



Nursing Intervention In Management Of Coronary Artery Disease

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Abstract

Background: Our understanding of individuals with coronary heart disease (CHD) has improved thanks to nursing researches, despite the fact that a lot of it has been on sudden cardiac events. Given the enormous gaps that still exist, active and ongoing research programs on CHD clinical outcomes become vital. Particularly in the elderly and those with acute conditions, patients require continuously efficient methods to assist them in altering risky behaviors, recognizing salient symptoms, managing their CHD and ischemic symptoms, improving functional ability and quality of life, and preventing further coronary activities.

Aim: The present article's objective was to examine how comprehensive nurse care affected individuals with coronary heart disease's anxiety, depression, quality of life, and cardiopulmonary functioning.

Patients and methods: 200 individuals with coronary heart disease were assigned randomly to the conventional nursing cohort as well as the comprehensive nursing group, each receiving distinct nursing techniques. The comprehensive nursing participants got standard nursing care together with cognitive behavioural therapy and psychosocial counselling. Findings of the 6-minutes walking examination, myocardial performance measure (Tei index), assessed by tissue Doppler imaging (TDI) after intervention, and total scoring of the self-rating anxiety scale and self-rating depression scale, as well as the quality of life evaluation (SF-36), have been recorded and contrasted between the two groups at admittance and six months after discharging.

Results: In pre and post treatment, the comprehensive nursing sample's SAS and SDS ratings were considerably lower compared to those of the traditional nursing sample (both $P < 0.05$). Additionally, the comprehensive nursing sample significantly outperformed the conventional group in terms of quality of life ratings, the Tei index, and outcomes from the 6-minute walking assessment (all $P < 0.05$).

Conclusion: Comprehensive nursing intervention, as opposed to conventional nursing intervention, can successfully treat sufferers' depression and anxiety enhance quality of life, and boost cardiopulmonary functioning.

Keywords: Depression, nursing intervention, quality of life, anxiety, cardiopulmonary function, Coronary heart disease

DOI Number: 10.14704/Nq.2022.20.17.Nq880120

Neuroquantology 2022; 20(17): 934-942

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Introduction

Cardiovascular disease incidence and fatality rates have increased during the last 50 years [1]. This could be brought on by lifestyle changes, demographic ageing, and environmental contamination [2]. Cardiovascular disorders were responsible for 44.60% and 42.51% of fatalities in China's rural and urban populations, respectively, in 2014. In China, cardiovascular disorders are becoming the leading cause of mortality [3, 4]. A serious cardiovascular condition is coronary heart disease (CHD). CHD is responsible for close to 50% of cardiovascular fatalities. As a result, it has emerged as a major public health issue [5, 6]. As the illness progresses,

depression and anxiety are more common than they are in the normal community [7]. One meta-analysis discovered that 51% of CHD sufferers globally had depression [8]. Bad feelings, including such depression and worry, might further harm people with coronary heart disease's outcome and life quality [9].

Comprehensive nursing interventions entails the application of numerous nursing techniques to diverse disease-related issues or elements. Psychotherapy and ongoing nursing care are two often employed techniques [10]. Additionally, it has been demonstrated to enhance negative feelings, quality of life ratings, and outcome in the nursing care of a range of

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



conditions [11]. Numerous researches have demonstrated that psychiatric therapy can improve patients' quality of life and cardiovascular performance by reducing negative emotions like despair and anxiety in people with coronary heart disease [12, 13]. Unfortunately, as a result of variations in study design and assessment variables, outcomes have not been consistent [14, 15]. A systematic review on the outcomes of psychological treatment on anxiety and depression, correspondingly, was published by Sun Yuhua in China and comprised seven studies on anxiety and nine publications on depression. Outcomes demonstrated that psychological treatment can significantly lessen depression and anxiety in those with coronary heart disease [10]. In another systematic review, psychotherapy had no discernible impacts on individuals with coronary heart disease's unpleasant feelings [8]. Further research have demonstrated that post-discharge nursing care for CHD sufferers can enhance negatively feelings and cardiopulmonary performance [16, 17]. In order to comprehend the effect of comprehensive nursing interventions on patients with CHD and their quality of life, cardiopulmonary functioning, and other negative feelings, the present study analyzed the functions of these interventions in nursing care. The purpose of this research was to establish a scientific foundation for bettering the impacts of coronary heart disease on nursing care.

