

Effects of a Telephone Counseling Intervention on Psychosocial Function in Women Following a Cardiac Event.

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ABSTRACT

The effect of a telephone counseling intervention, providing education and support and specifically designed to promote adjustment in women was trialed on 196 women admitted for myocardial infarction (MI) (19%), coronary artery bypass grafts (CABG) (55%), coronary angioplasty (PTCA) (9%) or stable angina (17%). Women were randomized to usual care ($n = 103$) or the intervention ($n = 93$) delivered during admission and 1, 2, 3 and 6 weeks postdischarge. The sample had a mean age of 67 years (range 34 – 92), had not completed high school (92%), and were not employed (84%). At 12 weeks the intervention had no effect, with no significant differences between group mean scores on psychosocial adjustment ($F[1,182] = 0.06, p = 0.8$), anxiety ($F[1,182] = .015, p = 0.69$) or depression ($F[1,182] = 0.11, p = 0.74$). Women made significant improvements over the 12 weeks on mean scores for psychosocial adjustment ($F[1,182] = 58.37, p = 0.00$), anxiety ($F [1,182] = 74.58, p = 0.00$) and depression ($F[1,182] = 14.11, p = 0.00$). The women with the worst psychosocial adjustment (determined by multiple regression) had experienced a stressful, personal event during follow-up ($B = 15.98, p = .001$) and to be unemployed/retired ($B = 11.29, p = .02$), aged less than 55 years ($B = 3.64, p = .01$) and less adjusted to their illness at baseline ($B = 0.34, p = .002$). During admission women at risk of poor outcomes should be targeted i.e., women aged less than 55 years, unemployed or retired, poorly adjusted to their cardiac illness, or readmitted to hospital within 12 weeks of a previous cardiac admission. An effective intervention for women, which can cater for a wide range of ages, multiple role demands, readmissions and stress at home, remains to be established.

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Patient participation in postdischarge interventions including education and support, particularly when conducted with cardiac rehabilitation programs, have been demonstrated to improve psychosocial wellbeing following a cardiac event.¹⁻³ However, the relative benefit of these interventions for women has not been determined, as most interventions have been designed and tested on men. When women have been recruited, low participation rates have limited gender subgroup analyses.^{1,4-6} Furthermore, men and women are likely to respond differently to the same intervention due to gender based differences in psychosocial recovery patterns.⁷ Most of these differences arise from women's older age when first diagnosed with coronary heart disease and women's identification with traditional, gender-based roles.⁸⁻¹² Age-related factors such as increased incidence of comorbidities and fatigue, and multiple role commitments also limit women's ability to participate in cardiac rehabilitation and other outpatient based interventions.¹³⁻¹⁶ Delivery of an education and support intervention, specifically designed for women and delivered by telephone, offers an inexpensive, convenient, alternative method of delivery. It is unclear what factors other than the intervention might influence psychosocial recovery in women. Therefore the purpose of this study was twofold: 1) to determine the effectiveness of a telephone follow-up intervention providing information and support in improving psychosocial adjustment in women following a cardiac event, and 2) to determine the predictors of psychosocial adjustment in women following a cardiac event.

METHODS

The study was reviewed and approved by the appropriate hospital review boards. All participating patients were provided with information sheets and signed consent forms.

Patients: A cluster randomized, controlled trial was conducted in which consecutive female inpatients (n = 196) were recruited in randomized clusters of 5 days recruitment, followed by a 2 day nonrecruitment period. The randomized cluster method was chosen to prevent contamination between subject groups by women forming friendships during hospitalization and sharing information.^{17,18} Recruitment took place from July 1997 to January 1999 in 4 metropolitan hospitals in Sydney, Australia.

