

Original Article

Impact of individualized health management on self-perceived burden, fatigue and negative emotions in angina patients

Chenchen Liu¹, Xinmin Liu², Qun Jiang³, Jianming Liu⁴

¹Department of Nursing, Xiangya Nursing School of Central South University, Changsha, Hunan, China;

²Department of Public Health, Public Health School of Central South University, Changsha, Hunan, China;

³Department of Ophthalmology, The Second Xiangya Hospital of Central South University, Changsha, Hunan, China; ⁴Department of Respiratory Diseases, The Third Xiangya Hospital of Central South University, Changsha, Hunan, China

Received January 23, 2018; Accepted September 23, 2018; Epub March 15, 2019; Published March 30, 2019

Abstract: To explore the effect of individualized health management on angina patients, a total of 98 patients with angina pectoris admitted to our hospital from January 2017 to June 2017 were enrolled. 49 patients were randomly selected as routine group under the guidance of conventional management mode nursing intervention and the other 49 patients were included as individualized group, who received individual health management mode-guided nursing intervention. The patients received self-perceived burden scale, fatigue rating scale, anxiety self-rating scale, and depression self-rating scale questionnaires delivered by the trained investigators at the time of enrollment and after 3 months, respectively. Self-perceived burden, fatigue, anxiety, and depression were compared between the two groups. There were no statistical differences in economic burden, emotional burden, physical burden, scores of each factor of fatigue assessment scale, self-rating anxiety scale, and self-rating depression scale between two groups ($P > 0.05$). After 3 months' intervention, scores of economic burden, emotional burden, physical burden, fatigue assessment scale, self-rating anxiety scale, and self-rating depression scale in both groups were decreased, while lower scores were found in the patients of individualized group than those in the control group at. Meanwhile, the scores of fatigue severity scale, fatigue environment specific scale, fatigue outcome scale, and the effect of fatigue on rest and sleep scale in patients of the individualization group decreased more obviously than those of the control. Individualized health management significantly reduced self-perceived burden, attenuated fatigue, and improved negative emotions on patients with angina pectoris, which may offer basis in further clinical practice.

Keywords: Angina pectoris, individualized health management, self-perceived burden, negative emotion, nursing quality

Introduction

Angina pectoris is one of the most common cardiovascular diseases. The prevalence has been growing, due to the change of people's lifestyle and eating habits [1, 2]. At present, most patients with angina pectoris receive guidance and treatment in cardiology clinics [3, 4]. Since most patients have no medical background, relevant expertise concerning angina patients is often insufficient [5, 6]. Therefore, the intervention of cardiologists plays a decisive role for the management of angina patients. To this end, academics and nurses keep exploring ways to optimize angina management. In recent years, individualized health management be-

comes widely used in various chronic diseases, such as maintenance hemodialysis and rectal cancer, and obtains satisfactory results [7, 8]. In this study, we randomly divided 98 patients with angina pectoris from January to June 2017, in order to explore the effect of individualized health management on angina patients.

Materials and methods

Research objects

A total of 98 patients with angina pectoris undergoing cardiovascular medical treatment from January 2017 to June 2017 in our hospital were enrolled in this study. Inclusion criteria: ①

Individualized health management on angina

Table 1. Clinical information comparison ($\bar{x} \pm s$)

Group	Cases	Male/female	Age (year)	Course of disease (month)
Control	49	28/21	52.68±6.84	3.46±1.05
Individualized group	49	29/20	53.47±6.29	3.52±0.97
T/x ² value		0.042	0.595	0.294
P value		0.838	0.405	0.706

Comply with the International Classification of Diseases Code [ICD-10] on the diagnostic criteria of “angina pectoris”; ② the patients were firstly diagnosed in our hospital; ③ the subjects had clear awareness and were able to communicate effectively with the investigators; ④ the subjects can understand the purpose of this study and the intervention content; ⑤ patients volunteered to participate in this study and signed informed consent. Exclusion criteria: ① Other heart diseases, such as congenital heart disease and rheumatic heart disease; ② Mental illness, such as schizophrenia and depression; ③ Taking antidepressants or anti-anxiety drugs that may affect the mood. The basic clinical data were comparable between two groups ($P > 0.05$, **Table 1**). 49 patients were randomly selected as routine group under the guidance of conventional management mode nursing intervention and the other 49 patients were included as individualized group, who received individual health management mode-guided nursing intervention. The study was reviewed and approved by Ethics Committee of our hospital and all patients participated in the study signed the informed consent.

