Journal of Vessels and Circulation

Relationship between Aspects of the Social Support Provided by the Spouse and the Blood Pressure in Hypertension Patients Who Referred to Healthcare Centers in Qom, Iran

Amin Arabshahi[1], Abolfazl Mohammadbeigi[2], Zabihollah Gharlipour[3], Taher Oroji[1], Siamak Mohebi[4*]

[1] *Student Research Committee, Department of Health Education and Promotion, Faculty of Health, Qom University of Medical Sciences, Qom, Iran*
[2] *Neuroscience Research Center, Department of Epidemiology and Biostatistics, Faculty of Health, Qom University of Medical Sciences, Qom, Iran*
[3] *Department of Public Health, Faculty of Health, Qom University of Medical Sciences, Qom, Iran*
[4] *Department of Health Education and Promotion, Faculty of Health, Qom University of Medical Sciences, Qom, Iran*

*** *Corresponding author:*** Siamak Mohebi, Department of Health Education and Promotion, Faculty of Health, Qom University of Medical Sciences, Qom, Iran. Tel: 09183304297; Email: mohebisiamak@yahoo.com

Article Info

Article type:
Original article

Article History:
Received: 28 03 2020
Revised: 22 04 2020
Accepted: 27 04 2020

Keywords:
Cardiovascular disease
Hypertension
Social support

A B S T R A C T

Background and Aim: Hypertension is one of the most important risk factors for cardiovascular disease and stroke. Social support is one of the effective factors in the prevention and control of this disease. Therefore, this study aimed to determine the relationship between the aspects of social support received from the spouse and high blood pressure in patients who referred to healthcare centers in Qom, Iran.

Materials and Methods: This cross-sectional study was performed on 280 patients with primary hypertension referred to healthcare centers in Qom. Data collection tools were demographic form, social support survey by Sherburne and Stuart, a checklist for checking and recording systolic and diastolic blood pressure, and a standard sphygmomanometer. The data were analyzed in SPSS software (version 20) using independent t-test, one-way ANOVA, Pearson correlation coefficient, and multivariate linear regression tests.

Results: According to the results, the social support received from the spouse was good in 82.9% of the patients, while 9.3% and 7.9% of the patients received moderate and low social support from their spouses, respectively. In addition, the results showed that the systolic (P=0.01) and diastolic blood pressures (P=0.003) had a significant relationship with the social support received from the spouse. Moreover, the findings revealed that occupation (P<0.001), gender (P<0.001), and income (P=0.019) had a significant correlation with the received social support (P<0.05).

Conclusion: The results of this study indicated that social support received from the spouse should be considered as an influential component on systolic and diastolic blood pressure in hypertension patients.

➢ **How to cite this paper**
Arabshahi A, Mohammadbeigi A, Gharlipour Z, Oroji T, Mohebi S. Relationship between Aspects of the Social Support Provided by the Spouse and the Blood Pressure in Hypertension Patients Who Referred to Healthcare Centers in Qom, Iran. J Vessel Circ. Winter 2020; 1(1): 41-47. DOI: 10.21859/JVesselCirc.1.1.41

Introduction

Hypertension is a major public health problem all over the world and has a global mortality rate of 13%. According to previous studies, this disease has a relatively high prevalence rate worldwide and Iran is no exception (1). Hypertension is known as "the silent killer" due to its lack of obvious symptoms (2, 3). Genetic factors (e.g., family history), environmental factors (e.g., salt intake, obesity, and alcohol consumption), psychological factors (e.g., personality, coping style, self-esteem,

repressed anger, and personality type), and social factors (e.g., occupation, income, marital status, loneliness, and social isolation) play important roles in creating high blood pressure (4). Hypertension is associated with other problems, such as heart attack, stroke, congestive heart failure, peripheral vascular disease, and coronary heart disease (5). Higher blood pressure increases the chance of having a heart attack, stroke, and kidney disease (6).

Based on previous studies, approximately 25% of adults around the world suffer from high blood pressure, and this rate increases with age (7). According to the American College of Physicians, lowering blood pressure by at least 3 mm Hg can prevent cardiovascular diseases, stroke, and other causes of death (8). Currently, out of the 400,000 deaths that annually occur in Iran, 81,000 cases are due to hypertension and stroke (9). The results of the latest national survey on risk factors of non-communicable diseases in 2016 indicated that the prevalence rate of hypertension in Iran was 27% (10). Hypertension is influenced by all important life events which can, in turn, affect the quality of life of the patients. Besides medication, hypertension treatments should pay close attention to the role of psychological and sociological factors in order to be successful (11).