Eligible women were identified through the unit admission log on the basis of the following criteria: 1) diagnosed with myocardial infarction, coronary artery bypass grafts, coronary angioplasty or stable angina (confirmed by angiography), 2) without cardiac failure or unstable angina, 3) telephone at home and available for six weeks follow-up and interview at 12 weeks, 4) able to read and converse in English, 5) physically and cognitively capable of interview and follow-up. No age limits were set to ensure women of all ages were included, as older women are poorly represented in cardiac research.⁶ Several coronary heart disease related diagnoses were included, as listed above, as the diagnoses are not mutually exclusive and the process of adjustment and recovery is similar.^{19,20}

Of the 211 eligible women approached, refusals occurred for 15 (7%) due to symptoms (6), lack of interest (5) and unwillingness to sign a consent form (4). Failure to complete the study occurred for 15 (8%), due to death (5), withdrawal (6) and loss to follow-up (4). A total sample size of 180 women was required to maintain a power of 0.80, with alpha 0.05, and a small effect size on psychosocial adjustment. The sociodemographic and clinical characteristics of the patient sample are summarised in Table 1. On average, patients were older women (mean \pm standard deviation age 67 ± 9 years old, range 34 to 92), had not completed high school, lived with family or friends and were retired or not seeking employment. The majority (75%) of the women had a previous admission for a cardiac cause. During the follow-up period 36% were readmitted for a CHD related cause, 26% experienced personal stressful events and 32% attended cardiac rehabilitation programs.

Usual Care: Women in the control group received usual care, which varied across the four hospitals as two hospitals were large referral centers and two hospitals were community hospitals. However, the hospitals shared a number of similarities; all inpatients received a Phase I education program and all women were referred to local cardiac rehabilitation programs.

Intervention: In addition to ‘usual care’, women in the intervention group received an intervention providing support and information intended to promote self-managed recovery and psychosocial adjustment. The intervention began with an

introductory session 1 to 2 days before hospital discharge and was followed by 4 telephone calls at 2 to 3 days, 1, 3 and 6 weeks post-discharge. Follow-up telephone calls were scheduled to assist women cope with various stages of adjustment during recovery.

19-22

Session content was individually tailored in response to a detailed health evaluation in the initial interview and consideration of the individuals preferred coping style, home context and stage of adjustment. All sessions evaluated physical and psychological status and incorporated mutual goal setting for self-management of symptoms, diet, exercise, smoking, medications and stress response according to guidelines for risk factor reduction from the Heart Foundation Australia.²³

The strategies used in the intervention were aimed at improving perceptions of control, self-efficacy, and social support related to their cardiac illness.²⁴⁻²⁸ Strategies to promote perceptions of control included providing information regarding coronary heart disease, events and treatments in response to women's needs, targeting areas that the women may act upon and providing choices.^{24,29,30} Strategies to promote perceptions of self-efficacy included encouraging progressive mastery of skills using small, incremental goals appropriate to the stage of recovery, women's roles and presence of comorbidity, confirmation of progress and positive comparisons to other similar women.²⁷ Perceptions of social support were enhanced by using empathic listening, helping reinterpret situations and taking an interest in day to day concerns.^{20,31,32} Women's self-esteem was

also promoted by reinforcing their skills and abilities in managing multiple roles and relationships. Family participation was encouraged at all stages of the intervention.

The intervention protocol was reviewed by an expert panel of cardiac Clinical Nurse Consultants and tested on several female patients attending cardiac rehabilitation. Minor alterations in the scope of the intervention were made as a result of this consulting and testing process.

Delivery of the telephone follow-up protocol was interrupted by readmissions and events in the women's lives. For 4 women, death occurred shortly following discharge, before the first follow-up call (Table 2). Most women received 3 telephone sessions. All women allocated to the treatment group who completed the final interview, regardless of the number of telephone sessions, were included in the analysis based on intention to treat.

Data Collection: Data were collected 1 to 2 days before discharge by interview and chart audit on clinical, social, psychological and demographic variables. Outcome data were collected at 12 weeks by telephone interview on psychological variables and events occurring during follow-up that could potentially influence the effect of the intervention, such as stressful personal events e.g., family deaths, readmissions and attendance at cardiac rehabilitation.