Methods

Survey methods and tools: The subjects received self-perceived burden scale, fatigue rating scale, anxiety self-rating scale, and depression self-rating scale questionnaires under the unified guidance by the trained investigators at entering the group and after 3 months. The questionnaire contained the following questions: (1) Basic information: gender, age, and course of disease; (2) Self-perceived burden scale: The scale was composed of three dimension-based scale systems (“never, occasionally, sometimes, often, always” scored as 1 to 5 points), including economic burden, emotional burden, and physical burden. 20 points were designated as the dividing line of self-perceived burden [9]; (3) Fatigue assessing scale: The scale consisted of four factors (fatigue severity scale fac-

tor 1, fatigue environment specific scale factor 2, fatigue outcome scale factor 3, and the effect of fatigue on rest and sleep scale factor 4). They were used to assess the degree of fatigue,

the impact of fatigue to specific environmental sensitivity, fatigue result, and the consequences of fatigue on rest and sleep. The score was obtained by the arithmetic mean value after simple sum of factors contained in their entries [10]. (4) Anxiety: The self-rating anxiety scale was used for assessment. The higher the standard score of anxiety self-rating scale, the more serious the anxiety situation was [11]. (5) Depression: The self-rating depression scale was adopted to assess the depression. The higher the standard score of depression self-rating scale, the more severe the depression was [11].

Nursing methods: The subjects in the conventional group received exercise therapy, drug use methods and precautions under the guidance of conventional management methods of nursing interventions. (1) Construction of individualized health management team: a chief nurse, a head of the nurse, and two cardiologists (one chief physician is responsible for the diagnosis and treatment of the disease, one attending physician is responsible for dietary guidance and sports intervention). The duty contained investigating the self-perceived burden, fatigue, negative emotions, nurse mission education content training, micro video content settings and recording, and WeChat communication. (2) Professional training of members: The group leader trained members via WeChat group, department lectures, etc. The training duration was 18 hours. Meanwhile, the leader guided the individual member to learn about angina pectoris theoretical knowledge, individualized health management methods, angina home management; (3) The specific implementation plan: the formation of individual health management program with the participation of patients and their families: ① Establishing a WeChat group including the patients and their families, to perform occasional health education, special education about angina pectoris, individualized health management, emotion management, and sports exercise; ② Setting

Individualized health management on angina

Table 2. Self-perceived burden comparison ($\bar{x} \pm s$, score)

Group	Cases	Economic burden		Emotional burden		Physical burden	
		Enrollment	3 months' intervention	Enrollment	3 months' intervention	Enrollment	3 months' intervention
Individualized group	49	3.52±0.35	2.02±0.30*	15.62±0.68	5.17±0.53*	17.12±0.45	8.02±0.37*
Conventional group	49	3.48±0.33	2.88±0.28*	15.57±0.61	6.99±0.55*	17.16±0.48	8.99±0.43*
T value		0.582	14.670	0.383	16.680	0.426	11.970
P value		0.418	0.000	0.627	0.000	0.574	0.000

*P < 0.05, compared with before enrollment.

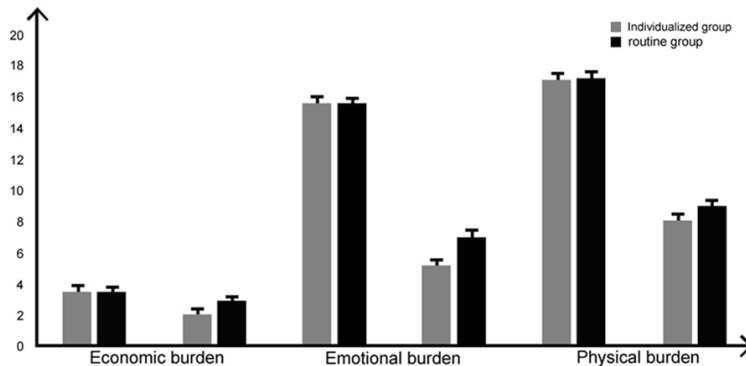


Figure 1. Self-perceived burden comparison.

up the WeChat platform attention number, releasing angina patients emotional management and exercise; ③ WeChat counseling.

Observational index

Observing and recording the self-perceived burden, fatigue, and negative emotions of patients in both groups.

Statistical analysis

All data were compared by t test and χ^2 test on SPSS19.0 statistical package. P < 0.05 was considered as significant difference.

