Int J Clin Exp Med 2021;14(2):1190-1198
www.ijcem.com /ISSN:1940-5901/IJCEM0123297

Original Article

The effects of high-quality nursing intervention on the clinical efficacy, blood pressure, and heart function of hypertension patients with coronary heart disease complications

Rong Xu, Yun Bao, Zhonglan Chen

Department of Cardiology, Sichuan University of West China Hospital, Chengdu 610041, Sichuan Province, China

Received September 28, 2020; Accepted November 11, 2020; Epub February 15, 2021; Published February 28, 2021

Abstract: Objective: To analyze the effects of high-quality nursing intervention on the clinical efficacy, blood pressure, and heart function of hypertension patients with coronary heart disease (CHD) complications. Methods: From July 2017 to November 2019, 123 hypertension patients with CHD complications treated in our hospital were recruited as the study cohort. They were separated into an observation group (OG) (64 cases) and a control group (CG) (60 cases) depending on the nursing method each patient underwent. In the CG, the patients underwent routine nursing intervention. In the OG, the patients underwent high-quality nursing intervention. The patients' blood pressure, hospitalization times, abnormal electrocardiograms, curative effects of CHD, nursing satisfaction, adverse reactions, and quality of life were compared in both groups. Results: The patients' hospitalization times, abnormal electrocardiogram ratios, and incidences of adverse effects in the OG were significantly lower than they were in the CG. The CHD curative effect , the blood pressure control effect, and the nursing satisfaction in the OG were significantly better than they were in the CG. There was no significant difference in the patients' quality of life scores in the two groups before the nursing. After the nursing intervention, the quality of life scores in the OG were significantly higher than they were in the CG. Conclusion: High-quality nursing intervention can better control the blood pressure, ameliorate the heart function, and improve the quality of life in hypertension patients with CHD complications.

Keywords: Hypertension complicated with coronary heart disease, high-quality nursing intervention, blood pressure, heart function

Introduction

Hypertension is the most common disease seen in cardiovascular departments. In recent years, with the rapid development of the economy and the continuous improvement in people's living standards, the incidence of hypertension cases are also constantly increasing, and the disease has an impact on patients' quality of life and health [1, 2]. At the same time, CHD is also a common cardiovascular disease. Epidemiological statistics show that patients with hypertension have a higher risk of suffering from CHD, a risk 2-3 times higher than in healthy people with normal blood pressure [3, 4]. The two diseases interact with each other, so it is important to take effective measures for hypertension patients with CHD complications [5].

The etiology and symptoms of hypertension complicated with CHD are relatively complex, so it is of more important practical significance to adopt an effective nursing model [6]. It is difficult to effectively promote patients' recovery only through routine nursing. In order to ensure the quality of clinical nursing and improve the efficiency of clinical nursing work to the greatest extent, the nursing intervention plans should be formulated pertinently according to the actual progress of patients' illnesses, and the rationality and standardization of the clinical nursing work should be guaranteed, so as to better improve the prognosis and strengthen the treatment effect for hypertension patients with CHD complications. High-quality nursing provides comprehensive and targeted nursing for patients using psychological nursing, health education, diet nursing, and other methods [7,

8]. Previous studies have shown that high-quality nursing can effectively ameliorate the nursing effect and prognosis of patients, but its nursing effect on patients with hypertension complicated with CHD has not been studied [9].

Therefore, the hypertension patients with CHD complications treated in our hospital were recruited as the main study cohort, and the application effect of high-quality nursing intervention was analyzed to explore the clinical treatment effect of high-quality nursing intervention on hypertension patients with CHD complications.

Materials and methods

Baseline data

From July 2017 to November 2019, 123 hypertension patients with CHD complications treated in Sichuan University of West China Hospital were recruited as the research cohort. According to the nursing method each patient underwent, the patients were divided into the OG (64 cases) and the CG (60 cases). The patients' ages mainly ranged from 37 to 85 years old, and the average age was (62.41± 5.65) years old. In the OG, there were 38 men and 26 women with an average age of (61.78±6.23) years old. In the CG, there were 33 men and 27 women with an average age of (62.53±5.77) years old. The proposed study was submitted to the medical ethics department for review and approval. Both the patients and their guardians were informed of the study. We provided written informed consent forms, and all the patients signed the forms.

