Original Article

Effect of individualized holistic nursing on the development of cardiac rehabilitation exercise compliance and quality of life in patients with coronary heart disease

Chunxia Zhou[1*], Na Zhao[1], Caizhe Ci[2], Xiuguo Zhang[3]

Abstract

Background: Coronary heart disease (CHD) is one of the major heart disease which is characterized by coronary artery blockage or stenosis caused by atherosclerosis, which results in myocardial hypoxia, ischemia, or necrosis. Individualized holistic nursing has achieved considerable success in curing the disease.

Objective: The aim of this research is to examine the impact of individualised holistic nursing on the development of cardiac rehabilitation exercise compliance and function in patients with CHD.

Methods: From January 2019 to January 2021, 100 patients with CHD who underwent cardiac rehabilitation exercise at the hospital's rehabilitation facility were randomly split into 50 cases in the control group and 50 cases in the observation group. The observation group and the control group were analysed for the following parameters: degree of knowledge, health education, psychological intervention, behaviour intervention, and discharge guidance. The control group was given regular nursing, whereas the observation group received personalised overall nursing. The two groups received continuous nursing for 6 months. The two groups' compliance with cardiac rehabilitation activity was evaluated; WHOQOL-BREF score; GSES score; Satisfaction.

Results: Compared with the control group (70.00%), the compliance of cardiac rehabilitation exercise in the observation group (92.00%) was significantly higher ($P < 0.05$); Compared with before nursing, the WHOQOL-BREF score of the two groups improved considerably after nursing, and the increase range of the observation group was considerably greater than that of the control group ($P < 0.05$); Compared with before nursing, the GSEs score of the two groups increased considerably after nursing, and the increase range of the observation group was considerably greater than that of the control group ($P < 0.05$); Compared with the control group (82.00%), the nursing satisfaction of the observation group (96.00%) was significantly higher ($P < 0.05$).

Conclusion: Individualized holistic nursing may successfully recover CHD patients' compliance and livability through cardiac rehabilitation exercise, increase patients' self-efficacy and nursing satisfaction, and has a high clinical reference value. [*Ethiop. J. Health Dev.* 2022; 36(3): 00-00]

Keywords: Individualized holistic nursing; Coronary heart disease; Cardiac rehabilitation exercise; Compliance; Quality of life

Introduction

Coronary heart disease (CHD) is a one of the heart disorder characterized by coronary artery occlusion or stenosis caused by atherosclerosis, which leads to myocardial hypoxia, ischemia or necrosis. The main clinical manifestations are chest tightness, chest pain, and aggravation after activities, which seriously threaten human health and life safety [1]. Percutaneous coronary intervention (PCI) is one of the commonly used approaches for the clinical action of CHD. PCI is a non-surgical, invasive treatment that relieve coronary artery constriction or blockage and increase blood flow to ischemic tissue. It's not only has significant efficacy, but also has the advantages of small trauma, high safety and simple operation [2]. However, some studies show that after PCI treatment, the prognosis of some patients is not ideal, and they need to receive cardiac rehabilitation exercise, but in

[1] Cardiovascular Department II, The Third Hospital of Hebei Medical University, China;
[2] Cardiovascular Department I, The Third Hospital of Hebei Medical University, China;
[3] Nursing Department, The Third Hospital of Hebei Medical University, China;
Corresponding author email: zhouchunxia000@163.com

the actual implementation process, patients' compliance is low, which has a direct influence on the condition of rehabilitation and life. Therefore, certain nursing intervention should be given to them [3, 4]. At present, routine care such as medication guidance, diet guidance and health education is mainly used for CHD patients, which is simple and easy to operate. However, due to the large differences among patients, the application effects are not the same [5]. As an emerging nursing mode, individualized holistic nursing not only takes into account the patients' own factors, but also gives care to the patients' specific conditions and needs, and carries out targeted nursing for physical factors, psychological state, environment, etc. [6]. Individualized holistic nursing has achieved significant success in the nursing of many clinical conditions at present moment, which gives patients confidence and builds mental fortitude to face the disease [7,8]. Several studies have shown the effectiveness of individualised holistic nursing in the therapy of CHD patients. However, further research is needed on the degree of knowledge, health education, psychological intervention, behaviour intervention, and discharge advice. These parameters have never been studied previously. Therefore, the purpose of this research is mainly to explore the impact of individualized holistic nursing on compliance and livability of cardiac rehabilitation exercise for CHD patients, aiming to provide more reference ideas for clinical nursing of CHD.

