Applied Nursing Research 32 (2016) 41–43

Contents lists available at ScienceDirect

Applied Nursing Research

journal homepage: www.elsevier.com/locate/apnr

An interventional study to provide telephone follow-up support to open-heart surgery patients during recovery☆,☆☆

Kristy Chunta, PhD, RN*

Department of Nursing and Allied Health Professions, Indiana University of Pennsylvania (IUP), Indiana, PA, 15705 USA

ARTICLE INFO

Article history:
Received 12 March 2016
Accepted 4 April 2016
Available online xxxx

Keywords:
Open-heart surgery
Anxiety
Depression
Expectations
Physical health status
Telephone intervention

ABSTRACT

Introduction: Over 500,000 open-heart (OH) surgery procedures are performed annually to treat cardiovascular and valvular heart disease. Despite the frequency of the procedure, patients face psychosocial and physical challenges that continue long after discharge. The research question for this study was: How does a telephone supportive intervention change anxiety, depression, expectations, and physical health status (PHS) in OH surgery patients?

Methods: A quasi-experimental, repeated measures design was used. The study included a supportive telephone intervention during recovery, and measured anxiety, depression, expectations, and physical health status (PHS) preoperatively (T1) and postoperatively, three days after discharge (T2), and at 4 weeks (T3) and 3 months (T4) after surgery. Participants ($N = 28$) were randomly assigned to the control ($n = 13$) or experimental group ($n = 15$).

Results: Mean scores for anxiety and depression were in the normal range across all data collection times. Scores for anxiety ($p = .03$) and PHS ($p = .00$) were statistically significant when examining how the scores changed over the four time periods. Main effect for group and interaction effects were not significant for any of the variables.

Conclusions: Limitations of this pilot study suggest the need to recruit a larger, heterogeneous sample from multiple sites. Future research including patients with a known history of anxiety and depression and developing a more evidence-based practice intervention are options to consider.

1. Introduction

Over 500,000 open-heart (OH) surgery procedures are performed annually to treat cardiovascular and valvular heart disease (American Heart Association, 2014). Despite the frequency of the procedure, the surgical event leads to many physical and psychological challenges that can continue long after discharge (Kan, 2009a). Depression has been specifically linked to adverse outcomes and increased risk for mortality after surgery (Dao, Chu, Springer, Hiatt, & Nguyen, 2010). Anxiety and depressive symptoms have been associated with poor physical and mental health related quality of life even up to five years after surgery (Lee, 2009). Physical health limitations have also affected recovery from OH surgery and have been reported for several months after discharge (Kan, 2009b).

1.1. Purpose and research question

The aim of this pilot study was to use an intervention to improve psychosocial and physical outcomes in OH surgery patients. The research question for the study was: How does a telephone supportive intervention during recovery change postoperative anxiety, depression, expectations, and physical health status (PHS) in OH surgery patients who receive the intervention compared to those patients who receive usual care?

2. Methods

2.1. Design

This pilot study used a quasi-experimental repeated measures design. Data collection interviews occurred preoperatively on the nursing units or in the open-heart surgery clinic. Telephone interviews were used for data collection postoperatively. Data were collected over four time points: preoperatively at baseline (T1), postoperatively, three days after discharge (T2), four weeks postoperatively (T3), and three months after surgery (T4). Data collection occurred between December

☆ The author declares no conflict of interest.

☆☆ Research supported by *American Nurses Foundation/Council for the Advancement of Nursing Science (CANS) Grant*.

* Department of Nursing and Allied Health Professions, IUP, 1010 Oakland Avenue, Johnson Hall, Room 233, Indiana, PA 15705.
E-mail address: kchunta@iup.edu.

http://dx.doi.org/10.1016/j.apnr.2016.04.001
0897-1897/

2010 and June 2012. Institutional review board approval was obtained prior to data collection.

2.2. Sample

A convenience sample of adults 18 years of age or older undergoing elective CABG or valve replacement OH surgery were recruited from one medical center in western Pennsylvania. Inclusion criteria included: English speaking, community dwelling adults over age 18, able to communicate responses to complete the questionnaires, access to a telephone postoperatively, and experienced elective or urgent open-heart surgery using traditional sternotomy approach. Persons with confusion, dementia, were medically unstable, unable to complete the questionnaires, or were undergoing emergent surgery were excluded from the study. Participants were recruited over 17 months. Subjects ($N = 28$) were randomly assigned to the control ($n = 13$) or experimental group ($n = 15$) prior to T2 data collection.