Social support can be a shield against the negative outcomes of this disease and affects adaptation indicators through physiological, emotional, and cognitive characteristics (12). Social support reduces cardiovascular diseases (13), hypertension, nervous headaches, and gastrointestinal disorders (14). Moreover, it boosts self-esteem, reduces the negative effects of chronic illnesses, and helps the patients to adapt to their illness (14). The seventh joint national committee on prevention, detection, evaluation, and treatment of high blood pressure emphasizes the involvement of family members in caring for the hypertension patients, highlighting that social support can play an important role in the control of this disease (15). Social support which is provided by others can be obtained from a variety of sources such as family, spouse, and friends (16).

One of the components of social support is the support received from the spouse which is superior to the support provided by the other members of society and the family. Based on health promotion strategies, family, especially the spouse, plays a crucial role in the process of disease prevention and treatment (17). Family is the most basic element of society and is responsible for the provision of proper healthcare for patients and those around them, and the most important element in this regard is the spouse (17). According to previous studies, health-promoting behaviors are more common among people who are in daily contact with their spouse (18). Such behaviors are mostly performed through direct social control, such as reminders, encouragement, observation, or even threats. However, few studies have been performed on the valuable role of the family of patients, especially spouses (18).

Therefore, considering the important role of social support in the control and prevention of hypertension, the present study aimed to investigate this role. For this purpose, this paper will focus on the relationship of the various aspects of social support provided by the spouse with high blood pressure in patients who referred to healthcare centers in Qom, Iran.

Materials and Methods

This cross-sectional (descriptive-analytical) study was performed on people with primary hypertension during 9 months (early spring to late autumn) in Qom in 2019. The statistical population in this study was hypertension patients who referred to healthcare centers in Qom. The healthcare centers were selected using the simple random sampling method from three different areas (uptown, midtown, and downtown). Moreover, the participants were selected using the convenience sampling method from the eligible patients. The sample size was calculated according to the sample size formula and based on a study conducted by Taher et al., considering r=0.18, and type one and two errors 5% and 20%, respectively (19). Finally, the sample size was estimated at 280 cases who were included in the study using the convenience sampling method.

The inclusion criteria consisted of 1) age range of 30- 65 years, 2) ≥1 year of history of primary hypertension, 3) uncontrolled primary hypertension (confirmed by a doctor), 4) minimum use of medications to control blood pressure, and 4) medical record in healthcare centers. On the other hand, the exclusion criteria were unwillingness to continue cooperation and hypertension caused by other diseases (secondary hypertension).

The required data were collected through a demographic form, the social support survey by Sherbourne and Stewart (1991) (MOS-SSS), a checklist for the examination and record of systolic and diastolic blood pressure, and the HS20A standard Brisk sphygmomanometer. The demographic form included age, gender, level of education, income, and occupation. To measure social support, MOS-SSS was used which was developed in 1991 by Sherbourne and Stewart (20). This test measures the social support received by

the subject and is comprised of 19 phrases and 5 subscales.

The emotional/informational support section includes items 1-8 that assess guidance, information, positive emotion, empathy, and encouragement to express emotions. The tangible support section includes items 9-12 and measures tangible and behavioral support. The affectionate section includes items 13-15 and evaluates the expression of love and affection. The positive social interaction section deals with recreational activities and includes items 18-16, and the last item is an extra item. This questionnaire was scored based on a 5-point Likert scale from 1 (never) to 5 (always) and it determines the agreement or disagreement of the subject with the statements.

The minimum and maximum possible total scores were 19 and 95, respectively. The total score ranges of 19-38, 38-57, and >57 indicated low, moderate, and high levels of family support. High scores on this scale showed that the subject received the desired support of the family. The reliability of this test was calculated at 0.7-0.93 using Cronbach's alpha coefficient. Moreover, Tamannaeifar and Mansourinik confirmed the formal and content validity of this tool by using the opinions of psychological experts and estimated its reliability at 0.97 using Cronbach's alpha coefficient (21).