2. Data and methods

2.1 General Information

The test subjects were 100 CHD patients who received cardiac rehabilitation exercise at our hospital's rehabilitation facility between January 2019 and January 2021. They were split into 50 patients in the control group and 50 patients in the observation group using the random number table technique. Based on this process, the control group received regular nursing, whereas the observation group received customised holistic nursing. The Ethics Committee permitted this study.

2.2 Inclusion and exclusion criteria

Inclusion criteria: ① All patients were analyzed with CHD by coronary angiography and computed tomography angiography; ② Patients with stable condition; ③ Patients with normal cognitive function and mental health; ④ Patients with normal liver and kidney functions; (5) Patients or members of their families sign informed consent forms.

Exclusion criteria: ① Patients with bleeding tendency; ② Patients with cardiac function grade iii or above; (3) Patients complicated with malignant tumors, blood system diseases, autoimmune diseases, endocrine diseases, acute and chronic infectious diseases, etc.; ④ Patients with severe arrhythmia; ⑤ Patients who can tolerate cardiac rehabilitation exercise; ⑥ Patients with active disease or physical disability.

2.3 Methods

The control group received routine nursing: that is, health education, to explain the disease related knowledge, cardiac rehabilitation exercise precautions, and at the same time to their diet, medication, discharge and other guidance.

Observation group in the control group on the base of individualized holistic nursing: ① Comprehensive evaluation: by understanding the degree of knowledge of patients, learning ability, diet and living habits to develop specific nursing measures. (2) Health education: to introduce the matters for attention of cardiac rehabilitation exercise to patients. Before carrying out cardiac rehabilitation exercise every time, first evaluate the general function, psychology, exercise tolerance, exercise risk of patients, rehabilitation exercise should be moderate, should not make patients feel tired; At the same time to the patient medication and diet guidance; Health education can be carried out through health lectures, education videos, health manuals and oral education. (3) Psychological intervention: to understand the causes of negative emotions in patients, and for its effective intervention, such as the establishment of a good relationship with patients, patient, warm, cordial communication with patients, so as to eliminate patients' anxiety, tension, helplessness and other negative emotions; At the same time, maintain communication with patients' families, understand the psychological changes of patients, timely give targeted care, so that patients actively face the disease. (4) Behavior intervention: to evaluate the recovery of patients, to explain the necessity of cardiac rehabilitation exercise, and then guide them to carry

out cardiac rehabilitation exercise, pointing out the patient's incorrect place in the training process and helping them to correct. ⑤ Discharge guidance: 1 day before the discharge of patients to their families to explain the matters needing attention after discharge, told them to review on time; At the same time, explain the possible situation and countermeasures; The specific recovery of patients was learned through telephone follow-up and home follow-up, and the deficiencies and correction methods were pointed out. The follow-up frequency was once a week for the first 2 months and once a month for the home follow-up, and once a month for the next 1 month and once a month for the home follow-up. Two groups of patients continued to care for 6 months.

2.4 Observation Indicators

(1) Compliance of cardiac rehabilitation exercise: The compliance of cardiac rehabilitation exercise in the two groups of patients following intervention was investigated using a hospital-made scale. Complete compliance: patients could complete the exercise completely actively; More compliance: under the reminder of medical staff and family members can successfully complete the exercise; Non-compliance: reducing exercise routines or refusing to exercise even after taking various measures; Total compliance = full compliance + more compliance. ②The World Health Organization's Quality of Life-Briefing (WHOQOL-BREF) [9] was used to score the quality of life of patients in the two groups before and after nursing. The higher the score, the better the quality of life; (3) Self-efficacy: The general self Scale (GSES) [10] was utilized to assess individuals' self-efficacy before and after nursing in two groups, which was split into health knowledge, self-concept, self-care responsibility, and self-care abilities. The higher the score, the better the self-efficacy of patients. ④ Satisfaction: the hospital self-made scale was used to collect the two groups of patients' satisfaction with care, which was divided into very satisfied, satisfied, dissatisfied, total satisfaction = very satisfied + satisfied.

