$).

In this study, 30 caregivers were recruited and 66.7% ($n = 20$) of them reported to holding full responsibility in medication-related tasks, such as reminding the hypertensive residents to take their medication every morning or evening (**Table 5**). The majority of the caregivers (73.3%, $n = 22$) also agreed that it is their full responsibility to ensure that all medications are taken correctly. More than 96.7% ($n = 29$) of caregivers reported that they would ensure that residents have a balanced daily diet, but only 33% ($n = 10$) reminded the residents to exercise regularly. Nevertheless, the caregivers were not concerned with helping residents measure their blood pressure regularly (36.7%, $n = 11$).

Table 1. Socio-demographic characteristics of the residents ($n = 200$)

Variables	Total participants $n = 200$	Blood pressure		Statistics value	p value
		Under control ($<140/90$ mmHg) ($n = 124$)	Not controlled ($>140/90$ mmHg) ($n = 76$)		
<i>Gender</i>					
Male	95 (47.5)	58 (46.8)	37 (48.7)	$\chi^2 = 0.069$	$p = 0.793$
Female	105 (52.5)	66 (53.2)	39 (51.3)		
<i>Age (years), mean \pm SD</i>					
40–59	70.6 \pm 11.4	70.7 \pm 11.3	70.5 \pm 11.6	$\chi^2 = 0.137$	$p = 0.934$
60–79	34 (17.0)	22 (17.7)	12 (15.8)		
80–99	116 (58.0)	71 (57.3)	45 (59.2)		
<i>Ethnicity</i>					
Malay	50 (25.0)	31 (25.0)	19 (25.0)	$\chi^2 = 3.816$	$p = 0.148$
Chinese	32 (16.0)	15 (12.1)	17 (22.4)		
Indian	146 (73.0)	94 (75.8)	52 (68.4)		
<i>Education level</i>					
Illiteracy No formal education	22 (11.0)	15 (12.1)	7 (9.2)	$\chi^2 = 2.779$	$p = 0.427$
Primary school	69 (34.5)	48 (38.7)	21 (27.6)		
Secondary school	59 (29.5)	33 (26.6)	26 (34.2)		
Diploma, university or above	59 (29.5)	35 (28.2)	24 (31.6)		
<i>Body mass index (BMI)</i>					
Underweight (BMI <18.5)	13 (6.5)	8 (6.5)	5 (6.6)	$\chi^2 = 1.190$	$p = 0.755$
Normal weight (BMI 18.5–24.9)	43 (21.5)	27 (21.8)	16 (21.1)		
Overweight (BMI 25–29.9)	116 (58.0)	74 (59.7)	42 (55.3)		
Obese (BMI ≥ 30)	16 (8.0)	8 (6.5)	8 (10.5)		
<i>Duration of hypertension</i>					
1–10 years	151 (75.5)	98 (79.0)	53 (69.7)	$\chi^2 = \text{NA}$	NA
11–20 years	34 (17.0)	18 (14.5)	16 (21.1)		
21–40 years	7 (3.5)	2 (1.6)	5 (6.6)		
Could not remember	8 (4.0)	6 (4.8)	2 (2.6)		

Table 1. Socio-demographic characteristics of the residents ($n = 200$)