Instruments: Psychosocial recovery was assessed by measuring anxiety, depression and overall psychosocial adjustment to illness. The Psychosocial Adjustment to Illness Scale (PAIS) uses 46 items to measure the demands on patient's coping skills resulting from a chronic illness in several dimensions: health care orientation, vocational environment, domestic environment, sexual relations, extended family relations, social environment and psychological distress.³³ Higher scores reflect worse psychosocial adjustment. The PAIS has been demonstrated to be sensitive, reliable and valid in cardiac patients.^{24,34-39} The Hospital Anxiety and Depression Scale (HAD) uses 14 questions to measure anxiety and depression, distinguishing these states from any cardiac symptoms.⁴⁰ Higher scores reflect more distress and scores above 11 identify a clinical condition. The HAD has been demonstrated to be sensitive, reliable and valid in cardiac patients.^{26,38,41-43} Additional data were collected at baseline related to perceptions of control over the cardiac illness using the Control Attitudes Scale (CAS) as these scores are predictive of scores on the PAIS in cardiac patients.^{34,44} The CAS consists of four belief statements measuring perceptions of personal and family control in the context of cardiac disease. The CAS has been reported to be reliable and valid in cardiac patients.³⁴

Data analysis: Baseline group characteristics were compared to identify any differences between the intervention and usual care groups by using independent *t*-tests, chi-square and Fisher's exact tests. The effect of the intervention on the dependent variables total psychosocial adjustment, anxiety and depression was tested using repeated measures analysis of variance. The predictors of psychosocial adjustment, anxiety and depression were determined by backward reduction of multiple regression models to the

most parsimonious model. Each model included baseline values of the dependent variable plus age, education, living arrangements, work status, perceived control, diagnosis, cardiac function, length of stay, readmission and stressful event during follow-up. Taylor linear approximation was used to take into account the randomization by cluster design in the multiple linear regression models.⁴⁵⁻⁴⁷ Statistical significance was set at a p value of 0.01 using Bonferroni calculation to limit Type 1 error.

RESULTS

There were no significant differences at baseline between the control and intervention groups in sociodemographic, clinical characteristics (Table 1) or psychosocial characteristics (Table 3). At 12 weeks there were no significant differences between the groups for the mean scores on psychosocial adjustment ($F[1,182] = 0.06, p = 0.8$), anxiety ($F[1,182] = .015, p = 0.69$) or depression ($F[1,182] = 0.11, p = 0.74$), as summarized in Table 3. Therefore, it was concluded that the intervention had no effect. Significant improvements were made over time for mean scores on psychosocial adjustment ($F[1,182] = 58.37, p = 0.00$), anxiety ($F [1,182] = 74.58, p = 0.00$) and depression ($F[1,182] = 14.11, p = 0.00$) (Table 3). No significant interactions occurred for time and group for psychosocial adjustment ($F[1,182] = 0.18, p .068$), anxiety ($F[1,182] = 0.9, p = 0.34$) or depression ($F[1,182] = 0.00, p = 0.97$) confirming that the intervention had no effect.

Predictors of poor psychosocial adjustment are detailed in Table 4. They include age, experiencing a major stressful event during follow-up, being unemployed/retired or poor adjustment at baseline. The effect of age was nonlinear, so that in order of adjustment, women with the worst psychosocial adjustment to their illness were aged under 55 years, women with moderate adjustment were aged over 70 years and women with the best adjustment were aged between 55 and 70 years. The predictors of increased anxiety were having a stressful event or being readmitted for a cardiac cause during recovery, being unemployed or retired and having poor perceptions of control over their cardiac illness before the cardiac event. Similarly, the predictors of increased depression were having a stressful event or being readmitted for a cardiac cause during recovery, being unemployed or retired, having poor perceptions of control over their illness or being depressed before their cardiac event.

Discussion.

The telephone follow-up intervention providing information and support demonstrated no benefit for psychosocial recovery in this population of women who have had a cardiac event. Possible explanations for the lack of effect of the intervention include the nonselective sample of women, dilution of treatment effects by complicated recovery, early measurement of outcomes and relatively short duration and low intensity of treatment.

Many women were included in the trial that would have been excluded from previous trials, i.e., because of old age, previous cardiac history, rural residence and lack

of a caregiver. Therefore, the results of this trial may reflect more accurately the effects of an intervention on the general population of female cardiac patients.