2.5 Statistical methods

For statistical analysis, SPSS 18.0 was used. The measurement data were reported as mean standard deviation (s), and the test statistic t was done. Enumeration data were represented as cases (N) or percentages (%), with a value of 2 utilised for testing. The variation was statistically significant at $P<0.05$.

3 Results

3.1 Assessment of general data between the two groups

The comparison of sex, age, duration of illness, TYPE of CHD, and grading of cardiac function between the two groups ($P<0.05$) revealed no statistical significance, and the two groups were comparable, as indicated in **Table 1**.

3.2 Assessment of cardiac rehabilitation exercise compliance between the two groups

Table 2 shows that adherence with cardiac rehabilitation exercise was considerably higher in the observation group than in the control group, with statistical significance ($P<0.05$).

3.3 Assessment of the two groups' quality of life before and after nursing

There were no statistically significant changes in whoQOL-BREF scores among the first two groups ($P>0.05$); after nursing, whoQOL-BREF scores in both groups increased substantially, with the increase in the observation group being significantly greater than that in the control group ($P<0.05$), as revealed in **Table 3** and **Figure 1**.

3.4 Comparison of self-efficacy between the two groups before and after nursing

In the first two nursing groups, no statistically significant ($P>0.05$) difference in GSES ratings was found; however, after nursing, both groups' GSES scores risen dramatically, with the observation group's increase being significantly greater than the control group's, with statistical significance ($P<0.05$), as shown in **Table 4**.

Table 1. Evaluation of general information from the two patient groups

General data (n=50) (n=50)		Control group（n=50）	Observation group（n=50）	t/χ^2	*P*
Gender [n (%)]	Male	27（54.00）	26（52.00）	0.023	0.887
	Female	23（46.00）	24（48.00）		
Average age year）		59.19±6.70	58.78±6.93	0.372	0.708
Mean course of disease (years)		3.86±3.52	4.07±3.38	0.459	0.639
CHD type [n(%)]	Myocardial infarction,	25（50.00）	25（50.00）	0.473	0.492
	Stable angina	13（26.00）	14（28.00）		
	Unstable angina	12（24.00）	11（22.00）		
Cardiac function classification [N (%)	I	32（64.00）	33（66.00）	0.454	0.501
	II	13（26.00）	13（26.00）		
	III	5（10.00）	4（8.00）		

Table 2. Assessment of cardiac rehabilitation exercise compliance between the two groups [n(%)]

Compliance More compliant	Control group（n=50）	Observation group（n=50）	χ^2	*P*
Complete compliance	27（54.00）	16（32.00）	-	-
More compliance	19（38.00）	19（38.00）	-	-
Non-compliance	4（8.00）	15（30.00）	-	-
Total	46（92.00）	35（70.00）	6.948	0.006

Table 3. Assessment of the two groups' quality of life before and after nursing（$\bar{x}$±s,score）

Project		Control group（n=50）	Observation group (n=50）
The environment	Before treatment	13.56±4.68	13.95±3.94
	After treatment	14.98±4.69*	18.70±5.75*#
Social relations	Before treatment	14.46±4.30	14.66±4.18
	After treatment	15.94±3.97*	18.14±4.90*#
Psychological field	Before treatment	13.62±3.05	13.26±3.26
	After treatment	15.48±4.18*	18.90±5.85*#
Physical field	Before treatment	14.46±3.30	14.56±3.53
	After treatment	15.74±4.29*	19.26±6.47*#

Note: * indicates the comparison between groups before and after nursing, *P<0.05; # indicates comparison with control group, #P<0.05.