Patients and methods

Study setting and duration

Participants with stable angina who were admitted to >>>>> University between June 2021 and August 2022 served as research participants.

Study subjects

Inclusion criteria

The majority of people with coronary heart disease are individuals with stable angina [18]. >>>> gave their permission and freely took part in the study after being admitted to the hospital.

Exclusion criteria:

Individuals who need coronary artery bypass grafting surgeries, have a past of mental illness, or are in cardiogenic shock or have acute

arrhythmias individuals who have severe illnesses affecting additional organs individuals with myocardial infarction or severe coronary syndrome.

Ethical considerations

>>>>>>>>>>>>>>>>>>>>> Ethics Committee approved this research.

Nursing interventions and categorization

A sample of 200 participants suffering from CHD were hospitalized during the trial period. A randomly number table was used to classify the 200 individuals into the comprehensive nursing cohort and the conventional control nursing group. Every category contained 100 instances. Throughout their hospital stay, the conventional nursing participants got standard treatments and care, including administrating medications for relief of symptoms to dilate blood vessels, promoting blood flow, inhibit platelet aggregations, reduced blood lipids, stabilize plaques, and decrease myocardial oxygen intake. Participants would receive PCI and any required anticoagulant if the criteria were fulfilled. Based on the circumstances after discharging, the patients had to keep taking the aforementioned drugs for CHD.

The comprehensive nursing cohort also got the nursing techniques listed below in addition to traditional nursing. These included monitoring patient symptoms depending on the nursing degree, administering medications, and providing specialized nursing in accordance with the type of therapies being used, including such preoperatively and postoperatively nursing care for interventional surgical procedure, in addition to giving dietary instructions and scheduling follow-up appointments before discharging. The comprehensive nursing participants got comprehensive care plan utilizing psychological therapy in addition to normal nursing, containing: (1) Routine medical education: Training guides on cardiovascular disease, created by the institution, were distributed following hospitalization. Either once or twice per week, the department's doctors and nursing staff gave courses on CHD-related healthcare topics and provided patients inquiries while care; (2) Psychiatric interventions: Following hospitalization, participants' psychologically strain was recognized, and via consultation with their relatives, the degree of the levels of depressive



symptoms was assessed. Thereafter, twice a week for thirty minutes each, individualized cognitive behavioral psychological nursing care was provided. The nursing staff assisted cases in progressively training to react with violence, accurately comprehend themselves, seek out social supporting, regain self-esteem, and exercise subjective initiative in accordance with the various psychological conditions of patients. Additionally, they gave patients instructions on how to practice gradual relaxing, repair mistakes with appropriate rational thought, and reestablish cognitive framework; (3) Continuous nursing care: following discharge, participants undergo ongoing nursing care for a total of six months. Once each week, participants underwent follow-up through call phones, texting, or another form of communication. Depending on the participant's needs, they got specialized nursing and functional exercising advice. The primary goals of the guidance were to continue educating individuals how to practice self-care, including showing them how to move their limbs, take drugs responsibly, and provide nutritional advice. At the follow-up appointment, the participant's status was evaluated in further detail. A revision to the continuing nursing program was made in light of the evaluation. Individuals involved in the current research had received pertinent psychoeducation courses.

Evaluating metrics

1- Psychology-related signs:

During two days of hospitalization and six months following release, the Zung self-rating depression scaling (SDS) and self-rating anxiety scaling (SAS), correspondingly, were used to assess the depressive and anxious states [19, 20]. Scorings on the SDS ranged from 0 to 50, which denoted no depression, to 59, which showed mild depression, to 60, which suggested moderate depression, and ≥ 70 , which showed severe depression. Normal values on the SAS were defined as 50 or less, mild anxiety was defined as 50 to 59, moderate anxiety was defined as 60 to 69, and acute anxiety was defined as 70 or more.