Variables	Total participants $n = 200$	Blood pressure		Statistics value	p value
		Under control ($<140/90$ mmHg) ($n = 124$)	Not controlled ($>140/90$ mmHg) ($n = 76$)		
<i>Remember last blood pressure level</i>					
Yes	17 (8.5)	11 (8.9)	6 (7.9)	$\chi^2 = 0.058$	$p = 0.810$
No	183 (91.5)	113 (91.1)	70 (92.1)		
<i>Number of drugs taking for hypertension</i>					
Not sure	17 (8.5)	11 (8.9)	5 (7.9)	$\chi^2 = 2.066$	$p = 0.559$
Monotherapy	117 (58.5)	71 (57.3)	46 (60.5)		
Dual therapy	55 (27.5)	33 (26.6)	22 (28.9)		
Triple therapy	11 (5.5)	9 (7.3)	2 (2.6)		
<i>Number of comorbidities</i>					
One comorbidity	80 (40.0)	54 (43.5)	26 (34.2)	$\chi^2 = 3.024$	$p = 0.220$
Multiple comorbidities	38 (19.0)	25 (20.2)	13 (17.1)		
None	82 (41.0)	45 (36.3)	37 (48.7)		
<i>Smoking habit</i>					
Smoker	30 (15.0)	16 (53.3)	14(46.7)	$\chi^2 = 1.125$	$p = 0.289$
Non smoker	170 (85.0)	108 (63.5)	62 (36.5)		
<i>Having regular exercise</i>					
Yes	93 (46.5)	61 (65.6)	32 (34.4)	$\chi^2 = 0.952$	$p = 0.329$
No	107 (53.5)	63 (58.9)	44 (41.1)		
<i>Agree to healthy eating</i>					
Yes	183 (91.5)	114 (62.3)	69 (37.7)	$\chi^2 = 0.080$	$p = 0.778$
No	17 (8.5)	10 (58.8)	7 (41.2)		

χ^2 = chi-square test; NA = not applicable.

Table 2. Hypertension knowledge among residents ($n = 200$)

Hypertension knowledge	n (%)
1. What does the term HYPERTENSION mean?	
High blood pressure	119 (59.5)
High-level stress/tension	4 (2.0)
Nervous condition	1 (0.5)
Do not know	76 (38.0)
2. How dangerous is hypertension to your health?	
Extremely	142 (71.0)
Somewhat	35 (17.5)
Not at all	13 (6.5)
Do not know	10 (5.0)
3. Would lowering high blood pressure improve a person's health?	
Yes	181 (90.5)
No	5 (2.5)
Somewhat	3 (1.5)
Do not know	11(5.5)

Table 2. Hypertension knowledge among residents ($n = 200$)

Hypertension knowledge	<i>n</i> (%)
4. What do the two numbers reported for blood pressure mean? Correctly replied for both top and bottom number Do not know	81 (40.5) 119 (59.5)
5. What should normal blood pressure levels be? Top and bottom number (less than 140/90 mmHg) Do not know	65 (32.5) 135 (67.5)
6. Which measure is more important? Top (systolic) Bottom (diastolic) Both (top and bottom) Do not know	14 (7.0) 5 (2.5) 40 (20.0) 141 (70.5)
7. Can people do things to lower their blood pressure? Yes No Do not know	173 (86.5) 18 (9.0) 9 (4.5)

Table 3. Hypertension awareness among residents ($n = 200$)

Hypertension knowledge	<i>n</i> (%)
1. Did your doctor or health care provider tell you what your personal blood pressure reading should be? Yes No Do not know	34 (17.0) 140 (70.0) 26 (13.0)
2. Has a doctor or health care provider ever told you that the top number is important to keep under control? Yes No Do not know	15 (7.5) 132 (66.0) 53 (26.5)
3. Has a doctor or health care provider ever told you that the bottom number is important to keep under control? Yes No Do not know	18 (9.0) 134 (67.0) 48 (24.0)

Table 4. Residents' perceptions of hypertension ($n = 200$)

Hypertension knowledge	<i>n</i> (%)
1. How important do you think taking medicine is to keeping your blood pressure under control? Very important Somewhat important Not at all important Do not know	162 (81.0) 23 (11.5) 14 (7.0) 1 (0.5)
2. Do you think that high blood pressure (hypertension) is a life-long disease? Yes No Do not know	96 (48.0) 69 (34.5) 35 (17.5)

Table 4. Residents' perceptions of hypertension ($n = 200$)