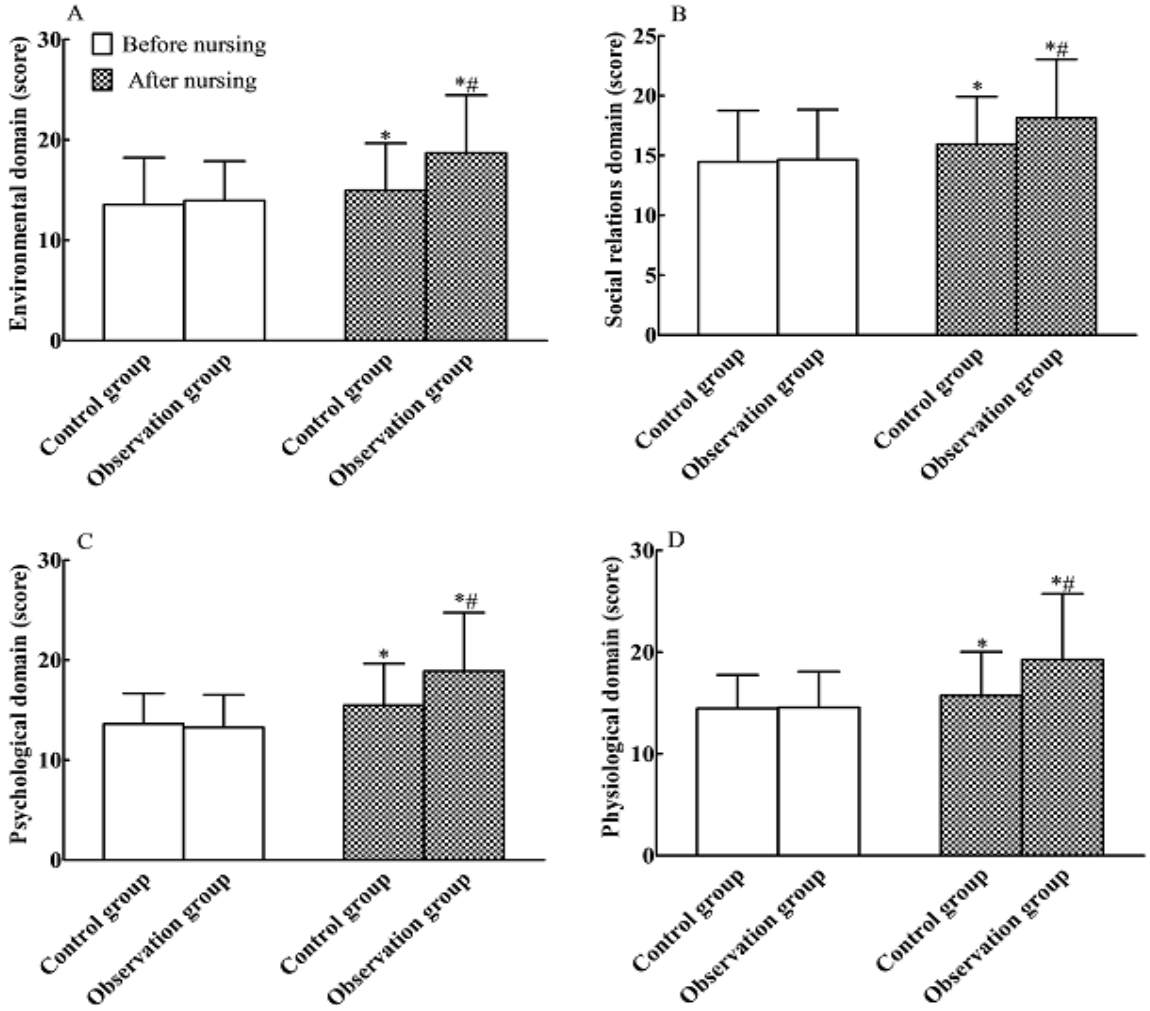

Figure 1. Assessment of the two groups' life quality before and after nursing

Note: * represents the comparison between the same group before and after nursing, *$P < 0.05$; # Compared with the control group, $^{\#}P < 0.05$

3.4 Comparison of self-efficacy between the two groups before and after nursing

In the first two nursing groups, no statistically significant (P>0.05) difference in GSES ratings was found; however, after nursing, both groups' GSES scores risen dramatically, with the observation group's increase being significantly greater than the control group's, with statistical significance (P<0.05), as shown in **Table 4.**