Effects of the interventions may have been diluted by difficulties in the delivery of the full protocol (5 sessions), which was only received by a third of the women. Follow-up sessions were interrupted by frequent readmissions, personal stress and multiple roles. Therefore, the intention to treat analysis may also have diluted any true therapeutic effect. Furthermore, the use of the telephone instead of face-to-face may have limited the effectiveness of the techniques used, given women's circumstances.²⁹ The Gilliss et al. trial (1993) demonstrated some benefits for self-efficacy in a combined sample of men and women, therefore there is a possibility, that women may respond differently to the telephone intervention to men. However, as neither the Gilliss et al. trial nor any other trial of telephone intervention reported effects by gender, this possibility can-not be determined.⁴⁸⁻⁵¹

However, it would seem that women found the telephone method acceptable, as a comparatively large percentage (95%) remained in the intervention arm, whereas participation in cardiac rehabilitation programs was low. The tension between effectiveness and acceptability suggests that a range of flexible interventions need to be made available to suit women's recovery. This may be particularly necessary given that the women in this study demonstrated a frequency of readmission, which was higher than previous reports.^{43,60,61}

Finally, the PAIS is designed to measure adjustment in chronic illness over time and it is likely that changes in social adjustment may take six to twelve months to become evident given the unexpectedly high rate of readmissions.^{12,29,51,52} Continuing to measure outcomes at 6 and 12 months may have been more appropriate.

As most women recovered well from the cardiac event, it may be more appropriate to target interventions to women at risk of poor psychosocial recovery. The factors predictive of poor recovery can be used to identify women at risk during admission. These women are unemployed or retired, aged under 55 years, readmitted within 12 weeks, depressed, poorly adjusted to their illness and not feeling in control of their cardiac illness.

The influences of most of these factors are not surprising. For instance, age was anticipated to predict psychosocial recovery because age usually determines life stage and expectations of CHD. Therefore relatively young women not only experience the cardiac event as more of a crisis, but they must also recover while managing competing family and/or work demand.⁵³ In contrast, relatively older women may not be surprised by the cardiac event, but they often have to manage their recovery without support and in poorer health.⁵⁴⁻⁵⁶

Similarly, the influence of existing adjustment to illness and depression on adjustment to subsequent admissions confirms previous reports and was not surprising given the frequency of previous cardiac admission in the sample.⁵⁷⁻⁵⁹ Furthermore, unanticipated readmission for a related cardiac cause event increased anxiety and depression, possibly because women's perceptions of control over their cardiac illness were decreased by the admission. Low perceptions of control were also predictive of increased anxiety and depression, confirming previous reports.^{34,25} In contrast, perceptions of control were not predictive of psychosocial adjustment. Possibly, the relatively frequent occurrence of readmissions and other stressful events diminished the influence of baseline perceptions of control over later adjustment.

The positive influence of employment was not anticipated as previous reports suggested that women found employment an additional source of stress.⁵⁷ In this sample, few women were in paid employment, but employment probably provided financial, social and self-esteem support resources sufficient to counter work-related stress.

The relative lack of influence of many established predictors of psychosocial recovery, such as cardiac function, diagnosis, education and social support, was also not expected.^{19,60-63} It may be that clinical factors assume less importance in this population of women who have had previous admissions. The lack of influence of education and social support possibly reflects the difficulty in accurately measuring these factors in women. Years of education may not be a suitable surrogate for socioeconomic status in women,

as the great majority of women in this study had the minimal, legislated education requirement and frequently their socioeconomic status depended on their husband's education.⁶⁴ Similarly, living arrangements may not reflect support for women as it does for men, because for many of the women in this study, living with someone meant being primary carer for that person.

The influence of stressful life events during follow up was not anticipated and has not been documented previously, although the influence of bereavement on mortality in women has received some attention.⁵⁷ While bereavement and severe illness in the participant or their family would be expected to increase distress, it also appears that women's focus on caring roles may make them uniquely vulnerable to a range of stressful events.⁶⁵ Kessler and Mcleod determined in their study that unlike men, women's emotional involvement with family and friends means that women become distressed even when the events are not specific to themselves. This association has been referred to briefly in a study of female cardiac failure patients as the 'emotional cost of caring'.⁶⁶ It appears that women may be particularly vulnerable to these personal stressful events during recovery from a cardiac event. The impact of stressful events on women's psychosocial adjustment to illness was more varied than the impact on anxiety and depression suggesting that women's coping ability in this area varies somewhat. Identification of the mechanisms that help women cope with these stressful events would be worthy of further investigation. As reporting of stressful events occurred in response to unstructured questions, it would also be beneficial to examine further stressful events using validated instruments.