Inclusion criteria: All the patients underwent a strict examination and diagnosis, and they met the diagnostic criteria for hypertension complicated with CHD as formulated by the WHO [10].

The exclusion criteria were as follows: Patients with other serious cardiovascular or cerebrovascular diseases, patients with mental disorders, patients with liver or kidney diseases, patients with severe cerebral hemorrhages, and critically ill patients.

Nursing methods

In the CG, the patients underwent routine nursing, including routine medication nursing, blood pressure monitoring, and the taking and nursing of their vital signs. In addition to the routine nursing, the patients in the OG underwent effective high-quality nursing intervention. The specific measures were as follows: (1) Psychological nursing: Health education was given to the patients and their families to make them understand the symptoms and treatment of hypertension. Psychological counseling was given to the patients to strengthen the communication with the patients and to establish a good sense of trust. At the same time, it was necessary to help the patients eliminate their unhealthy psychological emotions and to build confidence in overcoming the disease. (2) Health education: After admission, the nursing staff examined the patients' biochemical indexes, evaluated their conditions, recorded their basic conditions, and diseases in detail, and then established a health record. The nursing staff provided information about hypertension with CHD complications, so the patients could have a better understanding of the pathogenesis, risk factors, and daily self-care of hypertension with CHD complications, and the patients' attention to their diseases was enhanced to make them actively cooperate with the medical staff and improve their treatment compliance. (3) Dietary nursing: The nursing staff urged patients to develop healthy and good eating habits, to adhere to the principle of "three lows and one high" in diet, to eat fish oil and other foods rich in unsaturated fatty acids, and to eat more fruits and vegetables, so as to reduce their serum cholesterol and increase their intestinal fiber, and prevent the patients from getting constipation and other symptoms. The nursing staff also instructed the patients to limit their alcohol, tobacco, and strong tea intake and to drink plenty of water. (4) Exercise nursing: The nursing staff guided the patients in making reasonable exercise plans according to their personal interests and physical qualities. It is best to exercise 3~5 times a week, for about 30 minutes each time. The patient could also choose healthy exercises, swimming or jogging, etc., so that the nursing could be sustained step by step. (5) Medication nursing: The nursing staff clearly explained the scientific and rational use times and the onset times of the antihypertensive and heart-protecting drugs to the patients, guided the patients to learn to observe any adverse reactions, so that patients could see a doctor promptly when any adverse reactions developed. (6) Daily living care: The patients

Table 1. Comparison of baseline data in the two groups

Factor	OG (n=64)	CG (n=60)	t	P
Age	62.41±5.65	61.78±6.23	0.591	0.556
Gender			0.242	0.623
Male	38 (59.38)	33 (55)		
Female	26 (40.63)	27 (45)		
Course of the disease	6.48±3.59	6.79± 3. 62	0.520	0.604
Smoking history			0.395	0.530
Yes	18 (28.13)	20 (33.33)		
No	46 (71.88)	40 (66.67)		
Drinking history			0.273	0.602
Yes	13 (20.31)	10 (16.67)		
No	51 (175.86)	50 (208.33)		
Fasting blood glucose	5.44±0.65	5.41±0.61	0.265	0.792

needed to combine work and rest in their daily lives and to ensure they got adequate sleep and rest to prevent adverse symptoms such as angina pectoris. In their lives, the patients needed to maintain a positive and optimistic attitude, avoid impatience and irritability, and maintain peaceful and good moods.