2- Quality of life condition:

During two days of admission and six months after discharging, quality of life was evaluated using the SF-36 assessment [21]. Eight categories—physical role functioning, physical

performance, bodily pain, overall health assessments, vitality, social role activity, emotional role functioning, and mental health—were each split into 36 elements on this measure. Each component received a total of 100 points. Better grades correspond to a higher quality of life.

3- Cardiovascular functioning markers:

The participants had cardiac ultrasound examinations using ultrasonic diagnostic equipment within two days of hospitalization and six months following discharging. These evaluated the left ventricle's Tei score. The two stages and the pumping time stage were immediately read from the figures and estimated by noting the diastolic blood circulation spectra of the mitral valves orifice acquired by pulsed Doppler ultrasonography. Blood flow spectra of the mitral and aortic valves orifices were acquired from the apical four-chambers viewpoint and apical five-chambers view under pulsed Doppler circumstances. The period of the aortic valves orifices blood flow spectral range throughout systoles (b) and the period from the stop point of the mitral valves orifices blood flow spectral range throughout diastolic pressure to the initial point of the next blood flow spectrum (a) were evaluated, alongside the left ventricular Tei index = $(a-b)/b$ [22]. To assess heart function, this score was mixed with systolic and diastolic timings. In comparison to other heart function markers, it was straightforward and uncomplicated to carry out. Heart rate, ventricular shape, and cardiac load had little impact on it. As a result, this might accurately reflect the left heart's overall functionality [23].

4- Six-minute walking test (6MWT):

During three days of admission and six months following discharging, the test was conducted. The participants crossed a 20-meter indoor hallway back and forth. Participants' maximum walking distances in 6 minutes were recorded. There were two sessions of the assessment in the morning. Every time, the testing time was essentially the same. Amongst outcomes, the optimum values was chosen. This investigation also evaluated the assessment results in terms of the participant's capacity for exercising [24].



Statistical analysis

The standard deviation and mean are used to explain measured data. Two independent sample t-tests were used to compare the means between the two categories. The compositional ratio serves as a representation for data count. The two-sided χ^2 test was used to compare variances. Both before and after the treatment, improvements in the two groups' ratings for depression, anxiety, quality of life, and cardiopulmonary functioning were compared using a paired t-test. Bilateral $\alpha = 0.05$ was used as the statistically significance level. Data analysis was done statistically using SPSS 20.0 program.

Results

General characteristics of the studied patients in both groups

Table 1 lists the unique and clinically significant features of the conventional nursing cohort (n = 100) and the comprehensive nursing cohort (n = 100). Age, sex distribution, smoking, educational attainment, socioeconomic standing, health insurance, comorbidities, and therapeutic approaches did not significantly differ between the two groups. Baseline statistics were equivalent.

Table (1): General and clinical features of the study participants in both groups:

Features	Variables	Conventional nursing group (n = 100)	Comprehensive nursing group (n = 100)	χ^2 /test	P-value
Age (years)	Mean \pm SD	58.1 \pm 8.8	59.1 \pm 8.3	0.512	0.437
Sex n (%)	Female	39 (39)	46 (46)	0.511	0.329
	Male	61 (61)	54 (54)		
Smoking n (%)	Smoker	64 (64)	76 (76)	1.964	0.254
	Non-smoker	36 (36)	14 (14)		
Academic degree n (%)	High colleague or above	22 (22)	24 (24)	1.074	0.584
	Secondary or technical school	59 (59)	49 (49)		
	Primary or lower	19 (19)	27 (27)		
Medical insurance n (%)	Yes	87 (87)	93 (93)	1.013	0.29
	No	13 (13)	7 (7)		
Monthly family income n (%)	Low	17 (17)	11 (11)	2.107	0.433
	Medium	48 (48)	47 (47)		
	High	35 (35)	42 (42)		
Way of treatment (n, %)	Interventional treatment	25 (25)	32 (32)	0.615	0.312
	Conservative treatment	75 (75)	68 (68)		
Hypertensive n (%)	Yes	77 (77)	75 (75)	0.191	0.536
	No	23 (23)	25 (25)		
Diabetic n (%)	Yes	31 (31)	40 (40)	0.865	0.212
	No	69 (69)	60 (60)		