Conclusion

Despite being acceptable and suitable for women, a nursing intervention providing education and support by telephone had no benefit for women's psychosocial recovery from a cardiac event. Instead, a range of flexible interventions is required, which can cater for a wide range of ages, multiple role demands, readmissions and stress at home. Efforts should be made to target these interventions to the women at risk of poor psychosocial outcomes. These women are: unemployed or retired, aged less than 55 years, poorly adjusted to their cardiac illness, or readmitted to hospital within 12 weeks of a previous cardiac admission. Development of these interventions requires a better understanding of women's responses during recovery from a cardiac event, in particular women's responses to personal stress.

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References:

1. Dinnes J, Kleijnen J, Leitner M, Thompson D. Cardiac rehabilitation. *Quality in Health Care* 1999;8:65-71.
2. Thompson D, Bowman G. Evidence for the effectiveness of cardiac rehabilitation. *Intensive Crit Care Nurs* 1998;14:38-48.
3. Moore S. Effects of interventions to promote recovery in coronary artery bypass surgical patients. *J Cardiovas Nurs* 1997;12:59-70.
4. Toobert D, Strycker L, Glasgow R. Lifestyle changes in women with coronary heart disease: What do we know? *J Womens Health* 1998;7:685-699.
5. Mosca L, Manson J, Sutherland S, Langer R, Manolio T, Barrett-Connor E. Cardiovascular disease in women. A statement for healthcare professionals from the American Heart Association. *Circulation* 1997;96:2468-2482.
6. Wenger N. Exclusion of the elderly and women from coronary heart trials. *JAMA* 1992;268:1460-1461.
7. Frasure-Smith N, Lesperance F, Prince R H, Verrier P, Garber R A, Juneau M, Wolfson C, Bourassa M G. Randomized trial of home-based psychosocial nursing intervention for patients recovering from myocardial infarction. *Lancet North Am Ed* 1996;350:473-479.

8. Artinian N, Duggan C. Sex differences in patient recovery patterns after coronary artery bypass surgery. *Heart Lung* 1995;24:483-494.
9. Conn V, Taylor S, Abele P. Myocardial infarction survivors: Age and gender differences in physical health, psychosocial state and regimen adherence. *J Adv Nurs* 1991;16:1026-1034.
10. Wiklund I, Herlitz J, Johansson S, Bengtson A, Karlson B, Persson N. Subjective symptoms and well-being differ in women and men after myocardial infarction. *Eur Heart J* 1993;14:1315-1319.
11. Con A, Linden W, Thompson J, Ignazewski A. The psychology of men and women recovering from coronary artery bypass surgery. *J Cardiopul Rehab* 1999;19:152-161.
12. King K. Gender and short-term recovery from cardiac surgery. *Nurs Res* 2000;49:29-36.
13. Ades P, Waldmann M, Polk D, Coflesky J. Referral patterns and exercise response in the rehabilitation of female coronary patients aged > 62 years. *Am J Cardiol* 1992;69:1422-1425.
14. Halm M, Penque S, Doll N, Beahrs M. Women and cardiac rehabilitation: Referral and compliance patterns. *J Cardiovasc Nurs* 1999;13:83-92.
15. Thomas R, Houston Miller N, Lamendola C, Berra K, Hedback B, Durstine J, Haskell W. National survey on gender differences in cardiac rehabilitation

- programs. Patient characteristics and enrollment patterns. *J Cardiopul Rehab* 1996;16:402-412.
16. Oldridge N, Ragowski B, Gottlieb M. Use of outpatient cardiac rehabilitation services: Factors associated with attendance. *J Cardiopul Rehab* 1992;12:25-31.
 17. Buck C, Donner A. The design of controlled experiments in the evaluation of non-therapeutic interventions. *Journal of Chronic Disease* 1982;35:531-538.
 18. Hauck W. Randomization by cluster. *Nurs Res* 1991;40:356-358.
 19. Hamilton G, Seidman R. A comparison of the recovery period for women and men after an acute myocardial infarction. *Heart Lung* 1990;19:126-135.
 20. Hawthorne M. Women recovering from coronary artery bypass surgery. *Schol Inq Nurs Prac* 1993;7:223-252.
 21. Johnson J, Morse J. Regaining control: The process of adjustment after myocardial infarction. *Heart Lung* 1990;19:126-135.
 22. Kos-Munson B, Alexander L, Culbert Hinthorn P, Lloyd Gallagher E, Goetze C. Psychosocial predictors of optimal rehabilitation post-coronary artery bypass surgery. *Schol Inq Nurs Prac* 1988;2:171-199.
 23. National Cardiac Rehabilitation Advisory Committee. Recommendations for cardiac rehabilitation. National Heart Foundation Australia:Sydney, 1998:1-10.
 24. Krantz D. Cognitive processes and recovery from heart attack: A review and theoretical analyses. *Journal of Human Stress* 1980;6:27-37.