To measure the blood pressure of the subjects, they were first rested for 10 minutes. Then their blood pressure was measured twice with an HS20A standard Brisk sphygmomanometer from the right hand in a seated position with a 5-minute interval. The mean of the obtained blood pressures was recorded as the systolic and diastolic blood pressure. The data were finally collected and analyzed using descriptive statistics (mean and standard deviation) in SPSS software (version 20). Regarding the analytical statistics, independent t-tests, one-way analysis of variance, and Pearson correlation coefficient and multivariate linear regression were used. A p-value of less than 0.05 was considered statistically significant in all the analytical procedures.

First, the necessary licenses were obtained from the Qom University of Medical Sciences. The questionnaires and checklists for registering blood pressure were completed by the patients in the form of a structured interview with an M.Sc. student of health education. It should be noticed that the present study was approved by the ethics committee of Qom University of Medical Sciences (registration code IR.MUQ.REC.1398.132). Moreover, the ethical considerations were respected since the objectives of the study were explained to the patients, and participation in the study was voluntary. In addition, written informed consent was obtained from all the participants.

Results

According to the results, 73.2% (n=205) and 26.8% (n=75) of the subjects were male and female, respectively. Moreover, the mean age of the participants was 53.56±8.75 years while the mean duration of hypertension in them was 6.07±5.01 years. In addition, the level of education of the majority of the patients (64.6%, n=181) was elementary school. Furthermore, based on the findings, 7.9% (n=22), 9.3% (n=26), and 82.9% (n=232) received poor, moderate, and good social support, respectively. The mean±standard deviation of social support (total score) was 77.31±20.81, and thereby within the range of 19-95. Besides, the mean and standard deviation of systolic (12.38±1.69) and diastolic (8.03±1.2) blood pressures were within the range of 8-19 and 5-12, respectively (Table 1).

Study of the relationship between demographic variables and social support through the ANOVA test indicated that occupation had a significant relationship with the social support received from the spouse (total score). In addition, it revealed that clerks had the highest mean score of social support received from the spouse, compared to other groups (P<0.001). Moreover, based on the results of this test, there was a positive significant correlation between the income level and received social support (total score) (P<0.01) (Table 2).

The independent t-test revealed that there was a significant relationship between gender and social support (total score) (P<0.001) and that male subjects received more social support, compared to female subjects. However, the study findings

Table 1. Mean and standard deviations of the components of social support and systolic and diastolic blood pressures

Components	Minimum	Maximum	Mean	SD	Range of scores
Emotional/informational support	8	40	31.7	9.35	8-40
Tangible support	4	20	17.1	4.39	4-20
Positive social interaction support	3	15	12.1	3.7	3-15
Affectionate support	3	15	12.14	3.7	3-15
Social support (total)	19	95	77.3	20.81	19-95
Systolic blood pressure	8	19	12.38	1.69	-
Diastolic blood pressure	5	12	8.03	1.2	-

Table 2. Relationship of demographic variables with social support and systolic and diastolic blood pressure (n=280)

Demographic characteristics		Number	Social support by the spouse		Systolic blood pressure		Diastolic blood pressure	
			Mean±SD	P	Mean±SD	P	Mean±SD	P
Education	Elementary school	181	76.2±21.3	0.208	12.32±1.74	0.171	8.1±1.2	0.593
	Junior school	47	75.5±22.6		12.58±1.67		7.9±1.1	
	High school	27	80.8±18.3		12.87±1.65		8.3±1.3	
	Academic	25	84.4±13.7		11.92±1.25		7.9±1.13	
Occupation	Housewife	70	64.4±26.2	<0/001	12.6±1.7	0.721	8.22±1.2	0.742
	Clerk	20	85.8±11.3		12.4±1.6		8.22±1.3	
	Laborer	72	83.6±14.32		12.29±1.4		8.06±1.1	
	Self-employed	64	79.8±17.7		12.2±2.0		8.0±1.2	
	Retired	54	79.3±19.3		12.3±1.5		8.0±1.03	
Gender	Male	205	82.2±16.8	<0.001	12.3±1.6	0.368	8.06±1.19	0.678
	Female	75	63.9±24.4		12.5±1.7		8.1±1.2	
Income (per month)	<700,000 Tomans	89	74.3±23.5	0.019	12.36±1.6	0.144	8.1±1.2	0.695
	700,000-1,500,000 Tomans	100	75.3±21.1		12.1±1.6		8.02±1.1	
	>1,500,000 Tomans	91	82.3±16.5		12.64±1.7		8.07±1.16	