Results

Self-perceived burden comparison

As shown in **Table 2** and **Figure 1**, no statistical differences were found in economic burden, emotional burden, and physical burden between two groups (P > 0.05). After 3 months' intervention, the scores of economic burden, emotional burden, and physical burden were significantly decreased in patients of both groups, compared those before enrollment (P < 0.05). Of note, the scores in the individualized

group were remarkably lower than those in the control group.

Fatigue assessing scale comparison

As shown in **Table 3** and **Figure 2**, there were no statistical differences of fatigue assessment scales between two groups (P > 0.05). After 3 months' intervention, the scores on fatigue assessment scale were decreased in both group compared to those before enrollment

(P < 0.05), while values were even reduced in patients from individualized group, compared control group, indicating the intervention improved the manifestation of the disease.

Self-rating anxiety and depression scale comparison

We then evaluate the self-rating anxiety and depression scale between two groups. As shown in **Table 4** and **Figure 3**, there were no statistical differences between two groups before enrollment (P > 0.05). After 3 months' intervention, the symptoms of anxiety and depression were remarkably improved in both groups. Moreover, favorable effect in patients of individualized group was shown compared to that in the control group regarding to the reduction of scores.

Discussion

The rapid development of information technology has brought new approaches to health care services [12, 13]. At present, WeChat has been employed in almost every aspect of life. WeChat has become the main force of the "new generation" by its advantages of timeliness, convenience, diversification, and safety. It has been

Individualized health management on angina

Table 3. Fatigue assessing scale comparison ($\bar{x} \pm s$, score)

Group	Cases	Factor 1		Factor 2		Factor 3		Factor 4	
		Enrollment	3 months' intervention	Enrollment	3 months' intervention	Enrollment	3 months' intervention	Enrollment	3 months' intervention
Individualized group	49	4.78±0.32	2.02±0.34*	5.61±0.70	2.15±0.69*	4.11±0.44	2.01±0.39*	4.09±0.36	2.01±0.33*
Conventional group	49	4.79±0.36	3.38±0.31*	5.63±0.82	2.96±0.61*	4.19±0.45	2.97±0.46*	4.05±0.33	2.68±0.30*
T value		0.145	20.691	0.130	6.157	0.890	11.027	0.573	10.516
P value		0.855	0.000	0.870	0.000	0.110	0.000	0.427	0.000

*P < 0.05, compared with before enrollment.

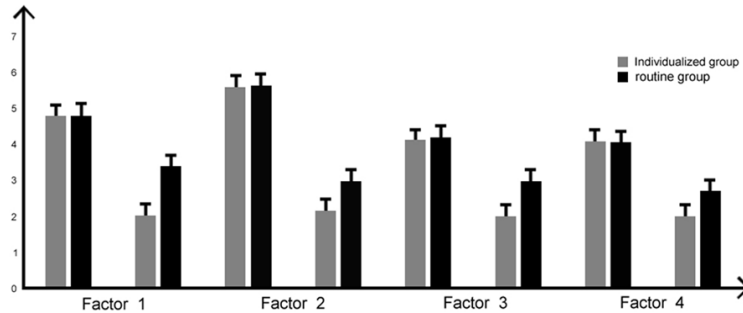


Figure 2. Fatigue assessing scale comparison.

now widely used in the continuation nursing for major diseases [14, 15]. Previous evidence showed WeChat presented as the media of health education and physical examination extension of young patients with acute myocardial infarction [16, 17]. WeChat applied in the intervention of various types of chronic disease is characterized as simple, fast response, low cost, and no place restriction. However, due to the specificity of each disease, the full use of WeChat in medical nurse services requires to be further investigated.

Up to now, no personalized health management model based on WeChat media has been adopted to provide nursing interventions for angina patients. Therefore, we for the first time applied WeChat platform for patients with angina pectoris to perform individualized health management from January 2017 to June 2017 in our hospital. Our results showed that 3 months' intervention improved various indicators of patients, including economic burden, emotional burden, physical burden, fatigue assessment scale, self-rating anxiety scale, and self-rating depression scale. Jing Wang [18] selected 127 patients who received maintenance hemodialysis treatment (Autologous arteriovenous fistula for the dialysis channel) in Beijing Chaoyang Hospital affiliated Capital Medical University from February 2012 to January 2015 to com-