Evaluation of the two groups' pre- and post-intervention levels for anxiety and depression

Upon admission, the SDS values for the conventional nursing sample and the comprehensive nursing sample were 63.04 \pm 32.81 and 61.49 \pm 24.89, correspondingly. The two cohorts' respective SAS values were 59.12 \pm 32.33 and 63.43 \pm 34.06. In all cases, P-value was > 0.05, variations were not significant statistically. After six months of discharging, the

comprehensive intervention sample's SAS and SDS values significantly declined contrasted to those at admittance (all P < 0.001). Additionally, the conventional nursing group's SDS values significantly declined (P = 0.022), but the reduction in the SAS values was not statistically significant (P = 0.042). In pre and post intervention, the comprehensive nursing group's changes in SAS and SDS values were greater compared to the traditional nursing cohort (all P < 0.05) (Table 2).



Table (2): Evaluation of the two groups' progress with regard to anxiety and depression

Variable	Interventions	Conventional nursing group (n = 100)	Comprehensive nursing group (n = 100)	t-test	P-value
Self-rating depression scale	After intervention	60.37 ± 30.22	49.24 ± 28.54	0.221	0.655
	Before intervention	63.04 ± 32.81	61.49 ± 24.89		
	Difference	2.67 ± 13.32	11.16 ± 21.63	2.288	0.029
	t-test	1.824	6.268		
	P-value	0.022	< 0.001		
Self-rating anxiety scaling	After intervention	67.56 ± 28.64	49.24 ± 25.22		
	Before intervention	63.43 ± 34.06	59.12 ± 32.33	0.266	0.616
	Difference	3.68 ± 14.72	9.77 ± 18.16	1.833	0.016
	t-test	1.872	3.112		
	P-value	0.042	< 0.001		

Comparing between life quality ratings in two categories pre and post intervention

Table 3 displays the differences in life quality in 2 categories both pre and post the treatment. The values of every topic prior to intervention did not significantly differ between the 2 categories (all P > 0.05). After six months following discharging, ratings of participants in the comprehensive and conventional nursing

samples significantly increased in comparison to pre-intervention (all P < 0.05). Advances in other areas in the comprehensive healthcare category were indeed noticeably better than those from the conventional care category by the end of the treatment, as well as physical role function (P < 0.05).

Table (3): Evaluation of the two groups' improvements according to quality of life