Table 3. Correlation coefficients and p-values among systolic and diastolic blood pressures and aspects of social support received from the spouse

Variable		Emotional/informational support	Tangible support	Positive social interaction support	Affectionate support	Social support (Total)
Systolic blood pressure	P	0.015	0.036	0.005	0.046	0.01
	r	-0.146	-0.125	-0.167	-0.119	-0.151
Diastolic blood pressure	P	0.001	0.010	0.013	0.003	0.003
	r	-0.175	-0.154	-0.149	-0.175	-0.179

Table 4. Linear regression results of factors related to the total score of social support

Variable	Unstandardized beta	SD	P	Confidence interval	
				Lower limit	Upper limit
Constant	86.51	7.42	<0.001	71.91	101.19
Occupation	4.25	0.872	<0.001	2.53	5.97
Age	-0.413	0.144	0.004	-0.694	-0.131

showed that demographic variables had no significant relationship with systolic and diastolic blood pressure in participants (P>0.05) (Table 2).

Regarding the relationship of demographic variables with social support and systolic and diastolic blood pressures, the Pearson correlation coefficient showed that age had no significant relationship with social support (total score) (P=0.166, r=0.083), systolic blood pressure (P=0.224, r=0.073), and diastolic blood pressure (P=0.850, r=0.011). Moreover, this test revealed no significant relationship between the duration of the disease and the received social support (total score) (P=0.277, r=0.065), systolic blood pressure (P=0.056, r=0.039), diastolic blood pressure (P=0.114, r=0.056). However, it showed that there was a significant relationship between the components of social support (total score) with the mean systolic (P=0.01) and diastolic blood pressures (P=0.003) (Table 3).

The results of the regression analysis showed that with the increase of age, the social support score decreases and those who had an occupation obtained a higher social support score. Furthermore, income and education variables did not affect the social support scores (Table 4).

Discussion

High blood pressure is a chronic disease that influences all important life events of the patients which can, in turn, affect their quality of life. Social support is associated with disease and health and has protective effects on one's physical health (22). Based on the results of previous studies, social support can shorten the length of the hospital stay, lead to better adaptation to the treatment, and reduce the risk of death in patients with chronic diseases (23). According to the results of a study performed by Taher et al., social support is able to affect the health of hypertension patients (24).

According to the findings of the present study, more than two-thirds of the participants received good social support. While in a study carried out by Omidi et al., (25) only 37.5% of patients received good social support. This inconsistency could be due to the differences in the culture and level of social welfare of the study populations as well as

the data collection tools. Furthermore, in the present study, it was found that social support does not have a significant relationship with age, which is consistent with the results of a study performed by Taher et al. (24) and inconsistent with the results of the study conducted by Omidi et al. (25). In the study performed by Omidi et al., social support had a statistically negative relationship with age.

The results of the present study indicated that the social support received from the spouse had a significant relationship with the variables of occupation, gender, and income level. In addition, it was found that males, clerks, and those with higher income levels obtained a higher mean score regarding the social support received by the spouse. It seems that people with higher income levels receive more social support due to their financial status which provides them with more interactions and communications. Moreover, another reason could be the lack of financial problems in the family environment of such patients. These results are in line with the findings of the study performed by Taher et al. (19, 24). In another research conducted by Heydari et al., it was found that men received more family support, which is consistent with the results of this study. Graham also argues that women are generally the caregivers at home and thereby the intermediates between the family and the formal healthcare system of the society (26).

The results of this study are also consistent with those of the studies of Daniel (27) and Chobanian (28), which emphasize the effect of family members and social support on the control of blood pressure. Moreover, the findings of the studies carried out by Pena et al. (29) and Jafari et al. (30) indicated that family counseling affects blood pressure in women with hypertension which confirms the results of the present study. Another study conducted by OJO (31) found that good family support was an independent predictor of controlled blood pressure so that participants who received family support controlled their blood pressure almost 5 times more than those who did not. Numerous studies in developed countries have shown a strong positive relationship between social support and blood pressure control (32-34). Yang in his study (35) found that poor social support predicted an increase in systolic blood pressure. Besides, another research performed by Coulomb (36) demonstrated a statistically significant relationship between social support and diastolic blood pressure.