pare dialysis interval weight gain, patient sensory and blood pressure before and after individualized health management intervention. The results demonstrated that dialysis weight gain, thirst, salivary resting flow rate, taste sensitivity, and blood pressure control were dramatically improved after intervention. Thus, Jing Wang concluded that the application of individualized health

management to the patients with maintenance hemodialysis can favor the compliance of water and sodium control behaviors and effectively optimize patient's autonomic feeling and blood pressure control. The management of angina pectoris may be related to the following factors: The authors set up an individualized health management team to provide professional guidance to the angina patients through training the team members' nursing theory and skills. The authors chose WeChat as a communication medium for individual health management due to its extensive use [19, 20]. This study provides WeChat video education, such as emotional management and exercise training. Moreover, it supervises and manages the implementation of care measures at specific times and provides one-on-one instruction through WeChat to ensure that all medical interventions are put in place. At the same time, angina patients can be counseled through the WeChat group for free consultation and personalized health management mode guidance on difficult problems in the nursing process, which can greatly reduce the burden of self-feeling and improves the negative emotions via the application of emotional management such as general muscle relaxation training. However, this study only focused on subjective feeling index. Further improvement is still needed to observe the application of individualized health management on the angina patients.

Individualized health management on angina

Table 4. Self-rating anxiety and depression scale comparison ($\bar{x} \pm s$, score)

Group	Cases	Self-rating anxiety score		Self-rating depression score	
		Enrollment	3 months' intervention	Enrollment	3 months' intervention
Individualized group	49	58.47±2.64	41.15±1.66*	56.34±2.46	43.14±1.98*
Conventional group	49	58.12±2.48	38.23±1.58*	56.48±2.12	39.45±1.89*
T value		0.676	8.919	0.302	9.437
P value		0.324	0.000	0.698	0.000

*P < 0.05, compared with before enrollment.

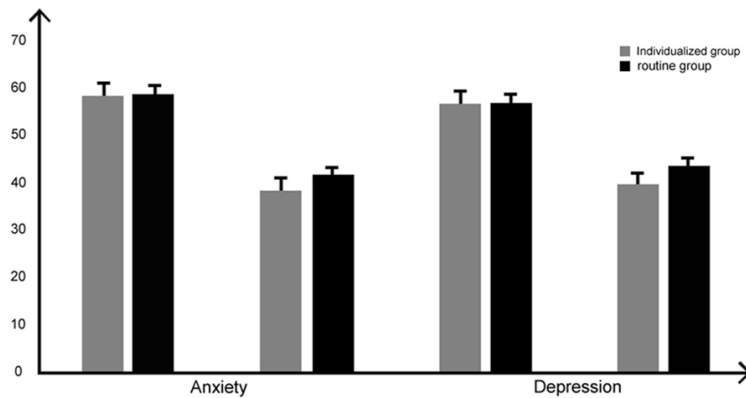


Figure 3. Self-rating anxiety and depression scale comparison.

In conclusion, individualized health management significantly reduced self-perceived burden, attenuated fatigue, and improved negative emotions on patients with angina pectoris, which highlights the clinical benefits in the future therapy of angina.

Acknowledgements

This work was supported by Hunan Science and Technology Office of China Scientific Research Project (Grant Contract No: 2018JJ2618).

Disclosure of conflict of interest

None.

Address correspondence to: Dr. Qun Jiang, Department of Ophthalmology, The Second Xiangya Hospital of Central South University, No. 139 People's Middle Road, Changsha 410011, China. Tel: +86-731-88618452; Fax: +86-731-88618452; E-mail: tuixing7059649@163.com

References

[1] Mygind ND, Michelsen MM, Pena A, Frestad D, Dose N, Aziz A, Faber R, Host N, Gustafsson I, Hansen PR, Hansen HS, Bairey Merz CN, Kas-

trup J, Prescott E. Coronary microvascular function and cardiovascular risk factors in women with angina pectoris and no obstructive coronary artery disease: the ipower study. *J Am Heart Assoc* 2016; 5: e003064.

[2] Will JC, Yuan K, Ford E. National trends in the prevalence and medical history of angina: 1988 to 2012. *Circ Cardiovasc Qual Outcomes* 2014; 7: 407-13.

[3] Beatty AL, Spertus JA, Whooley MA. Frequency of angina pectoris and secondary events in patients with stable coronary heart disease (from the heart and soul study). *Am J Cardiol* 2014; 114: 997-1002.