Outcome measures

During the nursing, each patient's blood pressure was monitored regularly. The patients' hospitalization times and any abnormal electrocardiograms were observed and analyzed. The DBP (diastolic blood pressure) and SBP (systolic blood pressure) were recorded before and after the nursing. The evaluation criteria for the efficacy of the CHD treatment we used was [11]: Markedly effective: nitroglycerin was basically not needed. The angina pectoris symptoms disappeared, and the frequency of the angina pectoris and degree of fatigue of the ISMN consumption decreased by > 80%; Effective: the nitroglycerin dosage was significantly reduced. The angina pectoris symptoms were significantly improved, and the frequency of the angina pectoris and degrees of fatigue of the ISMN consumption were reduced by 50-80%. Ineffective: For the ineffective level, the angina pectoris symptoms were not alleviated, and the attack frequency and ISMN consumption were reduced by < 50%. Referring to the nursing satisfaction survey in Zhang's study [12], a self-made nursing satisfaction questionnaire was made, which mainly included the patients' evaluation of the nursing staff's attitude, basic nursing, psychological nursing, health education, emergency treatment, and emotional support, and the questionnaire had a total possible score of 0-100. The higher the score, the higher the nursing satisfaction. A score of 90-100 points indicated great satisfaction, 80-90 points indicated basically satisfied, 70-80 points indicated relatively satisfied, and less than 70 points indicated dissatisfied. The patients' adverse reactions were compared in the two groups. In the two groups, the patients' quality of life was evaluated using the QOL-C30 core scale of quality of life [13], which mainly scores patients' psychological, physical, social functions, and material life. The higher the score, the higher the quality of life.

Statistical methods

The clinical data of all the patients were statistically analyzed using SPSS 22.0. The measurement data were represented as the "Mean ± sd" and tested using t-tests. The count data were represented as percentages (%) and tested using x^2 tests. A difference was statistically significant when $P < 0.05$.

Results

Comparison of the baseline data in the two groups

Comparing the basic data of the patients in both groups, there was no significant difference in age, gender, course of the disease, smoking history, drinking history, or fasting blood glucose levels between the OG and the CG ($P > 0.05$) (**Table 1**).

Comparison of the CHD therapeutic effects in the OG and CG

After the different intervention methods, the total response rate of the OG was 93.75%, and the total response rate in the CG was 73.33%. The total response rate in the OG was significantly higher than it was in the CG, with a statistically significant difference ($P < 0.05$) (**Table 2**).

Table 2. Comparison of the CHD therapeutic effects in the OG and CG [n (%)]

Grouping	n	Markedly effective	Effective	Ineffective	Total effective
OG	64	24 (37.50)	36 (56.25)	4 (6.25)	60 (93.75)
CG	60	18 (30.00)	26 (43.33)	16 (26.67)	44 (73.33)
χ^2	-	-	-	-	9.542
P	-	-	-	-	0.002

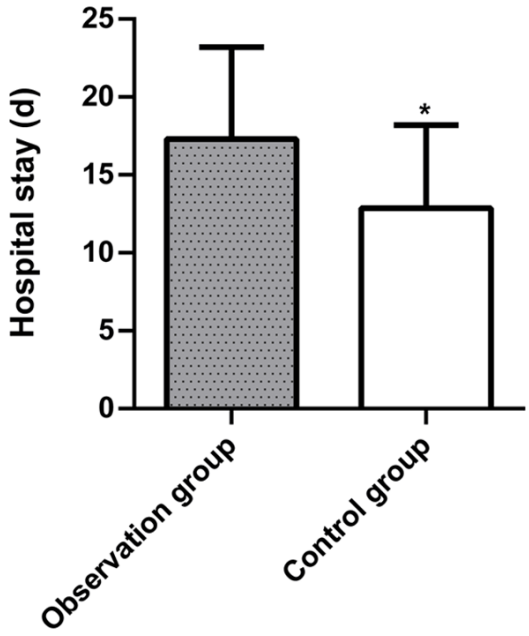

Figure 1. Comparison of the hospitalization times in the OG and CG. The hospitalization times in the OG were significantly shorter than they were in the CG, and the difference was statistically significant between the two groups. Note: Compared with the OG, *P < 0.05.

Comparison of the hospitalization time and abnormal electrocardiogram ratios in the OG and CG

The hospitalization times in the OG were significantly shorter than they were in the CG, and the difference was statistically significant (P < 0.05). There were significantly fewer abnormal electrocardiogram ratios in the OG than there were in the CG, and the difference was statistically significant (P < 0.05) (**Figure 1**; **Table 3**).