Life quality	Interventions	Conventional nursing group (n = 100)	Comprehensive nursing group (n = 100)	t-test	P-value
Role physical	Before intervention	31.27 ± 19.38	29.68 ± 17.19	0.355	0.532
	After intervention	35.61 ± 18.38	38.55 ± 19.31		
	Differences	3.23 ± 8.59	7.76 ± 16.67	1.654	0.079
	P-value	< 0.001	< 0.001		
Physical function	Before intervention	64.01 ± 36.84	62.35 ± 35.51	0.142	0.791
	After intervention	67.68 ± 28.13	73.72 ± 33.32		
	Differences	3.56 ± 9.47	12.26 ± 21.54	2.326	0.015
	P-value	0.024	0.007		
General health	Before intervention	51.23 ± 26.46	48.17 ± 24.38	0.547	0.401
	After intervention	54.24 ± 19.17	57.58 ± 26.26		
	Differences	2.99 ± 11.29	8.74 ± 24.66	1.073	0.032
	P-value	0.032	0.003		
Body pain	Before intervention	47.13 ± 18.47	45.66 ± 19.43	0.521	0.572
	After intervention	49.28 ± 19.16	53.79 ± 22.86		
	Differences	2.37 ± 6.25	8.14 ± 19.14		
	P-value	0.002	< 0.001	2.128	0.048
Energy	Before intervention	40.65 ± 25.51	38.14 ± 22.11	0.460	0.458
	After intervention	45.14 ± 26.75	50.28 ± 36.46		
	Differences	4.16 ± 10.29	12.83 ± 22.14	2.283	0.029
	P-value	0.002	< 0.001		
Emotional function	Before intervention	54.41 ± 33.16	51.16 ± 30.25	0.451	0.464
	After intervention	57.79 ± 21.48	62.28 ± 36.17		
	Differences	3.30 ± 7.12	10.01 ± 31.15	2.144	0.033
	P-value	0.002	0.003		
Social activities	Before intervention	53.18 ± 29.26	49.19 ± 26.81	0.735	0.288
	After intervention	56.37 ± 27.32	59.51 ± 24.63		
	Differences	3.21 ± 7.92	11.21 ± 25.71	2.17	0.032
	P-value	0.001	0.002		
Mental health	Before intervention	41.42 ± 28.14	37.28 ± 22.37	0.822	0.253
	After intervention	45.72 ± 25.15	50.22 ± 28.18		
	Differences	4.41 ± 10.14	11.82 ± 30.19	2.027	0.033
	P-value	0.036	0.003		



Evaluation of cardiopulmonary functional scores in the two groups pre and post intervention

Pre-intervention, neither the comprehensive nursing cohort nor the conventional nursing cohort's Tei indexes differed significantly from each other (0.53 ± 0.26 and 0.56 ± 0.28 , correspondingly). The Tei index of the comprehensive nursing cohort saw a substantial drop following hospitalisation and ongoing nursing care ($P = 0.007$), but notable advances in the traditional nursing cohort were not observed. Tei indexing declines

post intervention performed substantially better in the comprehensive nursing cohort than in the traditional nursing group ($P = 0.041$). The comprehensive nursing group's and conventional nursing group's 6-minute walk lengths rose noticeably post-intervention when opposed to pre-interventional. Moreover, the comprehensively treatment group's elevated concentration were noticeably greater than the traditional nursing group's ($P = 0.005$) (Table 4).

Table (4): Evaluation of the two groups' improvements in cardiopulmonary functioning

Variable	Interventions	Conventionally nursing Cohort (n = 100)	Comprehensively nursing Cohort (n = 100)	t-test	P-value
The six-minutes walking distancing	Before intervention	355.28 ± 143.16	363.63 ± 131.26	0.411	0.512
	After intervention	422.61 ± 181.05	427.88 ± 171.53		
	Differences	56.22 ± 34.18	75.14 ± 38.73	2.745	0.005
	T-test	12.21	14.22		
	P-value	< 0.001	< 0.001		
Myocardial performance index	Before intervention	0.56 ± 0.28	0.53 ± 0.26	0.337	0.544
	After intervention	0.54 ± 0.32	0.42 ± 0.30		
	Differences	0.03 ± 0.07	0.12 ± 0.21	2.199	0.041
	t-test	1.817	2.641		
	P-value	0.057	0.007		

Discussion

The frequency of CHD has grown recently. Changings in the environment, society, and lifestyles could be to blame for this, among other things. It has developed into a chronic condition that has a negative impact on people's health. The majority of CHD individuals are middle-aged or elderly. They require long-term care since their physical functioning has drastically diminished. Individuals are therefore more likely to experience unpleasant feelings like depression and worry. According to earlier research, negative feelings not only increase the incidence of CHD but also negatively impact the condition's progression, prognosis, and therapy [25-27]. Earlier research has demonstrated that in CHD sufferers, depression may contribute to neurological, immunological, and endocrine systemic malfunction, which in turn results in malfunctioning of the cardiac autonomic nerve system. This worsens the circumstances of patients by increasing the release of catecholamines, increasing inflammatory reaction, and altering lipids metabolisms [28]. Comprehensively nursing interventions have become more commonly applied in clinical nursing care in latest years. This approach focuses on using

psychological, ongoing, and other healthcare techniques to deal with sufferers' minds, bodies, and spirits [29, 30]. Numerous researches have demonstrated that comprehensively nursing care may help patients with different diseases feel happier, live better, and have better prognoses [30, 31]. As a result, psychotherapy may be a crucial complementary component of the evaluation and management of coronary heart disease.