Table 4. Assessment of self-efficacy before and after nursing in the two groups（$\bar{x}\pm s$，score）

Project		Control group（n=50）	Observation group（n=50）
Health knowledge	Before treatment	41.46±1.12	41.72±1.00
	After treatment	48.85±1.46*	53.03±3.82*#
Self concept	Before treatment	17.58±1.60	17.31±1.73
	After treatment	22.37±2.57*	26.83±2.78*#
Self-care sense of responsibility	Before treatment	13.06±1.24	13.32±1.16
	After treatment	17.99±2.91*	23.06±2.81*#
Since the nursing	Before treatment	19.15±3.38	18.96±3.40

skills	After treatment	25.93±4.19*	30.82±4.46*#

Note: * indicates the comparison between groups before and after nursing, *P<0.05; # indicates comparison with control group, #P<0.05.

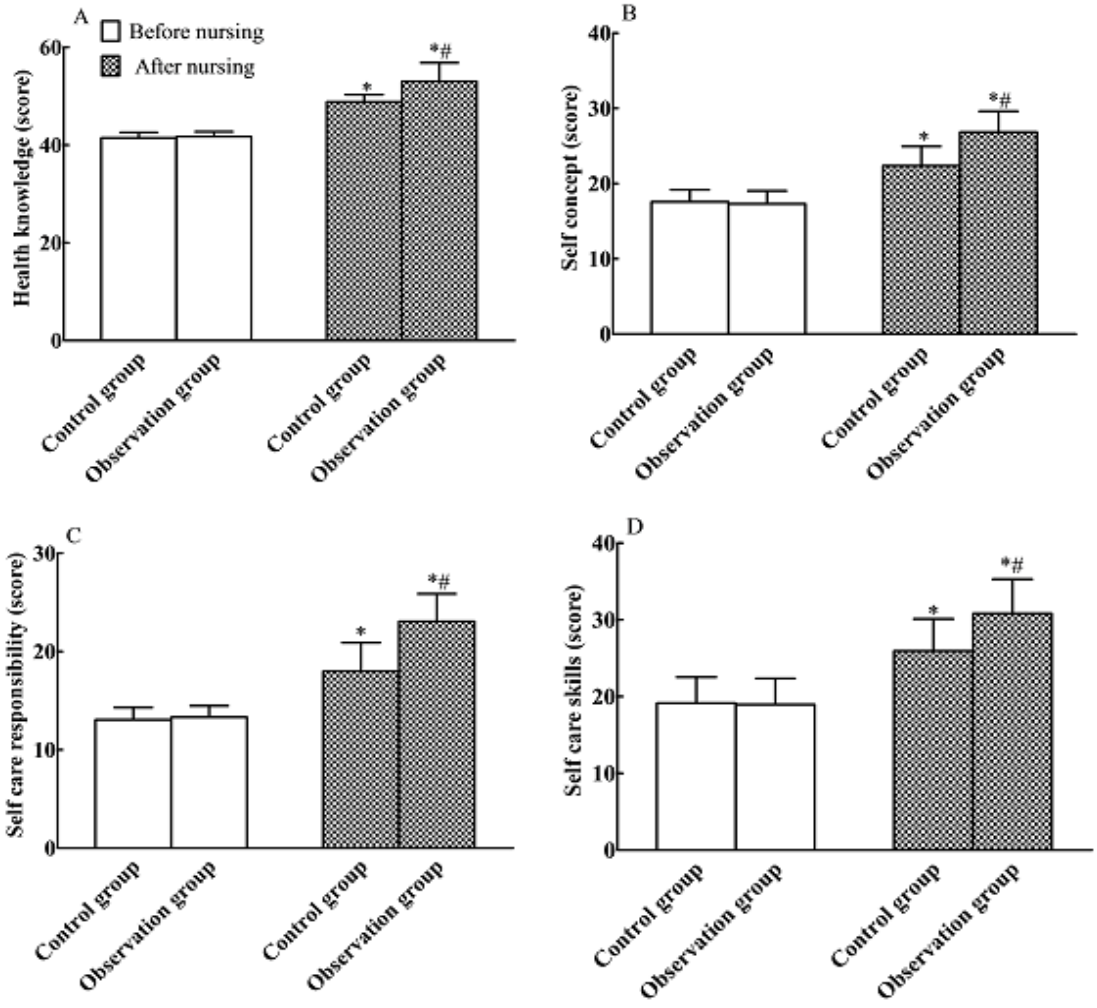

Figure 2. Assessment of self-efficacy between the two groups before and after nursing

Note: shows a comparison of the same group before and after nursing, * $P < 0.05$; # Compared with the control group, $^{\#}P < 0.05$.