Morisky et al. (37) in their study showed that group discussions and participation of family members in the treatment programs of hypertension patients during visits at home play an important role in the control of blood pressure.

The results of this study are consistent with those of a study performed by Izadi Rad et al. (38) and Omidi et al. (25) who emphasized the involvement of family members and social support in the control of systolic and diastolic blood pressures. Omidi et al. (25) in their study revealed that social support had a statistically negative relationship with systolic and diastolic blood pressure, which is consistent with the results of this study.

Moreover, Aragão et al. in their research showed that there was a significant relationship between high blood pressure and the four aspects of social support (tangible, affectionate, positive social interaction, and informational) which is in line with the results of our study (39).

Due to the fact that a major part of the care of these patients is provided for them at home, the family, especially the spouse, has a crucial role in the adaptation of these patients to their disease. Presence of a spouse as someone who increases one's sense of solidarity and belonging can affect one's health and performance, as well as the quality and perception of social support. It seems that the good social support received from the spouse has been able to control the blood pressure of the patients during prehypertension. The reason is that social support increases the self-esteem of the patients and makes them better adhere to self-care behaviors and follow their treatment procedure.

One of the limitations of this study was that it was performed on hypertension patients who referred to healthcare centers and were selected using non-probability and convenience sampling methods that can affect the results of this study. Therefore, the patients who did not go to community health centers were excluded from the study. Moreover, despite the fact that the subjects suffered from hypertension, their mean blood pressure was not high. It can be concluded that perhaps the results of the study cannot be generalized to all hypertension patients.

Moreover, in this study, only the social support provided by the spouse was examined and other factors affecting the social support by other family members or other social networks were not investigated. Furthermore, most of the participants of this study were male which can affect the results of the study as well. It is suggested that similar studies be performed in medical locations, such as hospitals and other clinics while the social support of other family members and the community be also considered using random methods. However, one of the strengths of the study was the sufficiency of the sample size.

Conclusion

The results of this study suggest that the social

support received from the spouse should be considered as a component affecting the level of systolic and diastolic blood pressures in hypertension patients. It is recommended to plan related interventions regarding the importance of social support and self-care behaviors for patients and their family members.

Acknowledgments

This article was based on a research proposal submitted to the Qom University of Medical Sciences (registration code IR.MUQ.REC.1398.132). The Researchers would like to thank all the respected officials of Qom University of Medical Sciences and the healthcare centers as well as all the people who contributed to this research.

Conflicts of interest

The authors declare that there was no conflict of interest in the present study.