Comparison of the blood pressure control in the two groups

After the intervention, the effect of the blood pressure control in the OG was significantly better than it was in the CG, and the difference was statistically significant (P < 0.05) (**Table 4**).

Comparison of nursing satisfaction in the OG and CG

The results revealed that the total nursing satisfaction rate in the OG was 87.5% after the intervention, and in the CG it was 70.00%. The nursing satisfaction of the patients in the OG was higher than it was in the CG, and the difference was statistically significant (P < 0.05) (**Table 5**).

Comparison of the adverse reactions in the two groups

In the two groups, the adverse reactions included diarrhea, constipation, nausea, dizziness, and hypotension, with incidence rates of 6.25%, 9.38%, 7.81%, 10.94%, and 9.38% in the OG and 18.33%, 23.33%, 25.00%, 30.00%, and 30.00% in the CG, respectively. The incidence of adverse reactions in the OG was significantly lower than it was in the CG, and the difference was statistically significant (P < 0.05) (**Table 6**).

Comparison of the quality of life scores in the OG and CG before and after the nursing

Before the nursing, there was no statistically significant difference in the quality of life scores among all the patients (P > 0.05). After the nursing, the quality of life scores in the two groups were significantly higher than they were before the intervention, and the quality of life scores in the OG were significantly higher than they were in the CG, and the difference was statistically significant (P < 0.05) (**Table 7**; **Figure 2**).

Discussion

Hypertension is one of the most common chronic illnesses in our modern society, and it has a serious impact on patients' quality of life [14]. Hypertension can also lead to other serious cerebrovascular diseases, diseases that also threaten patients' lives and safety [15, 16]. Some studies have shown that hypertension and CHD complications often develop at the same time, which makes the combination more threatening [17, 18].

Table 3. Comparison of the abnormal ECG rates in the two groups [n (%)]

Grouping	n	Abnormal ECG	Normal ECG	χ^2	P
OG	64	5 (7.81)	59 (92.19)	6.763	0.009
CG	60	15 (25.00)	45 (75.00)		

Because the initial symptoms of hypertension are not severe, it is not easy to detect. But once a patient is diagnosed, the patient needs to take medication for life. In this case, the patient is also substituted into a nursing misunderstanding. It is generally believed that drug treatment alone can control the development of the disease and the non-drug treatment is neglected. For example, while taking antihypertensive drugs, some patients with hypertension do not refrain from drinking and smoking, which further aggravates their condition and induces serious complications [19-21]. Consequently, it is of great realistic significance to adopt effective nursing measures in the clinical nursing of hypertension patients with CHD complications [22]. As a kind of nursing mode widely used in clinical nursing work, the high-quality nursing intervention can be designed to make targeted high-quality nursing intervention plans for patients, so as to ensure the quality and efficiency of the clinical nursing work and lay a solid foundation for the progression of the related treatment work [23]. In this study, we applied different nursing methods for the patients in both groups. The results showed that the hospitalization times, abnormal electrocardiogram ratios, and the incidences of adverse reactions of the patients in the OG were significantly lower than they were in the CG. High-quality nursing intervention can better improve heart function, control patients' blood pressure, and promote their recovery. In the process of long-term clinical treatment, some patients will have severe negative emotions such as anxiety and worry. These negative emotions will not only reduce the patients' enthusiasm for life and their self-confidence, but they will also involve a variety of stress responses and complications, which will seriously affect the patients' quality of life [24]. In high-quality nursing, the targeted nursing procedures will be developed according to each patient's condition, health education will be carried out regularly with the patient and his/her family members, and previous successful cases will be described to them and their families in detail, so as to eliminate any misunderstandings on the part of the patients regarding their disease knowledge. At the same time, the medical staff should maintain contact with them, improve their psychological stress reactions, instruct the patients to maintain balanced nutrition, inform them that their diet should be light and easy to digest, and instruct the patients to increase the intake of vitamins and high protein to strengthen their immunity. When the patient's condition is stable, the medical staff should guide them to carry out aerobic exercises in the early stage, assist the patients to develop healthy and good living habits, and facilitate their early recovery from the disease. In this research, the quality of life scores were compared in the two groups before and after the nursing. The results showed that the physical function, material life, psychological function, and social function scores in the OG were higher than they were in the CG after the nursing. In the studies of Wang et al. [25], CHD patients' quality of life is generally poor, and their social support is low. Regular assessment of the health status and social support of CHD patients may improve the patients' health status through appropriate personalized intervention. Therefore, high-quality nursing can significantly improve patients' quality of life, improve patients' prognosis, and promote an early recovery from the disease among hypertension patients with CHD complications. Improving heart function and controlling blood pressure are the main treatments for hypertension patients with CHD complications, and these treatment measures need to be closely coordinated with the effective nursing interventions. In this study, the effect of the blood pressure control in patients undergoing high-quality nursing intervention in the OG was significantly better than it was in the CG through a comparative analysis of the blood pressure control and the CHD treatment effect in the two groups after the nursing intervention. At the same time, the results of the nursing work satisfaction questionnaires (communication ability, nursing professionalism, ward environment, and comprehensive evaluation) from the patients in the OG were significantly better than they were in the CG. In the research of Campbell et al. [26], the implementation of nursing outpatient services is feasible in general practice, services which effectively improve the level of the secondary prevention of CHD. Most