Hypertension knowledge	<i>n</i> (%)
3. Do you think that high blood pressure (hypertension) is something you can cure?	
Yes	73 (36.5)
No	93 (46.5)
Do not know	34 (17.0)
4. Do you think that changing your lifestyle can help to lower your blood pressure?	
Yes	174 (87.0)
No	13 (6.5)
Do not know	13 (6.5)
5. Do you think that high blood pressure (hypertension) is an avoidable part of ageing?	
Yes	119 (59.5)
No	54 (27.0)
Do not know	27 (13.5)
6. What is the most important factor in controlling your high blood pressure?	
Taking medicine	116 (58.0)
Exercising	36 (18.0)
Less stress	6 (3.0)
Change diet (salt)	15 (7.5)
Other: Quitting smoking, sleep well, rest	11 (5.5)
Do not know	16 (8.0)

Table 5. General characteristics of caregivers and their tasks related to resident's medication and hypertension management ($n = 30$)

Characteristic	<i>n</i> (%)
<i>Gender</i>	
Male	14 (46.7)
Female	16 (53.3)
<i>Age^a</i>	
18–30 years	9 (30.0)
31–40 years	5 (16.7)
41–50 years	6 (20.0)
More than 50 years	10 (33.3)
<i>Ethnicity</i>	
Malay	7 (23.3)
Chinese	14 (46.7)
Indian	7 (23.3)
Others: Philippine, Sri Lanka	2 (6.7)
<i>Duration of working^a</i>	
≤1 years	9 (30.0)
≤5 years	10 (33.3)
≤10 years	5 (16.7)
>10 years	6 (20.0)

Table 5. General characteristics of caregivers and their tasks related to resident's medication and hypertension management ($n = 30$)

Characteristic	<i>n</i> (%)
<i>Gender</i>	
Male	14 (46.7)
Female	16 (53.3)
<i>Age^a</i>	
18–30 years	9 (30.0)
31–40 years	5 (16.7)
41–50 years	6 (20.0)
More than 50 years	10 (33.3)
<i>Ethnicity</i>	
Malay	7 (23.3)
Chinese	14 (46.7)
Indian	7 (23.3)
Others: Philippine, Sri Lanka	2 (6.7)
<i>Duration of working^a</i>	
≤1 years	9 (30.0)
≤5 years	10 (33.3)
≤10 years	5 (16.7)
>10 years	6 (20.0)
<i>Education level</i>	
Illiteracy/No formal education	2 (6.7)
Primary school	7 (23.3)
Secondary school	11 (36.7)
Diploma, university or above	10 (33.3)
<i>Medication-related tasks</i>	
1. Who remembers them to take morning medicines? Patients herself or himself Caregiver fully responsibility Patients and caregiver share responsibility	3 (10.0) 20 (66.7) 7 (23.3)
2. Who remembers them to take evening medicines? Patients herself or himself Caregiver fully responsibility Patients and caregiver share responsibility	3 (10.0) 20 (66.7) 7 (23.3)
3. Who makes sure medicines taken properly? Patients herself or himself Caregiver fully responsibility Patients and caregiver share responsibility	3 (10.0) 22 (73.3) 5 (16.7)
4. Who makes sure medicines taken enough? Patients herself or himself Caregiver fully responsibility Patients and caregiver share responsibility	3 (10.0) 22 (73.3) 5 (16.7)

Characteristic	n (%)
<i>Hypertension management tasks</i>	
1. Who makes sure them to exercise regularly?	
Patients herself or himself	4 (13.3)
Caregiver fully responsibility	10 (33.3)
Patients and caregiver share responsibility	10 (33.3)
Both are not concern	6 (20.0)
2. Who makes sure their diet is balanced daily?	
Patients herself or himself	0 (0.0)
Caregiver fully responsibility	29 (96.7)
Patients and caregiver share responsibility	1 (3.3)
Both are not concern	0 (0.0)
3. Who makes sure to measure their blood pressure regularly?	
Patients herself or himself	3 (10.0)
Caregiver fully responsibility	13 (43.3)
Patients and caregiver share responsibility	3 (10.0)
Both are not concern	11 (36.7)

^aThe mean \pm SD age of caregivers was 41.7 ± 14.036 with range 18 to 71 years, and they were working for 6.2 ± 7.4 years with a range of 3 months to 28 years.