3.5 Assessment of nursing satisfaction between the two groups

The observation group's nurse satisfaction was substantially greater than the control group's, with a statistically significant difference (P<0.05), as indicated in **Table 5.**

Table 5. Assessment of nursing satisfaction between two groups of patients [n (%)]

Satisfaction	Control group（n=50）	Observation group（n=50）	χ^2	*P*
Very satisfied	19（38.00）	31（62.00）	-	-
Satisfied	22（44.00）	17（34.00）	-	-
Dissatisfied	9（18.00）	2（4.00）	-	-
Total	41（82.00）	48（96.00）	6.534	0.018

Discussion

CHD is an ischemic heart disease, clinically characterized by high risk and sudden death rate. It is most common in people over 40 years old, and gradually becomes younger in recent years [11]. Currently, surgery is mainly used to treat CHD, but cardiac rehabilitation is also required, including exercise training, rehabilitation assessment, behavior and diet, which can successfully develop the cardiac structure and function of PATIENTS with CHD [12]. However, with the long-term clinical practice, the compliance of CHD patients may gradually decrease

due to the extension of the recovery time and the improvement of their condition, which requires high clinical attention [13]. Conventional nursing is not targeted, it is difficult to achieve the expected clinical effect. Individualized holistic nursing emphasizes people-oriented, and provides patients with required nursing care from various aspects such as spiritual, cultural, social and psychological aspects [14]. However, few research have investigated at its influence on cardiac rehabilitation exercise compliance and livability in CHD patients.[15] Lansberg ET al. Individualized intervention techniques for statin patients can dramatically improve patient adherence. The compliance of the observation group to cardiac rehabilitation training was considerably higher than the comparison group in the current study, which was compatible with the conclusions of the Lansberg study, representing that individualised holistic nursing can considerably develop the compliance of CHD patients to cardiac rehabilitation exercise. Individualized holistic nursing from the patient's psychological, physiological, and other aspects, first by evaluating the patient's body condition, and then the implementation of specific health learning, physiological, and behavioural interference, can improve the patient's knowledge of the disease and cardiac rehabilitation exercise, but also to remove doubts and bad emotions. In addition, the discharge guidance and regular telephone or home follow-up for patients before discharge can effectively understand the specific situation of patients' cardiac rehabilitation exercise, and give targeted guidance, which is of great significance to improve patient compliance.

With a long course of CHD and high difficulty in treatment, patients are likely to have bad emotions due to various reasons, which is not only detrimental to disease recovery, but also affects the quality of life. Whoqol-bref is one of the most reliable scales for evaluating patient quality of life; the higher score, the better the quality of life [16]. [17] Delrieu ET al. Individualized physical activity interventions can help individuals with metastatic breast cancer preserve their living standard. In this study, both groups' whoQOL-BreF scores increased after nursing, but the increase in the observation group was more significant, which was consistent with the Delrieu investigation's outcomes, indicating that individualised holistic nursing can significantly improve life of CHD patients. Individualized overall nursing on patients with individualized and comprehensive, holistic nursing care can effectively help patients into normal thinking and alleviate disease or treatment of negative emotions, coupled with its own produce behavior, confidence in disease treatment and recovery of the effort, improve their survival skills, eventually to be able to improve their quality of life [18].