Table 4. Comparison of the blood pressure control between the two groups ($\bar{x}$ ± sd)

Grouping	n	Systolic blood pressure		Diastolic blood pressure	
		Before intervention	After intervention	Before intervention	After intervention
OG	64	155.84±11.62	118.26±8.42*	109.59±8.70	75.50±7.97*
CG	60	156.35±10.75	135.83±9.97*	107.34±8.31	86.25±8.54*
t	-	0.253	10.670	1.471	7.352
P	-	0.801	< 0.001	0.144	< 0.001

Note: Compared with the same group before the intervention, *P < 0.05.

Table 5. Comparison of the nursing satisfaction in the OG and CG ($\bar{x}$ ± sd)

Grouping	n	Great satisfaction	Basically satisfaction	Relatively satisfied	Dissatisfied	Total satisfaction
OG	64	34 (53.13)	18 (28.13)	4 (6.24)	8 (12.50)	56 (87.50)
CG	60	16 (26.66)	13 (21.67)	13 (21.67)	18 (30.00)	42 (70.00)
χ^2	-	-	-	-	-	5.723
P	-	-	-	-	-	0.017

Table 6. Comparison of the adverse reactions in the OG and CG [n (%)]

Grouping	n	Diarrhea	Constipation	Nausea	Dizziness	Hypotension
OG	64	4 (6.25)	6 (9.38)	5 (7.81)	7 (10.94)	6 (9.38)
CG	60	11 (18.33)	14 (23.33)	15 (25.00)	18 (30.00)	18 (30.00)
χ^2	-	4.252	4.460	6.763	6.991	8.440
P	-	0.039	0.035	0.009	0.008	0.004

Table 7. Comparison of the quality of life scores in the OG and CG before and after the nursing ($\bar{x}$ ± sd)

Grouping	n	Physical function		Material function		Psychological function		Social function	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
OG	64	43.28±2.87	68.59±2.22*	45.59±4.34	63.39±3.29*	40.71±3.40	58.88±3.30*	46.74±2.19	60.86±4.55*
CG	60	43.51±3.96	52.66±3.25*	44.85±4.13	55.87±2.84*	39.60±3.53	46.84±2.34*	47.33±3.72	57.71±4.31*
t	-	0.372	32.040	0.971	13.580	1.783	23.300	1.084	3.952
P	-	0.711	< 0.001	0.333	< 0.001	0.077	< 0.001	0.280	< 0.001

Note: Compared with the same group before intervention, *P < 0.05.

patients who receive at least one effective secondary prevention component can reduce their future cardiovascular events and mortality by up to a third. The patients in this study were followed up on a regular basis, while we intervened in several aspects such as admission guidance, treatment, nursing intervention, diet, life and discharge guidance. The two nursing strategies are different, but high-quality nursing intervention can improve the clinical efficacy and nursing satisfaction in hypertension patients with CHD complications, so it has an important and practical significance in ensuring the orderly and standardized development of clinical nursing work.

