International Journal of Nursing Studies 61 (2016) 219–229

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

Tailored educational supportive care programme on sleep quality and psychological distress in patients with heart failure: A randomised controlled trial

Yia-Ling Chang [a], Ai-Fu Chiou [b,*], Shu-Meng Cheng [c], Kuan-Chia Lin [d]

[a] Community Nursing Center, Department of Family and Community Medicine, Tri-Service General Hospital, Taipei, Taiwan
[b] School of Nursing, National Yang Ming University, Taipei, Taiwan
[c] Division of Cardiology, Department of Internal Medicine, Tri-Service General Hospital, Taipei, Taiwan
[d] Institute of Hospital and Health Care Administration, National Yang Ming University, Taipei, Taiwan

ARTICLE INFO

Article history:
Received 3 June 2015
Received in revised form 30 June 2016
Accepted 1 July 2016

Keywords:
Anxiety
Depression
Heart failure
Sleep disturbance
Supportive care programme

ABSTRACT

Background: Up to 74% of patients with heart failure report poor sleep in Taiwan. Poor symptom management or sleep hygiene may affect patients' sleep quality. An effective educational programme was important to improve patients' sleep quality and psychological distress. However, research related to sleep disturbance in patients with heart failure is limited in Taiwan.
Objectives: To examine the effects of a tailored educational supportive care programme on sleep disturbance and psychological distress in patients with heart failure.
Design: randomised controlled trial.
Participants and setting: Eighty-four patients with heart failure were recruited from an outpatient department of a medical centre in Taipei, Taiwan. Patients were randomly assigned to the intervention group ($n = 43$) or the control group ($n = 41$).
Methods: Patients in the intervention group received a 12-week tailored educational supportive care programme including individualised education on sleep hygiene, self-care, emotional support through a monthly nursing visit at home, and telephone follow-up counselling every 2 weeks. The control group received routine nursing care. Data were collected at baseline, the 4th, 8th, and 12th weeks after patients' enrollment. Outcome measures included sleep quality, daytime sleepiness, anxiety, and depression.
Results: The intervention group exhibited significant improvement in the level of sleep quality and daytime sleepiness after 12 weeks of the supportive nursing care programme, whereas the control group exhibited no significant differences. Anxiety and depression scores were increased significantly in the control group at the 12th week ($p < .001$). However, anxiety and depression scores in the intervention group remained unchanged after 12 weeks of the supportive nursing care programme ($p > .05$). Compared with the control group, the intervention group had significantly greater improvement in sleep quality ($\beta = -2.22$, $p < .001$), daytime sleepiness ($\beta = -4.23$, $p < .001$), anxiety ($\beta = -1.94$, $p < .001$), and depression ($\beta = -3.05$, $p < .001$) after 12 weeks of the intervention.

* Corresponding author at: School of Nursing, National Yang Ming University, No. 155, Sec. 2, Li-Nong St., Taipei, Taiwan. Tel.: +886 2 2826 7354; fax: +886 2 2820 2487.
E-mail address: afchiou@ym.edu.tw (A.-F. Chiou).

http://dx.doi.org/10.1016/j.ijnurstu.2016.07.002

Conclusion: This study confirmed that a supportive nursing care programme could effectively improve sleep quality and psychological distress in patients with heart failure. We suggested that this supportive nursing care programme should be applied to clinical practice in cardiovascular nursing.

What is already known about the topic?

- Sleep disturbance is a common symptom of patients with heart failure and interferes with their physical function and quality of life.
- Little is known about the effects of supportive nursing care programme on sleep quality and psychological distress of patients with heart failure.

What this paper adds

- The 12-week tailored educational supportive care programme was effective in improving sleep quality, daytime sleepiness, anxiety and depression in patients with heart failure.
- An effective educational programme for patients with heart failure should consist of a comprehensive assessment and individualised education of self-management including symptom management, sleep hygiene and strategies of improving sleep quality.

