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The development and testing of a nurse practitioner secondary prevention intervention for patients after acute myocardial infarction: A prospective cohort study

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ABSTRACT

Background: Patients with acute myocardial infarction (AMI) are at high risk for reinfarction and death. Therapies that have been shown to reduce these risks (secondary prevention) continue to be underutilized. Nurse practitioners are well positioned to provide secondary prevention during and following hospitalization.
Objectives: The purpose of this study was to evaluate the effects of NP care on the rate of provider implementation and patient achievement of evidence-based secondary prevention target goals.
Design: A prospective cohort design was used, which compared achievement of target goals between patients who received secondary prevention care from an NP to those who received usual care.
Participants: The sample consisted of 65 patients with AMI, admitted to a large community hospital. Patients meeting eligibility criteria were recruited consecutively.
Methods: The intervention was delivered by the NP before discharge from hospital and one week, two weeks, six weeks and 3 months after discharge. Data on patients' achievement of goals were obtained before discharge from hospital and 3 months after discharge from both groups.
Results: This study's results provide preliminary evidence that an NP delivered secondary prevention intervention can significantly improve achievement of the following target goals when compared to usual care: smoking cessation (OR 5), blood pressure (OR 15), attendance at cardiac rehabilitation (OR 7), physical activity five days a week (OR 17), physical activity $\geq$ five days a week (OR 34), achieving a glycated haemoglobin $< 7\%$ in those with diabetes (OR 10), triglyceride levels ($p = .02$), statin use at follow-up ($p = .05$), and number of weeks to cardiac rehabilitation ($p = .05$).
Conclusion: NP-led interventions such as this warrant duplication to evaluate reproducibility of the intervention and to determine if short-term improvements in secondary prevention goals translate into morbidity and mortality benefits.

What is already known about the topic?

- Therapies that have been shown to reduce future risk in those with coronary heart disease (secondary prevention) continue to be underutilized.

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- Secondary prevention programmes, with and without exercise components, improve outcomes in patients following acute myocardial infarction (Clark et al., 2005).
- Cardiac rehabilitation programmes, the most typical form of secondary prevention programme, are utilized by less than 30% of those eligible.

What this paper adds

- The results of this study demonstrate that a nurse practitioner can safely and effectively deliver a comprehensive secondary prevention intervention.
- A nurse practitioner delivered secondary prevention intervention is well received by patients and significantly improves the implementation of guideline based secondary prevention treatments and risk factor reduction strategies, and improves treatment goals achieved by patients.
- Diabetes and activity levels, risk factors that have been challenging to improve in most secondary preventions programmes, were significantly improved with this nurse practitioner intervention.

1. Introduction

Patients with coronary heart disease are at high risk for reinfarction and death. Secondary prevention entailing strategies aimed at decreasing these risks in patients with established coronary heart disease has been shown effective in achieving its goal. In Canada and the United States, risk factor control outperformed improvements in medical and surgical treatments as the source of the decline in age-adjusted mortality associated with coronary heart disease over the past two decades (Ford et al., 2007; Wijeysundera et al., 2010). In spite of conclusive evidence that secondary prevention strategies significantly reduce morbidity and mortality in coronary heart disease survivors, a significant proportion of patients in whom these therapies are indicated are not receiving secondary prevention strategies, or are receiving them in suboptimal doses (Anderson et al., 2007; Jackevicius et al., 2008; Kotseva et al., 2009; Lee et al., 2008; Smith et al., 2011; Yusuf et al., 2011).

Based on our ageing population and the growing need to reduce cardiovascular risks internationally, innovative ways to improve the uptake and implementation of secondary prevention strategies are required. In this study, the nurse practitioner, whose nursing background is strengthened through advanced training in health assessment, diagnosis, treatment and counselling, is proposed as an ideal healthcare provider for delivering preventive care for patients with coronary heart disease.

2. Background

Coronary heart disease is a leading cause of death in Canada, the United States, and Europe, and the most common cause of death worldwide reported by the World Health Organization (Kochanek et al., 2011; Mathers et al., 2009; Statistics Canada, 2008). Acute myocardial infarction is an acute presentation of coronary heart disease, which plays a central role in assessing the burden of heart disease (Roger, 2007). Despite the dramatic fall in coronary heart disease mortality rates over the last three decades (Cooper et al., 2000; Every et al., 2000), the burden of coronary heart disease and acute myocardial infarction has been increasing, and is projected to continue to do so into the next century due to the ageing population. The decline in coronary heart disease related mortality is thought to be largely due to improvements in treatment and secondary prevention (Lenfant, 2003; Roger, 2007).

Secondary prevention incorporates identifying, treating, and rehabilitating patients with coronary heart disease or acute myocardial infarction to reduce their risk of recurrence, decrease their need for interventional procedures such as coronary artery bypass surgery, improve quality of life, and extend overall survival (Cooper et al., 2000). Secondary prevention strategies include smoking cessation, blood pressure control, lipid management, physical activity promotion, weight management, diabetes management, antiplatelet agent/anticoagulant use, and long-term use of angiotensin-converting enzyme inhibitors and beta-adrenoceptor blockers (Antman et al., 2008; Graham et al., 2007; Smith et al., 2011). These risk reduction strategies are based on compelling evidence from clinical trials and are the foundation for the American Heart Association/American College of Cardiology Foundation guidelines for secondary prevention reduction therapy for patients with coronary and other vascular disease (Antman et al., 2008; Smith et al., 2011) and the European guidelines on cardiovascular disease prevention in clinical practice (Graham et al., 2007).

Although utilization rates of evidence-based strategies have improved significantly over time, target levels have not yet been achieved in each category of secondary prevention strategy. Specifically, there is still much room for improvement in the initiation of and adherence to non-pharmacological therapies, such as smoking cessation, physical activity and referral to cardiac rehabilitation (Teo et al., 2013), and the long-term adherence to medications (Kotseva et al., 2009; Yusuf et al., 2011).

Evidence indicates that structured secondary prevention programmes, with and without exercise components, significantly improve outcomes in patients with coronary heart disease (Clark et al., 2005; McAlister et al., 2001b). Secondary prevention cardiac programmes which are exercise-based are widely available in most urban and suburban communities, but are utilized by less than 20–30% of the patients who are eligible (Gravely-Witte et al., 2010; Suaya et al., 2007). In a recent synthesis of the literature examining strategies to increase patient enrolment in cardiac rehabilitation, Grace et al. (2011) reported that on average only 34% of those eligible are referred to cardiac rehabilitation. Similar rates of referral have been reported in a multinational survey conducted in 15 countries in Europe (Kotseva et al., 2004). In most, if not all, studies nurses were the most frequently reported professionals to lead or manage the programmes.

To date, the level of training that nurses possess in secondary prevention practice settings is not well defined. However, the level of training that the nurse possesses

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