Our research has revealed that high-quality nursing intervention is very beneficial to patients with CHD. However, there are still some deficiencies in the research. First of all, we did not observe the CHD patients' anxiety and depression before and after the nursing. In addition, the application effect of the high-quality nursing strategy in other diseases is still unclear. These shortcomings need to be further supplemented in future research.

To sum up, high-quality nursing intervention can better control blood pressure, ameliorate heart function, and improve quality of life in patients with hypertension complicated with CHD.

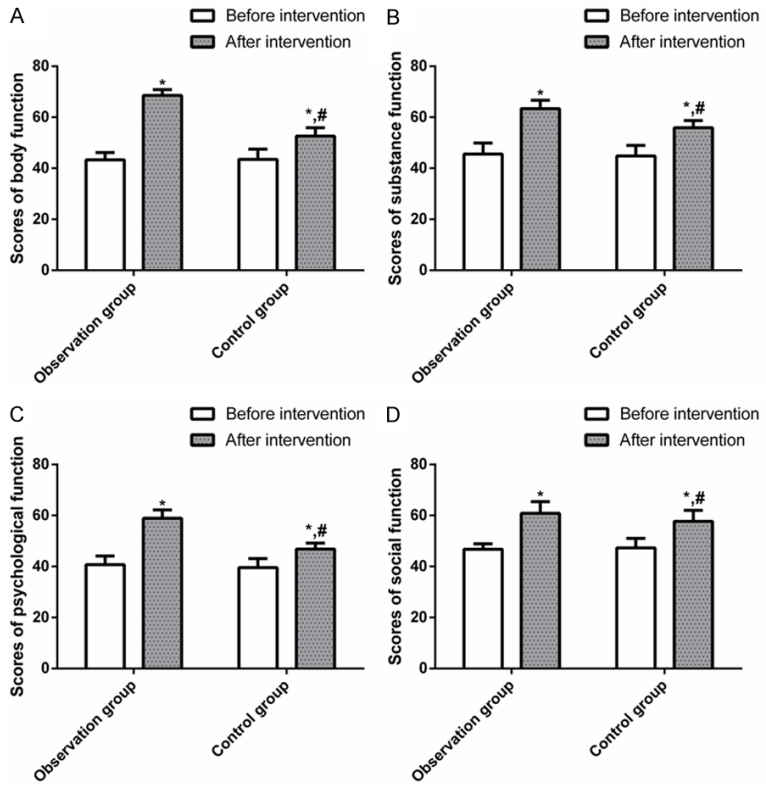

Figure 2. Comparison of the quality of life scores in the OG and CG before and after the nursing. Comparison of physical function scores between the two groups before and after the nursing (A). There were no statistical differences in the physical function scores among all the patients before the nursing. After the nursing intervention, the physical function scores in the two groups were significantly higher than they were before the intervention, and the physical function scores in the OG were significantly higher than they were in the CG. A comparison of the material function scores between the two groups before and after nursing (B). There were no statistical differences in the material function scores of all patients before the nursing. After the nursing intervention, the material function scores in the two groups were significantly higher than they were before the intervention, and the material function scores in the OG were significantly higher than they were in the CG. Comparison of psychological function scores between the two groups before and after nursing (C). There were no statistical differences in the psychological function scores among all the patients before the nursing. After the nursing intervention, the psychological function scores in the two groups were significantly higher than they were before the intervention, and the psychological function scores in the OG were significantly higher than they were in the CG. Comparison of the social function scores between the two groups before and after the nursing (D). There were no statistical differences in the patients' social function scores before the nursing. After the nursing intervention, the social function scores in the two groups were significantly higher than they were before the intervention, and the social function scores in the OG were significantly higher than they were in the CG. Note: Compared with the same group before the intervention, *$P < 0.05$; Compared with the OG after intervention, #$P < 0.05$.