25. Taylor S, Helgeson V, Reed G, Skokan L. Self-generated feelings of control and adjustment to physical illness. *Journal of Social Issues* 1991;47:91-109.
26. Litt M. Cognitive mediators of stressful experience: Self-efficacy and perceived control. *Cognitive Therapy and Research* 1988;12:241-259.
27. Bandura A. Self-efficacy mechanism in human agency. *American Psychologist* 1982;37:122-147.
28. Callaghan P, Morrissey J. Social support and health: A review. *J Advanced Nurs* 1993;18:203-210.
29. Gilliss C, Gortner S, Hauck W, Shinn J, Sparacino, P, Tompkins C. A randomized clinical trial of nursing care for recovery from cardiac surgery. *Heart Lung* 1993;22:125-133.
30. Plach S, Wierenga M, Heidrich S. Effect of a postdischarge education class on coronary artery disease knowledge and self-reported health-promoting behaviours. *Heart Lung* 1996;25:367-372.
31. Hanisch P. Information needs and preferred time to receive information for Phase II cardiac rehabilitation patients: What CE instructors need to know. *J Continuing Ed Nurs* 1993;24:82-89.
32. King K, Gortner S. Women's short-term recovery from cardiac surgery. *Progress in Cardiovascular Nursing* 1996;11:5-15.
33. Derogatis L. The Psychosocial Adjustment to Illness Scale (PAIS). *J Psychosom Res* 1986;30:77-91.
34. Moser D, Dracup K. Psychosocial recovery from a cardiac event: The influence of perceived control. *Heart Lung* 1995;24:273-280.

35. Dracup K, Moser D, Marsden C, Taylor S, Guzy P. Effects of multidimensional cardiopulmonary rehabilitation program on psychosocial function. *Am J Cardiol* 1991;68:31-34.
36. Drory Y, Kravetz S, Forian V, Psychosocial adjustment in patients after a first acute myocardial infarction: The contribution of salutogenic and pathogenic variables. *Arch Phys Med Rehab* 1999;80:811-818.
37. Langeluddecke P, Fulcher G, Baird D, Hughes C, Tennant C. A prospective evaluation of the psychosocial effects of coronary artery bypass surgery. *J Psychosom Res* 1989;33:37-45.
38. Bowling A. Measuring Disease. Buckingham:Open University Press, 1995:374.
39. Derogatis L, Derogatis M. PAIS and PAIS-SR Administration, Scoring and Procedures Manual – II. Maryland:Clinical Psychometric Research Inc, 1990:57.
40. Zigmont A, Snaith R. The Hospital Anxiety and Depression Scale. *Acta Psychiatr Scand* 1983;67:361-370.
41. Campbell N, Thain J, Deans H, Ritchie L, Rawles J, Squair J. Secondary prevention clinics for coronary heart disease: Randomized trial of effect on health. *Br Med J* 1998;316:1434-1437.
42. Linden B. Evaluation of home-based rehabilitation programme for patients recovering from acute myocardial infarction. *Intensive Crit Care Nurs* 1995;11:10-19.
43. Lewin B, Robertson I, Cay E, Irving J, Campbell M. Effects of self-help post-myocardial-infarction rehabilitation of psychological adjustment and use of health services. *Lancet North Am Ed* 1992;339:1036-1040.