Discussion

In this study, the majority of the hypertensive residents were found to have controlled blood pressure. Hypertension is common in older patients and studies have highlighted the high prevalence of hypertension among people in nursing home facilities.^{15,16} Although the majority of hypertensive patients require pharmacological intervention to adequately control their blood pressure, life-style interventions should be put as the first-line strategy for the management of all persons with hypertension. For example, smoking cessation should be emphasised as it has been proven to decrease the blood pressure level and lower the heart rate.^{17,18} Also, most of the residents in this study showed high awareness towards the importance of a healthy diet and reducing sodium intake, their efforts in diet modifications could be limited as a resident's daily diet was regulated by the caregivers. Based on our study, hypertensive residents believed that hypertension is a life-long disease that cannot be cured; thus, they trusted that changing their lifestyles could help lower their blood pressure and improve their health condition.

Most of the residents had a basic general knowledge of hypertension but were lacking specific knowledge. They believed that self-management is possible in lowering their high blood pressure. This finding is similar with the study done by Oliveria et al.¹³ who

reported that this population possess high knowledge and awareness about hypertension, yet patients do not have a comprehensive understanding of this condition. Awareness and treatment are important conditions for controlling hypertension. For example, it is most important to keep systolic blood pressure under control as this can reduce the risk of myocardial infarction, stroke and heart failure.¹⁹ However, most of the residents in our study were not able to determine which blood pressure measurement is more important in controlling their hypertension.

In this study, residents in nursing homes showed high dependency on their caregivers in managing their disease. This study demonstrated that caregivers played an important role in medication management. The dose and frequency of the antihypertensive medicines were fully controlled by caregivers and they also ensured that medication was taken daily. However, the contrary, most of caregivers were not concerned in helping residents to monitor their blood pressure regularly due to the lack of time and limited knowledge about the correct technique of using home blood pressure monitoring. Blood pressure is one of the vital signs for management of hypertension and proper training of skills and techniques are essential to improve the accuracy of blood pressure measurement.²⁰ Hence, the residents-caregiver relationship is crucial in helping residents to manage their hypertension.

Most caregivers were found to possess limited knowledge about medication, especially on side effects and their management.²¹ The caregivers require a better understanding of the aging process and how it may affect the resident's health. An educational program would help the caregivers to handle the disease and medication. Such educational programs have been started in a few developed countries and shown to benefit both residents and caregivers.²² Most of the caregivers agreed to the idea of participating in training and education programs to increase quality of care in older people, but some of them refused the training due to lack of time, energy and influenced by residents' age.²³ The hassles of medication administration should be noticed, especially when the resident is taking multiple medications several times a day.²⁴ Therefore, the educational program should also incorporate interventions to reduce the burden and distress of caregivers with intention to improve the medication management.

Conclusion

Hypertension control is good in older people under nursing home care, which could be attributed to their level of knowledge, attitude and perception of this chronic disease. The development of an educational program involving hypertensive residents and their caregivers in nursing homes would be beneficial in improving the self-management of hypertension in the residents.

Acknowledgement

This study was supported by Ministry of Education Malaysia under Fundamental Research Grant Scheme (FRGS/2/2014/SKK02/UKM/03/1).

Conflict of interest

The authors have no conflict of interest to disclose.

How does this paper make a difference to general practice?

- The majority (62%) of hypertensive residents in nursing home care have controlled blood pressure.
- These hypertensive residents in nursing home care have good knowledge, attitude and perception of hypertension.
- The residents in nursing homes were highly dependent on their caregivers for the management of their hypertension.