Disclosure of conflict of interest

None.

Address correspondence to: Zhonglan Chen, Department of Cardiology, Sichuan University of West China Hospital, No. 37, Guoxue Lane, Wuhou District, Chengdu 610041, Sichuan Province, China. Tel: +86-028-85422343; E-mail: chenzhonglan2020@163.com

References

[1] Riley E, Chang J, Park C, Kim S and Song I. Hypertension and health-related quality of life (HRQoL): evidence from the US hispanic population. Clin Drug Investig 2019; 39: 899-908.

[2] Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, Chen J and He J. Global disparities of hypertension prevalence and control: a systematic analysis of population-based studies from 90 countries. Circulation 2016; 134: 441-450.

[3] Si YQ, Ding ZJ, Wang WF, Shan WC, Wang RJ, Shi F and Sun WWX. Correlation between elevation of brachial artery pulse pressure increased and coronary heart disease in different genders. Zhonghua Yi Xue Za Zhi 2020; 100: 1816-1819.

[4] Fu M, Zhou D, Tang S, Zhou Y, Feng Y and Geng Q. Left atrial volume index is superior to left atrial diameter index in relation to coronary heart disease in hypertension patients with preserved left ventricular ejection fraction. Clin Exp Hypertens 2020; 42: 1-7.

[5] Yang H, Yang LC, Zhang RT, Ling YP and Ge QG. Risks factors for death among COVID-19 patients combined with hypertension, coronary heart disease or diabetes. Beijing Da Xue Xue Bao Yi Xue Ban 2020; 52: 420-424.

[6] Ramadhani FB, Liu Y, Jing X, Qing Y, Rathnayake AK, Kara WSK and Wu W. Investigating the relevance of nursing caring interventions delivered to patients with coronary artery disease at a teaching hospital in China: a retrospective study. Cureus 2019; 11: e4672.

[7] Gheorghe A, Griffiths U, Murphy A, Legido-Quigley H, Lamptey P and Perel P. The economic burden of cardiovascular disease and hypertension in low- and middle-income countries: a systematic review. BMC Public Health 2018; 18: 975.

[8] Arnett DK, Blumenthal RS, Albert MA, Buroker AB, Goldberger ZD, Hahn EJ, Himmelfarb CD, Khera A, Lloyd-Jones D, McEvoy JW, Michos ED, Miedema MD, Munoz D, Smith SC Jr, Virani SS, Williams KA Sr, Yeboah J and Ziaeian B. 2019 ACC/AHA guideline on the primary prevention of cardiovascular disease: executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol 2019; 74: 1376-1414.

[9] Ido MS, Frankel MR, Okosun IS and Rothenberg RB. Quality of care and its impact on one-year mortality: the georgia coverdell acute stroke registry. Am J Med Qual 2018; 33: 86-92.

[10] Luepker RV, Apple FS, Christenson RH, Crow RS, Fortmann SP, Goff D, Goldberg RJ, Hand MM, Jaffe AS, Julian DG, Levy D, Manolio T, Mendis S, Mensah G, Pajak A, Prineas RJ, Reddy KS, Roger VL, Rosamond WD, Shahar E, Sharrett AR, Sorlie P and Tunstall-Pedoe H; AHA Council on Epidemiology and Prevention; AHA Statistics Committee; World Heart Federation Council on Epidemiology and Prevention; European Society of Cardiology Working Group on Epidemiology and Prevention; Centers for Disease Control and Prevention; National Heart, Lung, and Blood Institute. Case definitions for acute coronary heart disease in epidemiology and clinical research studies: a statement from the AHA council on epidemiology and prevention; AHA statistics committee; world heart federation council on epidemiology and prevention; the European society of cardiology working group on epidemiology and prevention; centers for disease control and prevention; and the national heart, lung, and blood institute. Circulation 2003; 108: 2543-2549.

[11] Tan Z, Shang X, Li L, Tian L, Ma Y, Peng Y and Gao L. Clinical study of isosorbide mononitrate treatment for angina pectoris in coronary heart disease. Exp Ther Med 2013; 5: 1133-1136.