44. Wingate S. Quality of life for women after a myocardial infarction. *Heart Lung* 1995;24:467-473.
45. Binder D. On the variances of asymptotically normal estimators from complex surveys. *International Statistical Reviews* 1983;51:279-292.
46. Fuller W. Regression Analysis for Sample Survey. Series C. New York:Sankhya, 1975:117-32.
47. Rao J, Wu C, Yue K. Some recent work in resampling methods. *Survey Methodology* 1992;18:209-217.
48. Beckie T. A supportive-educative telephone program: Impact on knowledge and anxiety after coronary artery bypass graft surgery. *Heart Lung* 1989;18:460-55.
49. Garding B, Kerr J, Bay K. Effectiveness of a program of information and support for myocardial infarction patients recovering at home. *Heart Lung* 1988;17:355-362.
50. Roebuck A. Telephone support in the early post-discharge period following elective cardiac surgery: Does it reduce anxiety and depression levels? *Intensive Crit Care Nurs* 1999;15:142-146.
51. van Elderen-van Kamenade T, Maes S, van den Broek Y. Effects of a health education programme with telephone follow-up during cardiac rehabilitation. *Br J Clin Psychol* 1994;33:367-378.
52. Toobert D, Glasgow R, Nettekoven L, Brown J. Behavioural and psychosocial effects of intensive lifestyle management for women with coronary heart disease. *Patient Education and Counseling* 1998;35:177-188.

53. La Charity L. The experience of younger women with coronary artery disease. *J Womens Health Gend Based Med* 1997;8:773-785.
54. Helpard H, Meagher-Stewart H. The “kaleidoscope” experience for elderly women living with coronary artery disease. *Can J Cardiovasc Nurs* 1998;9:11-23.
55. La Charity L. The experiences of postmenopausal women with coronary artery disease. *West J Nurs Res* 197;19:583-607.
56. Moore S. A comparison of women’s and men’s symptoms during home recovery after coronary artery bypass surgery. *Heart Lung* 1994;24:495-501.
57. Brezinka V, Kittel F. Psychosocial factors of coronary heart disease in women: A review. *Soc Sci Med* 1996;42:1351-1365.
58. Reigel B, Gocka I. Gender difference in adjustment to acute myocardial infarction. *Heart Lung* 1995;24:457-466.
59. Varvara F. Women with coronary heart disease: An application of Roy’s adaptation model. *Cardiovasc Nurs* 1991;27:31-35.
60. King K, Porter L, Rowe M. Functional, social and emotional outcomes in women and men in the first year following coronary artery bypass surgery. *J Women’s Health* 1994;3:347-354.
61. Guiry E, Conroy P, Hickey N, Mulcahy R. Psychological response to an acute coronary event and its effect on subsequent rehabilitation and lifestyle changes. *Clinical Cardiology* 1987;10:256-260.
62. Deaton C. Patient perceived health status, hospital length of stay, and readmission after coronary artery bypass surgery. *J Cardiovasc Nurs* 1998;12:62-71.

63. O'Rourke A, Hampson S. Psychosocial outcomes after an MI: An evaluation of two approaches to rehabilitation. *Psychology, Health and Medicine* 1999;4:393-402.
64. Kaplan G, Kell J. Socioeconomic factors and cardiovascular disease: A review of the literature. *Circulation* 1993;88:1973-1998.
65. Kessler R, McLeod J. Sex difference in vulnerability to undesirable life events. *American Sociological Review* 1984;49:620-631.
66. Martensson J, Karlsson J, Fridlund B. Female patients with congestive heart failure: How they conceive their life situation. *J Advanced Nursing* 1998;28:1216-1224.

Table 1***Comparison of Group Characteristics***

| | Control Number (%) | Treatment Number (%) | <i>P</i> * |
|------------------------|-----------------------|-------------------------|------------|
| Number of subjects | 103 | 93 | |
| Paid employment | 13 (13) | 11 (11) | .86 |
| Live with others | 73 (71) | 66 (66) | .99 |
| Diagnosis- | | | |
| Myocardial Infarction | 16 (15) | 21 (23) | .09 |
| Cardiac bypass surgery | 52 (51) | 55 (59) | |
| Coronary angioplasty | 12 (12) | 6 (6) | |
| Angina | 23 (22) | 11 (12) | |
| NYHA functional class- | | | |
| Class I | 16 (16) | 11 (12) | .65 |
| Class II | 48 (48) | 47 (51) | |
| Class III | 39 (38) | 35 (37) | |
| Hospital | | | |
| Tertiary | 88 (85) | 74 (80) | .28 |
| Community | 15 (15) | 19 (20) | |
| Attend cardiac | | | |
| Rehabilitation | 29 (28) | 33 (35) | .44 |
| Age (yrs) | 68 ±12 | 67 ± 10 | .76 |
| Education (yrs) | 10 ± 3 | 10 ± 2 | .19 |
| Length of stay (dys) | 9 ± 7 | 11 ± 7 | .94 |

Mean values are ± standard deviation.