[4] Giavarini A, de Silva R. The role of ivabradine in the management of angina pectoris. *Cardiovasc Drugs Ther* 2016; 30: 407-417.

[5] Zhang D, Wu J, Liu S, Zhang X, Zhang B. Salvianolate injection in the treatment of unstable angina pectoris: a systematic review and meta-analysis. *Medicine (Baltimore)* 2016; 95: e5692.

[6] Gao Z, Wei B, Qian C. Puerarin injection for treatment of unstable angina pectoris: a meta-analysis and systematic review. *Int J Clin Exp Med* 2015; 8: 14577-94.

[7] Jo IY, Kim WJ, Park HC, Choi HY, Lee JE, Lee SM. Effect of personalized nutritional counseling on the nutritional status of hemodialysis patients. *Clin Nutr Res* 2017; 6: 285-295.

[8] Binefa G, Rodríguez-Moranta F, Teule A, Medina-Hayas M. Colorectal cancer: from prevention to personalized medicine. *World J Gastroenterol* 2014; 20: 6786-808.

[9] Takahashi Y, Edmonds GW, Jackson JJ, Roberts BW. Longitudinal correlated changes in conscientiousness, preventative health-related behaviors, and self-perceived physical health. *J Pers* 2013; 81: 417-27.

[10] Berger AM, Mooney K, Alvarez-Perez A, Breitbart WS, Carpenter KM, Cella D, Cleeland C,

Individualized health management on angina

- Dotan E, Eisenberger MA, Escalante CP, Jacobsen PB, Jankowski C, LeBlanc T, Ligibel JA, Loggers ET, Mandrell B, Murphy BA, Palesh O, Pirl WF, Plaxe SC, Riba MB, Rugo HS, Salvador C, Wagner LI, Wagner-Johnston ND, Zachariah FJ, Bergman MA, Smith C; National comprehensive cancer network. Cancer-related fatigue, version 2.2015. *J Natl Compr Canc Netw* 2015; 13: 1012-39.
- [11] Möller HJ, Bandelow B, Volz HP, Barnikol UB, Seifritz E, Kasper S. The relevance of 'mixed anxiety and depression' as a diagnostic category in clinical practice. *Eur Arch Psychiatry Clin Neurosci* 2016; 266: 725-736.
- [12] Douglas HE, Georgiou A, Tariq A, Prgomet M, Warland A, Armour P, Westbrook JI. Implementing information and communication technology to support community aged care service integration: lessons from an Australian aged care provider. *Int J Integr Care* 2017; 17: 9.
- [13] Garavand A, Mohseni M, Asadi H, Etemadi M, Moradi-Joo M, Moosavi A. Factors influencing the adoption of health information technologies: a systematic review. *Electron Physician* 2016; 8: 2713-2718.
- [14] Zhang X, Wen D, Liang J, Lei J. How the public uses social media wechat to obtain health information in china: a survey study. *BMC Med Inform Decis Mak* 2017; 17: 66.
- [15] He C, Wu S, Zhao Y, Li Z, Zhang Y, Le J, Wang L, Wan S, Li C, Li Y, Sun X. Social media-promoted weight loss among an occupational population: cohort study using a wechat mobile phone app-based campaign. *J Med Internet Res* 2017; 19: e357.
- [16] Li D, Ji H, Zhao B, Xu C, Xia W, Han L, Yu D, Ju Y, Jin C. Therapeutic effect of ulinastatin on pulmonary fibrosis via downregulation of TGF-beta1, tnfa and nfkb. *Mol Med Rep* 2018; 17: 1717-1723.
- [17] Weil AR. Market concentration. *Health Aff (Millwood)* 2017; 36: 1527.
- [18] Wang HH, Wen EQ, Wei JR. Research advances in the relationship between childhood malnutrition and gut microbiota. *Zhongguo Dang Dai Er Ke Za Zhi* 2016; 18: 1188-1193.
- [19] Lyu KX, Zhao J, Wang B, Xiong GX, Yang WQ, Liu QH, Zhu XL, Sun W, Jiang AY, Wen WP, Lei WB. Smartphone application wechat for clinical follow-up of discharged patients with head and neck tumors: a randomized controlled trial. *Chin Med J (Engl)* 2016; 129: 2816-2823.
- [20] Xu X, Lin Q, Zhang Y, Zhu R, Sharma M, Zhao Y. Influence of we chat on sleep quality among undergraduates in chongqing, China: a cross-sectional study. *Springerplus* 2016; 5: 2066.