[12] Zhang C and Sun C. Role of clinical nursing path combined with traditional Chinese dialectical nursing in the treatment of knee osteoarthritis. Int J Clin Exp Med 2015; 8: 6171-6178.

[13] Bewarder M, Klostermann A, Ahlgrimm M, Bittenbring JT, Pfreundschuh M, Wagenpfeil S and Kaddu-Mulindwa D. Safety and feasibility of electrical muscle stimulation in patients undergoing autologous and allogeneic stem cell transplantation or intensive chemotherapy. Support Care Cancer 2019; 27: 1013-1020.

[14] Mahjoub H, Le Blanc O, Paquette M, Imhoff S, Labrecque L, Drapeau A, Poirier P, Bedard E, Pibarot P and Brassard P. Cardiac remodeling after six weeks of high-intensity interval training to exhaustion in endurance-trained men. Am J Physiol Heart Circ Physiol 2019; 317: H685-H694.

[15] Shimohina NY, Petrova MM, Savchenko AA, Smertina EG, Ionova VG and Tanashyan MM. Platelet aggregation and endothelial function in patients with complicated essential hypertension (ischemic stroke) and coronary heart disease. Bull Exp Biol Med 2010; 149: 18-20.

[16] Yang FF, Peng F, Xing YB, Yuan M, Ma XC, Li G and Guo HY. Impacts of serum P-selectin on blood pressure control after PCI in patients with coronary heart disease complicated with hypertension. Eur Rev Med Pharmacol Sci 2017; 21: 78-83.

[17] Mandviwala T, Khalid U and Deswal A. Obesity and cardiovascular disease: a risk factor or a risk marker? Curr Atheroscler Rep 2016; 18: 21.

[18] Ettehad D, Emdin CA, Kiran A, Anderson SG, Callender T, Emberson J, Chalmers J, Rodgers A and Rahimi K. Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta-analysis. Lancet 2016; 387: 957-967.

[19] Mattei da Silva ÂT, de Fátima Mantovani M, Castanho Moreira R, Perez Arthur J and Molina de Souza R. Nursing case management for people with hypertension in primary health care: a randomized controlled trial. Res Nurs Health 2020; 43: 68-78.

[20] Li J, Liu F, Liang F, Huang K, Yang X, Xiao Q, Chen J, Liu X, Cao J, Chen S, Shen C, Yu L, Lu F, Wu X, Zhao L, Wu X, Li Y, Hu D, Huang J, Liu Y, Lu X and Gu D. Long-term effects of high exposure to ambient fine particulate matter on coronary heart disease incidence: a population-based Chinese cohort study. Environ Sci Technol 2020; 54: 6812-6821.

[21] Xie H, Wang X, He Y, Huang D, Qu X, Jiang Y, An Y, Zhang S and Zhang M. Association between plasma urotensin II and risk of hypertension: findings from a prospective study. Int J Hypertens 2020; 2020: 3284769.

[22] Fernandez RS, Salamonson Y, Griffiths R, Juergens C and Davidson P. Awareness of risk factors for coronary heart disease following interventional cardiology procedures: a key concern for nursing practice. Int J Nurs Pract 2008; 14: 435-442.

[23] Symon A, McFadden A, White M, Fraser K and Cummins A. Using the quality maternal and newborn care framework to evaluate women's

experiences of different models of care: a qualitative study. Midwifery 2019; 73: 26-34.
[24] Thurston RC and Kubzansky LD. Women, loneliness, and incident coronary heart disease. Psychosom Med 2009; 71: 836-842.
[25] Wang W, Lau Y, Chow A, Thompson DR and He HG. Health-related quality of life and social support among Chinese patients with coronary heart disease in mainland China. Eur J Cardiovasc Nurs 2014; 13: 48-54.
[26] Campbell NC, Ritchie LD, Thain J, Deans HG, Rawles JM and Squair JL. Secondary prevention in coronary heart disease: a randomised trial of nurse led clinics in primary care. Heart 1998; 80: 447-452.