**t*-test for interval data, Chi-square test for nominal/ordinal data,

Fisher's Exact test for cells < 5;

Table 2***Number of Telephone Follow-up Sessions Received by Women in the Intervention Group***

| Number of Telephone Sessions | 0 | 1 | 2 | 3 | 4 |
|------------------------------|-------|-------|--------|---------|---------|
| Number of women n (%) | | | | | |
| Total n = 93 | 4 (4) | 7 (8) | 9 (10) | 39 (42) | 34 (36) |

Table 3

Comparison of Psychosocial Recovery Between Control (n = 103) and Intervention (n = 93) Groups

| | Baseline | | 12 Weeks | |
|-------------------------|-----------|--------------|-------------|--------------|
| | Control | Intervention | Control | Intervention |
| Psychosocial Adjustment | 39.6 ± 17 | 39.8 ± 14.3 | 27.2 ± 22.5 | 25.9 ± 22.3 |
| Anxiety | 10.1 ± 4 | 9.9 ± 4.5 | 5 ± 4.4 | 5.7 ± 5.2 |
| Depression | 6.1 ± 3.4 | 6.3 ± 3.5 | 4.1 ± 4.2 | 4.3 ± 4.6 |

Mean values are ± standard deviation. Psychosocial adjustment: higher scores indicate poorer adjustment; anxiety: higher scores indicate increased anxiety; depression: higher scores indicate increased depression.

Table 4**Significant Predictors of Psychosocial Recovery at 12 weeks (n = 182).**

| Variables | Beta Coefficient | 95% Confidence Interval | P |
|--|---------------------|-------------------------------|------|
| Psychosocial adjustment | | | |
| Stressful event | 15.98 | 6.55 – 25.41 | .001 |
| Unemployed/retired | 11.29 | 1.83 – 20.75 | .020 |
| Age [†] | -3.64 | -6.58 - -0.70 | .016 |
| Baseline psychosocial adjustment | 0.34 | 0.13 – 0.56 | .002 |
| Overall <i>F</i> test = 6.22, <i>p</i> = .000, <i>R</i> ² = .25 | | | |
| Anxiety | | | |
| Stressful event | 2.80 | 0.99 – 4.61 | .003 |
| Unemployed/retired | 1.68 | 0.06 – 3.31 | .042 |
| Readmission | 1.53 | 0.16 – 2.90 | .029 |
| Perceived control | -0.14 | -0.27 - -0.02 | .025 |
| Overall <i>F</i> test = 7.7, <i>p</i> = .000, <i>R</i> ² = .19 | | | |
| Depression | | | |
| Stressful event | 2.90 | 1.23 – 4.58 | .001 |
| Unemployed/retired | 2.00 | 0.50 – 3.51 | .009 |
| Readmission | 1.56 | 0.27 – 2.86 | .019 |
| Baseline depression | 0.18 | 0.02 – 0.35 | .032 |
| Perceived control | -0.15 | -0.26 - -0.04 | .008 |
| Overall <i>F</i> test = 5.02, <i>p</i> = .000, <i>R</i> ² = .18 | | | |

Psychosocial adjustment: higher scores indicate poorer adjustment; anxiety: higher scores indicate increased anxiety; depression: higher scores indicate increased depression.

† entered as age squared.

Effects of a Telephone Counseling Intervention on Psychosocial Function in Women Following a Cardiac Event.

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The study evaluated the effect of postdischarge telephone counseling on women admitted for coronary heart disease on psychosocial adjustment at 3 months and found no effect on adjustment, anxiety or depression. The worst adjustment occurred in women aged less than 55 years, not working, experiencing stress at home or already poorly adjusted to their cardiac disease.