References

1. Park JB, Kario K, Wang JG. Systolic hypertension: an increasing clinical challenge in Asia. Hypertens Res. 2015; 38(4):227-36. PMID: 25503845 DOI: 10.1038/hr.2014.169
2. Hazavehei SM, Dashti S, Moeini B, Faradmal J, Shahrabadi R, Yazdi A. Factors related to self-care behaviors in hypertensive individuals based on Health Belief Model. Koomesh. 2015; 17(1):37-44.
3. Bairami S, Fathi Y, Mohammadinasab S, Barati M, Mohammadi Y. Relationship between self-care behaviors and quality of life among hypertensive patients visiting comprehensive health centers in Hamadan, Iran. J Educ Community Health. 2017; 4(1):20-7. DOI: 10.21859/jech.4.1.20
4. Tarkhan M, Saffarinia M, Khosh SP. Effectiveness of group stress inoculation training in systolic and diastolic blood pressure and life quality of hypertension in women. Quaet J Health Psychol. 2012; 1(1):46-58.
5. Perez V, Chang ET. Sodium-to-potassium ratio and blood pressure, hypertension, and related factors. Adv Nutr. 2014; 5(6):712-41. PMID: 25398734 DOI: 10.3945/an.114.006783
6. Palano F, Paneni F, Sciarretta S, Tocci G, Volpe M. The progression from hypertension to congestive heart failure. Recenti Prog Med. 2011; 102(12):461-7. PMID: 22258189 DOI: 10.1701/998.10857
7. Noori R, Alami A, Delshad Noghabi A. Effect of family-centered empowerment model on quality of life in patients with hypertension. J Mazandaran Univ Med Sci. 2015; 25(127):100-7.
8. Hoseini SA. Effect of 15 days cinnamon supplementation on hematocrit and blood pressure response in one session aerobic exercise. Complementary Med J Facul Nurs Midwifery. 2016; 6(3):1571-82.
9. Mehrabian F, Farmanbar R, Mahdavi Roshan M, Omidi S, Aghebati R. Investigating the status of blood pressure and its related factors in individuals with hypertension visiting urban and rural health centers in Rasht city during 2014. J Health. 2017; 8(3):328-35.
10. Jamshidi A, Rozbahani N, Nasirian M. The effect of group discussion on self-care behaviors among hypertensive patients referring to health care centers in Arak City. Sci J Kurdistan Univ Med Sci. 2019; 24(5):56-68.
11. Gangi S, Peyman N, Meysami BS, Esmayly H. Effect of self-care training program on quality of life and health literacy in the patients with essential hypertension. Med J Mashhad Univ Med Sci. 2018; 60(6):792-803.
12. Bazzazian S, Rajab A. Self-efficacy, social support and quality of life in patients with type II diabetes. J Behav Sci. 2012; 3(10):25-39.
13. Cheraghi M, Salavati M, Moghimbeigi A. Association between perceived social support and quality of life in patients with heart failure. Iran J Nurs. 2012; 25(75):21-31.
14. Heidarzadeh M, Ghahremanian A, Hagigat A, Yoosefi E. Relationship between quality of life and social support in stroke patients. Iran J Nurs. 2009; 22(59):23-32.
15. Ezzati E, Anoosheh M, Mohammadi E. The impact of group discussion with high school youth on lifestyle of their parents having high blood pressure. J Kermansha Univ Med Sci. 2013; 16(6):445-56.
16. Tol A, Baghbanian A, Rahimi A, Shojaeizadeh D, Mohebbi B, Majlessi F. The Relationship between perceived social support from family and diabetes control among patients with diabetes type 1 and type 2. J Diabetes Metab Disord. 2011; 10:21.
17. Abrahamian FM, Deblieux PM, Emerman CL, Kollef MH, Kupersmith E, Leeper Jr KV, et al. Health care-associated pneumonia: identification and initial management in the ED. Am J Emerg Med. 2008; 26(6):1-11. PMID: 18603170 DOI: 10.1016/j.ajem.2008.03.015
18. Poormuhamad S, Jalili Z. Related factors to self-care behaviors in elderly with hypertension based on the health belief model in Uremia county. J Gerontol. 2017; 2(1):41-50. DOI: 10.29252/joge.2.1.41
19. Taher M, Abredari H, Karimy M, Rahmati M, Atarod M, Azaepira H. The assessment of social support and self-care requisites for preventing diabetic foot ulcer in diabetic foot patients. J Educ Community Health. 2016; 2(4):34-40. DOI: 10.21859/jech-02045
20. Sherbourne CD, Stewart AL. The MOS social support survey. Soc Sci Med. 1991; 32(6):705-14. PMID: 2035047 DOI: 10.1016/0277-9536(91)90150-b
21. Tamannaeifar MR, Mansourinik A. The relationship between personality characteristics, social support and life satisfaction with university students' academic performance. Quart J Res Plan Higher Educ. 2014; 20(1):149-66.
22. Hwang SW, Kirst MJ, Chiu S, Tolomiczenko G, Kiss A, Cowan L, et al. Multidimensional social support and the health of homeless individuals. J Urban Health. 2009; 86(5):791-803. PMID: 19629703 DOI: 10.1007/s11524-009-9388-x
23. Dunbar SB, Clark PC, Quinn C, Gary RA, Kaslow NJ. Family influences on heart failure self-care and outcomes. J Cardiovasc Nurs. 2008; 23(3):258-65. PMID: 18437068 DOI: 10.1097/01.JCN.0000305093.20012.b8
24. Taher M, Abredari H, Karimy M, Abedi A, Shamsizadeh M. The relation between social support and adherence to the treatment of hypertension. J Educ Community Health. 2014; 1(3):63-9. DOI: 10.20286/jech-010348
25. Omidi A, Mirzaei Z, Khodaveisi M, Moghimbeigi A, Arabi A. The correlation between social support and management of hypertension in menopausal females at the Farshchian hospital, Hamadan. Avicenna J Nurs Midwifery Care. 2017; 25(2):75-83. DOI: 10.21859/nmj-250210
26. Heidari S, Nouri Tajer M, Hosseini F, Inanlou M, Golgiri F, Shirazi F. Geriatric family support and diabetic type-2 glycemic control. Iran J Ageing. 2008; 3(2):573-80.
27. Daniels PR, Kardia SL, Hanis CL, Brown CA, Hutchinson R, Boerwinkle E, et al. Familial aggregation of hypertension treatment and control in the Genetic Epidemiology Network of Arteriopathy (GENOA) study. Am J Med. 2004; 116(10):676-81. PMID: 15121494 DOI: 10.1016/j.amjmed.2003.12.032
28. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, et al. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension. 2003;