References

1. Rampala L, Rampal BS, Azharc MZ, et al. Prevalence, awareness, treatment and control of hypertension in Malaysia: A national study of 16,440 subjects. *Public Health*. 2008;122(1):11–8.
2. Lim KH, Ho BK, Kaur J, et al. Prevalence, awareness, treatment and control of hypertension among the aged person: the 2006 National Health and Morbidity Survey III in Malaysia. *Med J Malaysia*. 2006;68(4):332–7.
3. Gu QP, Burt VL, Dillon CF, et al. Trends in antihypertensive medication use and blood pressure control among United States adults with hypertension: the National Health and Nutrition Examination Survey, 2001 to 2010. *Circulation*. 2012;126:2105–14.
4. Wijeyundera HC, Machado M, Farahati F, et al. Association of temporal trends in risk factors and treatment uptake with coronary heart disease mortality, 1994–2005. *JAMA* 2010;303(18):1841–7.
5. Cordero A, Bertomeu-Martinez V, Mazon P, et al. Factors associated with uncontrolled hypertension in patients with and without cardiovascular disease. *Rev Esp Cardiol*. 2011;64(7):587–93.
6. Neutel CI, Campbell NRC. Changes in lifestyle after hypertension diagnosis in Canada. *Can J Cardiol*. 2008;24(3):199–204.
7. Barlow J, Wright C, Sheasby J, et al. Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns*. 2002;48(2):177–87.
8. Chobanian AV, Bakris GL, Black HR, et al. National Heart, Lung, and Blood Institute Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; National High Blood Pressure Education Program Coordinating Committee. 2003. The seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. *JAMA*. 2003;289(19):2560–72.
9. Charlson ME, Wells MT, Peterson JC, et al. Mediators and moderators of behavior change in patients with chronic cardiopulmonary disease: the impact of positive affect and self-affirmation. *Transl Behav Med*. 2014;4(1):7–17.

10. Warren-Findlow J, Seymour RB, Brunner Huber LR. The association between self-efficacy and hypertension self-care activities among African American adults. *J Community Health*. 2012;37(1):15–24.
11. McDonald M, Robin PH, Unger AN, et al. Prevalence, awareness, and management of hypertension, dyslipidemia, and diabetes among United States adults aged 65 and older. *J Gerontol A Biol Sci Med Sci*. 2010;64A(2):256–63.
12. Yadlapalli K, Gupta SK, Pandav CS. Knowledge and perceptions about hypertension among neo- and settled-migrants in Delhi, India: a qualitative study. *BMC Public Health*. 2009;4(2):119–29.
13. Oliveria SA, Chen RS, McCarthy BD, et al. Hypertension knowledge, awareness and attitudes in a hypertensive population. *J Gen Intern Med*. 2005;20(3):219–25.
14. Erichsen NB, Bussing A. Spiritual needs of aged person living residential/nursing homes. *Evid Based Complement Alternat Med*. 2013;1–10
15. Trilling JS, Froom J, Gomolin IH, et al. Hypertension in nursing home patients. *J Hum Hypertens*. 1998;12(2):117–21.
16. Welsh T, Gladman J, Gordon AL. The treatment of hypertension in care home residents: a systematic review of observational studies. *J Am Med Dir Assoc*. 2014;15(1):8–16.
17. Takami T, Saito Y. Effects of smoking cessation on central blood pressure and arterial stiffness. *Vasc Health Risk Manag*. 2011;7:633–38.
18. Appel LJ. ASH position paper: dietary approaches to lower blood pressure. *J Am Soc Hypertens*. 2010;4(2):79–89.
19. Izzo JL, Levy D, Black HR. Importance of systolic blood pressure in older Americans. *Hypertension*. 2000;35:1021–4.
20. Frese EM, Fick A, Sadowsky HS. Blood pressure measurement guidelines for physical therapists. *Cardiopulm Phys Ther J*. 2011;22(2):5–12.
21. Jones KR, Fink R, Pepper G, et al. Improving nursing home staff knowledge and attitudes about pain. *Gerontologist*. 2004;44(4):469–78.
22. Monette J, Champoux N, Monette M, et al. Effect of an interdisciplinary educational program on antipsychotic prescribing among residents with dementia. *Int J Geriatr Psychiatry*. 2008;23(6):574–9.
23. Haggstrom E, Bruhn A. Caregivers' attitudes to education and supervision in work with the older people in a nursing home. *Nurse Educ Today*. 2009;29:850–4.