Self-efficacy refers to the attitude towards dealing with difficulties or the confidence that comes from achieving a goal. Related studies have shown that improving the body's self-efficacy can significantly reduce or even eliminate negative emotions, which has a optimistic effect on the treatment and retrieval of diseases [19]. GSES is a commonly used scale for clinical evaluation of body self-efficacy. The higher the score, the better the body's self-efficacy [20]. [21] Sherman et al. Self-efficacy of cancer survivors was expressively improved after 12 weeks of individualized exercise intervention. In this study, both groups' GSES scores increased after nursing, but the observation group increased more considerably than the control group, which was basically consistent with the Sherman study, representing that individualised holistic nursing can successfully improve the self-efficacy of CHD patients. Affected by the disease and the long cycle of cardiac rehabilitation exercise, CHD patients will inevitably have some bad psychology and wrong cognition, resulting in the adjustment disorder of patients, and then make them suffer from anxiety, depression, negativity and other bad emotions, which is not conducive to the rehabilitation of patients [22]. On the other hand, individualized holistic nursing is to correct patients' cognition, alleviate and even eliminate patients' bad emotions by popularizing the knowledge related to disease and cardiac rehabilitation exercise to patients, so as to make them rationally accept and actively face disease rehabilitation, and make efforts to cooperate with clinical nursing and rehabilitation, so as to improve their self-efficacy [23].

Chen et al. [24] discovered that implementing a customised supervision method had a significant impact on improving satisfaction. The observation group's nursing overall satisfaction was considerably greater than the control group's in this study, which was similar with the findings of Chen's study, showing that customised holistic nursing may successfully

increase patient contentment. Individualized holistic nursing is to reflect humanistic characteristics on the basis of comprehensive nursing, pay attention to patients' personality, and combine it with routine nursing work, so as to provide patients with the required comprehensive nursing, so as to effectively improve patient satisfaction [25].

Conclusion

In conclusion, customised holistic nursing may not only enhance CHD patients' compliance and livability with cardiac rehabilitation exercise, but it can also increase patients' self-efficacy and contentment, which is worthy of clinical reference

Acknowledgement

The authors thank the “Third Hospital of Hebei Medical University, China for providing the facility.

Conflict of interest

The author declares that no conflict of interest is associated with this study.

Authors’ contribution

This study was done by the author named in this article, and the author accept all liabilities resulting from claims which relate to this article and its contents.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

[1] Pedersen E , Truong K , Garcia B H , et al. Self-reported medication use among coronary heart disease patients showed high validity compared with dispensing data [J]. J Clin Epidemiol, 2021, 135(9): 115-124.

[2] Doedee F , Houdt S , Widdershoven J , et al. Chronic stress exposure in men and women, and implications for the course of fatigue after percutaneous coronary intervention; the THORESCI study [J]. Gen Hosp Psychiatry, 2021, 72(42): 45-52.

[3] Aronov D , Bubnova M , Iosseliani D , et al. Clinical efficacy of a medical centre- and home-based cardiac rehabilitation program for patients with coronary heart disease after coronary bypass graft surgery [J]. Arch Med Res, 2019, 50(3): 122-132.

[4] O'Toole K , Chamberlain D , Giles T . Exploration of a nurse practitioner‐led phase two cardiac rehabilitation programme on attendance and compliance [J]. J Clin Nurs, 2020, 29(5-6): 785-793.

[5] Shi W D , Ghisi G M , Hyun K , et al. Patient education interventions for health behaviour change in adults diagnosed with coronary heart disease: A protocol for a systematic review and meta-analysis [J]. J Adv Nurs, 2020, 77(2): 1043-1050.

[6] Islind A S , Johansson V , Hult H V , et al. Individualized blended care for patients with colorectal cancer: the patient's view on informational support [J]. Support Care Cancer, 2021, 29(6): 3061-3067.

[7] Cheng J G . The HHS pain management best practice inter-agency task force report calls for patient-centered and individualized care: Reply to letter to editor by Dr. rees [J]. Pain Med, 2020, 21(1): 3733.

[8] Michaud L , Dorogi Y , Gilbert S , et al. Patient perspectives on an intervention after suicide attempt: The need for patient centred and individualized care [J]. PLos One, 2021, 16(2): e0247393.

[9] Zhang H H , Zhao Y J , Wang C , et al. Depression and its relationship with quality of life in frontline psychiatric clinicians during the COVID-19 pandemic in China: a national survey [J]. Int J Biol Sci, 2021, 17(3): 683-688.