42(6):1206-52. PMID: 14656957 DOI: 10.1161/01.HYP.0000107251.49515.c2
29. Garcia-Peña C, Thorogood M, Armstrong B, Reyes-Frausto S, Muñoz O. Pragmatic randomized trial of home visits by a nurse to elderly people with hypertension in Mexico. Int J Epidemiol. 2001; 30(6):1485-91. PMID: 11821367 DOI: 10.1093/ije/30.6.1485
30. Jaffari Varjoshani N, Anoshe M, Ahmadi F, Namadian M. Effect of family counceling on blood pressure in women suffering from hypertension. J Adv Med Biomed Res. 2004; 12:47.
31. Ojo O, Malomo SO, Sogunle PT. Blood pressure (BP) control and perceived family support in patients with essential hypertension seen at a primary care clinic in Western Nigeria. J Family Med Prim Care. 2016; 5(3):569-75. PMID: 28217585 DOI: 10.4103/2249-4863.197284
32. Osamor PE, Owumi BE. Factors associated with treatment compliance in hypertension in southwest Nigeria. J Health Popul Nutr. 2011; 29(6):619-28. PMID: 22283036 DOI: 10.3329/jhpn.v29i6.9899
33. Costa RdS, Nogueira LT. Family support in the control of hypertension. Rev Lat Am Enfermagem. 2008; 16(5):871-6. PMID: 19061024 DOI: 10.1590/s0104-11692008000500012
34. Merz EL, Roesch SC, Malcarne VL, Penedo FJ, Talavera GA, Castañeda SF, et al. Social support, simpatía, and hypertension prevalence in Hispanics/Latinos: findings from the HCHS/SOL Sociocultural Ancillary Study. J Lat Psychol. 2016; 4(3):131-41. PMID: 28804695 DOI: 10.1037/lat0000047
35. Yang YC, Boen C, Mullan Harris K. Social relationships and hypertension in late life: evidence from a nationally representative longitudinal study of older adults. J Aging Health. 2015; 27(3):403-31. PMID: 25253728 DOI: 10.1177/0898264314551172
36. Coulon S, Wilson D. Social support buffering of the relation between low income and elevated blood pressure in at-risk African-American adults. J Behav Med. 2015; 38(5):830-4. PMID: 26156119 DOI: 10.1007/s10865-015-9656-z
37. Morisky DE, Lees NB, Sharif BA, Liu KY, Ward HJ. Reducing disparities in hypertension control: a community-based hypertension control project (CHIP) for an ethnically diverse population. Health Prom Pract. 2002; 3(2):264-75. DOI: 10.1177/152483990200300221
38. Izadirad H, Masoudi GH, Zareban I, Shahraki Poor M, Jadgal K. The effect of educational program based on BASNEF model on women's blood pressure with hypertension. J Torbat Heydariyeh Univ Med Sci. 2013; 1(2):22-31.
39. Aragão EIS, Portugal FB, Campos MR, Lopes CS, Fortes SL. Different patterns of social support perceived and their association with physical (hypertension, diabetes) or mental diseases in the context of primary health care. Cien Saude Colet. 2017; 22(7):2367-74. PMID: 28724018 DOI: 10.1590/1413-81232017227.26712015