1. Introduction

Heart failure occurs in two major subtypes: heart failure with reduced ejection fraction or with preserved ejection fraction (Zouein et al., 2013). Heart failure with reduced ejection fraction is characterised by a progressive ventricular dilation and its leading cause is ischaemic heart disease. Heart failure with preserved ejection fraction has a normal ejection fraction (>50%) and is characterised by concentric remodelling/hypertrophy of the left ventricle. A leading cause of heart failure with preserved ejection fraction is hypertension. Heart failure with preserved ejection fraction is commonly associated with other comorbidities, such as diabetes, obesity, peptic ulcer, cancer, chronic obstructive pulmonary disease, psychiatric disorders, and anaemia. Individuals with heart failure with preserved ejection fraction are more likely to be female and older. The prevalence and outcomes of heart failure with preserved ejection fraction are similar to those seen in heart failure with reduced ejection fraction (Borlaug and Paulus, 2011).

Survival in those with heart failure with reduced ejection fraction has been improved with use of medications, such as angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, aldosterone antagonists, and β-blockers together with device therapies in selected patients. However, studies have failed to show any benefit of drugs effective in heart failure with preserved ejection fraction patients. Thus, there is a critical need to find new therapies for patients with heart failure with preserved ejection fraction (Bui et al., 2011). Patients with heart failure may suffer from complex symptoms such as fatigue, dyspnoea, oedema, sleep apnea, nocturia, and paroxysmal nocturnal dyspnoea, which may further cause sleep disturbance (Chen et al., 2013).

Sleep disturbance is a common symptom experienced by 45–79% patients with heart failure and interferes with their physical function and results in decreased quality of life (Chen et al., 2009; Moradi et al., 2014; Suna et al., 2014). More than half of patients with heart failure develop sleep-disordered breathing including central sleep apnea and obstructive sleep apnea, which are associated with fragmentation of sleep, excessive daytime sleepiness, and fatigue and result in decreased quality of life and increased mortality (Bitter et al., 2012; Naughton and Lorenzi-Filho, 2009; Skobel et al., 2005). Oldenburg et al. (2007) reported that sleep-disordered breathing was present in 76% of patients with heart failure, 40% of patients had central sleep apnea and 36% had obstructive sleep apnea.

Sleep disturbance is correlated with demographic characteristics (age, gender, marital status, and socioeconomic status), clinical characteristics (number of hospitalisations, comorbidities, diuretic use, New York Heart Association functional class, and left ventricular ejection fraction), psychosocial factors (depression and social support), lifestyle factors (physical activity), and sleep hygiene of patients with heart failure (Moradi et al., 2014; Riegel et al., 2012; Wang et al., 2010). In particular, symptom distress has been found to be associated with sleep disturbance in patients with heart failure (Chen et al., 2013). Patients with excessive daytime sleepiness had more frequent symptoms such as fatigue, shortness of breath, and oedema than those without excessive daytime sleepiness. Therefore, it is crucial to identify factors influencing sleep quality, including individual demographic, clinical, and psychosocial characteristics, and to provide patients with heart failure with an individualised educational programme to teach them about disease symptom management, sleep hygiene, increasing physical activity, and emotional adjustment skills to improve their sleep quality (Chen et al., 2013; Wang et al., 2010).

Supportive nursing care was defined as perception of supportive need, reciprocal interaction, listening, providing empathy and information related to health, and confirmation of the patient's verbal and non-verbal response (Kim, 1990). Edell-Gustafsson et al. (2003) proposed a supportive nursing care model that postulated that individual characteristic and biopsychosocial symptoms could cause stress and reduced sleep quality, health-related quality of life, and daytime functioning in patients suffering a chronic disease. It is suggested that nurses can help improve sleep quality in patients by understanding their attitudes, beliefs concerning sleep disturbance, and its consequences and by advocating sleep-promoting