[10] Kawaguchi K , Kawazoe H , Sakurai T , et al. Effect of general self-efficacy on promoting health-related quality of life during recovery from radical prostatectomy: a 1-year prospective study [J]. Int J Clin Oncol, 2020, 25(10): 2122-2129.

[11] Liu Y , Dai C Z , Lei Y P , et al. Inhibition of EZH2 attenuates coronary heart disease by interacting with microRNA‐22 to regulate the TXNIP/nuclear factor‐κB pathway [J]. Exp Physiol, 2020, 105(12): 238-2050.

[12] Carvalheira-Dos-Santos R , Delgado R M , Ferreira-Dos-Santos G , et al. Analysis of the cochrane review: Exercise-based cardiac rehabilitation for coronary heart disease. Cochrane Database Syst Rev. 2016;1:CD001800. [J]. Acta Med Port, 2019, 32(7-8): 483-487.

[13] Song Y X , Ren C , Liu P , et al. Effect of smartphone-based telemonitored exercise rehabilitation among patients with coronary heart disease [J]. J Cardiovasc Transl Res, 2019, 13(2): 659-667.

[14] Sevransky J E , Agarwal A , Jabaley C S , et al. Standardized care is better than individualized care for the majority of critically Ill patients [J]. Crit Care Med,

2020, 49(1): 151-155.

[15] Lansberg P , Lee A , Lee Z V , et al. Nonadherence to statins: individualized intervention strategies outside the pill box [J]. Vasc Health Risk Manag, 2018, 14: 91-102.

[16] Sandoughi M , Kaykhaei M A , Langarizadeh E , et al. Effects of dehydroepiandrosterone on quality of life in premenopausal women with rheumatoid arthritis: A preliminary randomized clinical trial [J]. Int J Rheum Dis, 2020, 23(1): 1692-1697.

[17] Delrieu L , Pialoux V , Perol O , et al. Feasibility and health benefits of an individualized physical activity intervention in women with metastatic breast cancer: Intervention study [J]. JMIR mHealth uHealth, 2020, 8(1): 12306.

[18] Huang G , Fang N , Kuang M Q , et al. Establishment of a risk assessment system for peptic ulcer recurrence and its value in individualized intervention [J]. Am J Transl Res, 2021, 13(4): 2969-2975.

[19] Long Q , Guo J , Zhong Q Y , et al. General self‐efficacy and social support as mediators of the association between perceived stress and quality of life among rural women with previous gestational diabetes mellitus [J]. J Clin Nurs, 2021, 30(7-8): 1026-1036.

[20] Qi Z A , Ke Z B , Yw C , et al. Psychometric properties of the Chinese version of the attitude towards the prevention of incontinence-associated dermatitis (C-APrIAD) among Chinese nurses [J]. J Tissue Viability, 2021, 30(3): 421-426.

[21] Sherman M M , Renbarger J , Sajdyk T J , et al. A feasibility study: Self-efficacy amongst cancer survivors in a 12-week individualized exercise intervention: 3999 Board #316 May 30 9:00 AM - 10:30 AM [J]. Med Sci Sports Exerc, 2020, 52(7s): 1107.

[22] Gonzalez-Salvado V , Pena-Gil C , Lado-Baleato S , et al. Offering, participation and adherence to cardiac rehabilitation programmes in the elderly: a European comparison based on the EU-CaRE multicentre observational study [J]. Eur J Prev Cardiol, 2021, 28(5): 558-568.

[23] Colville G , Doherty A , Mcgunnigle L , et al. 808: Evaluation of an individualized storybook intervention for PICU patients [J]. Crit Care Med, 2021, 49(1): 400.

[24] Chen Y M , Chen K M , Chang C C , et al. The individualized supervision strategy and effectiveness under the strength perspective: a pilot study for the case management model of the high-care elderly in communities [J]. BMC Health Serv Res, 2021, 21(1): 546.

[25] Alderman M H , Blumenfeld J D . Hypertension: evolving from standardized to individualized care [J]. J Hypertens, 2020, 38(7): 1251-1254.