Numerous interventional techniques, including behavior, cognitive, and continuous care, have been investigated in CHD cases in an attempt to enhance the nursing consequences of the condition. Negatively feelings, quality of life, cardiopulmonary functioning, and other clinical indications are assessed. Cognitive behavioral therapy is a type of psychological interventional therapy that aims to eliminate unpleasant feelings and behaviors by altering bad cognition through altering thinking and behavior. Underneath the action designing assumption, continuous nursing refers to assisting patients in receiving multiple levels of ongoing care in both various health-care settings (including such hospitals, communities, and relatives) and the same setting (such as healthcare



organizations). In latest years, the two nurse interventions techniques have been extensively utilized in the nursing care of numerous disorders [32-34]. In the current research, continued nursing throughout and after hospitalization and cognition in behavior-based psychiatric nursing dramatically reduced patients depression, stress, and quality of life levels. The findings agreed with those of other domestic and international investigations [35]. Findings from Twelve randomized clinical trials were compiled in one comprehensive assessment research, which demonstrated that there were vast variations in the standard deviations of depression, stress, and quality of life scores between the cognitive behavioral therapy cohort and the normal sample [36]. The outcomes of contemporary psychotherapy are different for CHD sufferers' bad emotions and quality of life, though. For instance, a recent meta-analysis encompassing five experiments revealed that psychological treatment can markedly lessen depressive symptoms in CHD sufferers, but it cannot enhance patients' stress, quality of life, and other relevant medical markers, such as the frequency of myocardial infarctions and revascularizations [26]. The impact of psychotherapies on negative feelings and quality of life in CHD individuals can generally vary and necessitate more investigation due to diverse intervention approaches, clinical factors, assessment markers, sampling processes, and analytical techniques.

Cardiopulmonary functioning and quality of life are tightly correlated in CHD individuals. Earlier research has indicated that people with heart failure who have inadequate exercises endurance have a lower quality of life [37]. As a result, the present research also examined how comprehensively nurse care affected individuals with CHD's cardiopulmonary performance. The indications used to assess cardiopulmonary functioning in Subjects treated at this time—including pulmonary functioning (such as FEV1), 6-minute walking assessments, left ventricular ejection fractions, and Tei index—are not always reliable [38]. The Tei index, among others, fully takes into consideration both the ventricular diastolic and systolic to indicate total heart functioning.

As evaluating indices of cardiopulmonary functioning, the Tei index and the six - minute walking assessment were employed in this

research. According to the findings of other research, psychotherapy that relies on cognitive behavior and ongoing nursing might also considerably enhance the cardiopulmonary functioning of patients [39]. This shows that thorough nursing care can not only raise individuals quality of life values and decrease negative patients feelings, but also reversal negative feelings generated by unfavorable consequences, hence raising physiological markers.

Strengthens and limitations

The adoption of randomly assigning in the present study was advantageous since it preserved basal balancing and comparability between the comprehensively nursing group and conventionally nursing group. There remained certain restrictions, though. For instance, no blinding designs was used. Therefore, it was impossible to escape bias's effect. Additionally, all study participants had stable angina.

Conclusion

Comprehensive nursing intervention, as opposed to conventional nursing intervention, can successfully treat sufferers' depression and anxiety enhance quality of life, and boost cardiopulmonary functioning. Future research must assess the impact of comprehensive nursing interventions on enhancing negative feelings, quality of life, and cardiovascular performance in CHD subjects using larger sampling sizes of randomized controlled interventional studies and distinct evaluation markers. The results of comprehensively nurse interventions on coronary heart disease nursing care will be more clearly demonstrated by additional researches.

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