2.3. Measures

Three instruments were used to measure the study outcomes variables of anxiety and depression, expectations, and PHS. *The Hospital Anxiety and Depression (HAD) Scale* is a 14 item self-report questionnaire that uses two subscales to measure anxiety and depression separately (Zigmond & Snaith, 1983). Total subscale scores indicate normal, borderline abnormal, and abnormal scores for anxiety or depression. *The Future Expectations Regarding Life with Heart Disease Scale* consists of 18 belief statements that measure subjects' expectations of successfully coping with heart disease (Axelrad, 1981). Scoring uses a Likert scale and ranges from 18 to 90 with a higher score reflecting positive expectations. The internal consistency reliability for the scale was reported at 0.88, but no validity values were reported. *The Medical Outcomes Study 36-item Short Form Health Survey (SF-36)* measures health concepts related to physical, mental, and general health (Stewart, Hays, & Ware, 1988), and the Physical Component Scale (PCS) of the *SF-36* was used to measure participants' PHS. The scale has well documented reliability and validity data. Although the SF-36 has a subscale for mental health, depression was not measured with this scale. Demographic data were also collected along with questions related to the type of surgery, insurance, patient and family teaching, and support after discharge.

2.4. Procedures for data collection

The outcome variables of anxiety, depression, expectations, and PHS were measured at T1, T2, T3, and T4. A registered nurse trained by a psychiatric nurse practitioner provided the telephone follow-up supportive intervention to the experimental group on the day of discharge, and weeks 2, 4, 6, 8, and 10 after surgery. A researcher constructed intervention was developed based on recommendations from the psychiatric nurse practitioner. Participants were asked questions about how they were doing in relation to their feelings of anxiety, depression, having positive expectations, and their physical health status. The control group did not receive the telephone follow-up intervention.

2.5. Data analysis

Descriptive statistics were used to compare mean scores for the variables expectations, anxiety, depression, and PHS. Four separate repeated measures ANOVA were conducted to assess the impact of the telephone follow-up intervention. The analysis determined if the scores changed over the four time periods (main effect for time), if the intervention changed the scores (main effect for group), and if the change in scores over time was different for the two groups (interaction effect).

3. Results

3.1. Sample characteristics

The majority of subjects were male (71%) and ranged in age from 42 to 86 with a mean age of 66.71. All of the participants were Caucasian (100%) which represented the rural and/or urban geographical area. Most subjects were married (67.9%), had a high school diploma (67.9%), and were unemployed (57.1%), although 100% reported having health insurance. Participants underwent bypass graft surgery (50%), valve replacement (39.3%) or combined bypass graft/valve surgery (10.7%). Of the 37 consent participants, several (n = 7) were lost to follow-up data collection, one participant did not have surgery, and one subject withdrew from the study. Of those who did not participate, six were from the experimental group and three from the control group. Comparisons of the experimental and control groups showed that the groups were not significantly different.

3.2. Analysis of findings

The research study sought to determine if a telephone follow-up intervention changed anxiety, depression, expectations, and PHS in OH surgery patients. Descriptive statistics revealed that anxiety and depression mean scores were in the normal range across all data collection times. Similarly, mean expectation scores ranged from 73.64 to 76.92 across all data collection points. PHS mean preoperative scores were lower ($M = 39.82$) than the mean for the general population ($M = 50.0$) (Zigmond & Snaith, 1983), decreased at T2 ($M = 28.61$), and increased at T3 ($M = 37.36$) and T4 ($M = 45.57$) (Table 1).

Although there was a statistically significant change in anxiety scores over the four time periods ($p = .03$), the findings were not statistically significant for the group main effect or the interaction effect. There were no statistically significant findings for depression and expectations. Findings for PHS also showed a statistically significant change in scores over the four time periods ($p < .001$) but the findings were not statistically significant for the group main effect or the interaction effect.

4. Discussion

In this pilot study, the telephone follow up intervention did not change the variables of anxiety, depression, expectations, and physical health for persons undergoing elective cardiac surgery. The scores on the variables were normal for the subjects going into the study and remained in the normal range across the four data collection periods. The psychosocial findings from this study differed from previous research which has found high levels of anxiety (Chunta, 2009) and significant depression in OH surgery patients (Rollman et al., 2009). In addition, mean scores for expectations were notably higher in this study than what has been reported in the literature (Chunta, 2009).

Future research should focus on accruing a more diverse sample and strengthening the telephone supportive intervention. Although this research design was a pilot study to determine feasibility for future studies, the sample size was a significant limitation and most likely too small

Table 1
Mean scores/range for the variables at T1, T2, T3, and T4.

	T1	T2	T3	T4
Anxiety	4.57/0–16	4.54/0–11	3.75/0–13	2.82/0–13
Depression	2.43/0–12	3.50/0–11	2.93/0–11	2.00/0–8
Expectations	74.71/49–88	75.11/55–90	73.64/45–90	76.92/45–90
PHS	39.82/14–59	28.61/14–55	37.36/11–56	45.57/25–58