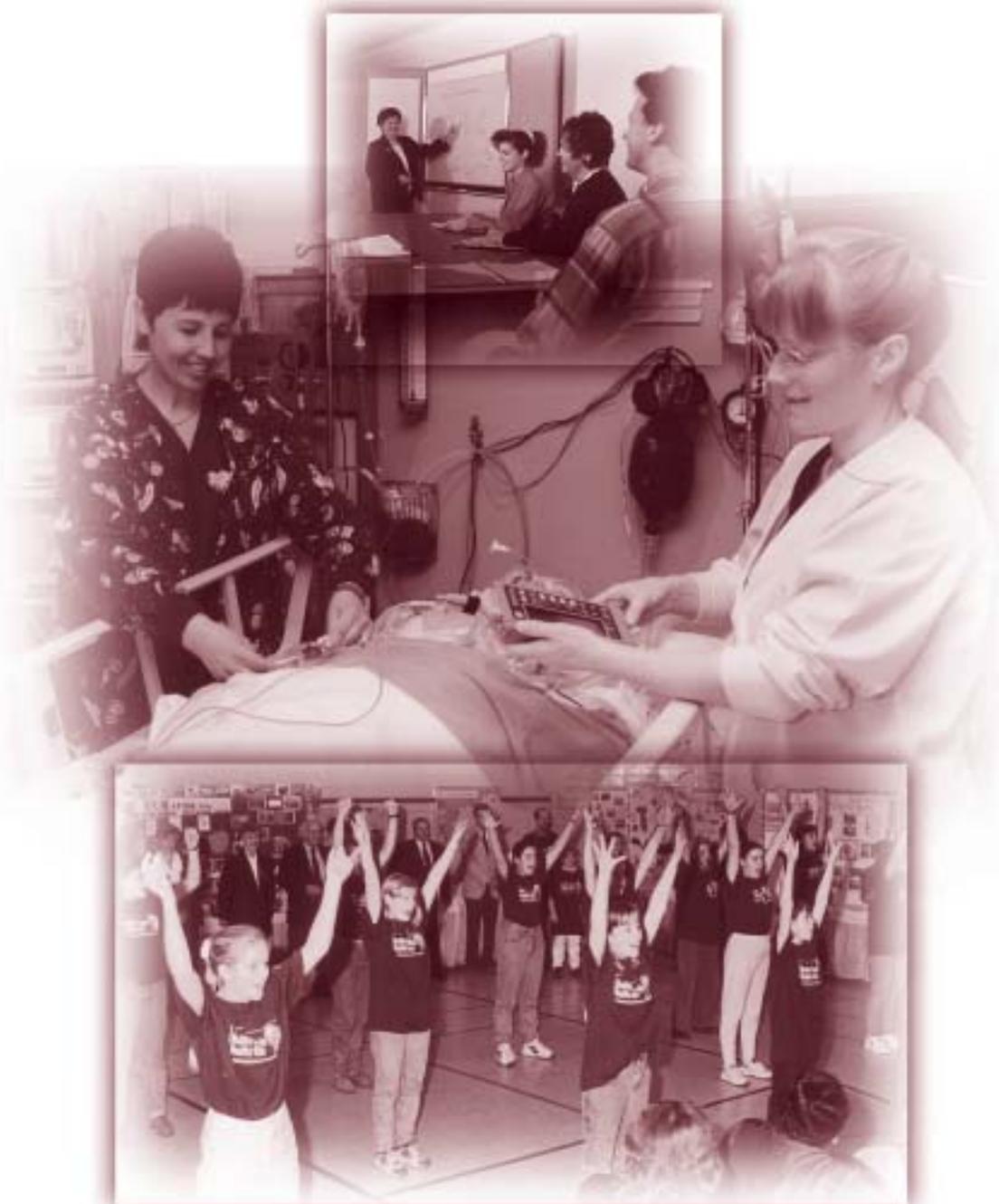


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SARS in Perspective – Are We Ready for the Next Round?

SARS, SARS, SARS. Health care workers in Toronto have felt its impact more strongly and directly than those of us working elsewhere, but it has affected all of us in some way or another. It's in the news almost every day, it has changed hospital visiting rules, it has affected travel, tourism and our economy, and it has made many of our patients, as *well* as the general population, anxious. I am loath to jump on the bandwagon and add more text on the topic, but it raises a number of important issues, as do other acute, infectious illnesses.

While the media made much of how many people contracted the disease and its high mortality rate, there was little attempt in the early days of its onset in Canada to put the disease in perspective. Between February 1, 2003 and June 24, 2003 there were 37 Canadian deaths related to SARS (WHO, 2003a). This number is small when compared to the approximately 19,000 deaths attributable to tobacco use or the approximately 3,200 deaths to pneumonia and influenza (about 600 to influenza alone) which would have occurred during those five months (Statistics Canada, 2003). During that time period, there were also approximately 33,000 deaths caused by cardiovascular disease, about 9,000 of which were myocardial infarctions and 6,000 of which were due to cerebrovascular disease (Health Canada, 2002). It is estimated that the number of deaths caused by the diversion of resources to SARS related activities will be four-fold the toll from SARS itself (Macdonald, 2003). Stephen Lewis, while speaking at an international economic forum in May, said he would like to see as much attention given AIDS in the third world (where 2.5 million sub-Saharan Africans will die of AIDS this year) as SARS has received globally.

The impact of SARS on travel and local economies is receiving lots of coverage in the recent media. SARS has also affected the ways hospitals function, over and above the changes we are all aware of in visiting. Fifty-one per cent of SARS cases in Toronto occurred in nurses and physicians. Farquharson

and Bagueley (2003), a nurse clinician and a manager at the Mount Sinai hospital, describe the changes which occurred in their hospital's emergency department in response to SARS. The amount of time it took to triage patients increased and now occasionally requires two nurses. In order to cope with a growing emergency room attendance over the past years, hallways had also been used for stretcher patients. With SARS, this practice ceased as did multiple stretchers in their resuscitation rooms, decreasing the bed/stretcher capacity from 33 to 16. Add to that the increased use of isolation procedures, the need for nurses to wear N95 masks throughout their 12-hour shifts, and the discouraging of staff socialization outside of work. SARS had a big impact on the working lives of Toronto nurses, not to mention the impact of these changes on the speed with which patients had access to much-needed care.

In light of this information, should we have done anything differently? Did we over-react? Did the World Health Organization (WHO) over-react? Did all the coverage SARS received produce fear in the public mind far beyond the real risk? Worldwide, the peaks in the daily number of cases occurred between mid-March and mid-April. By the end of April, the incidence of new cases was clearly declining and it no longer appeared that SARS was likely to become a major pandemic (WHO, 2003b). Despite this pattern, an East Asia news release, dated April 15, announced that "The World Health Organisation (WHO) is warning that Severe Acute Respiratory Syndrome (SARS) could become the first severe illness of the 21st century - with the potential to cause a global epidemic" (Channel News, 2003). While we can point fingers at the mass media for propagating fear, professional journals were also joining in with articles such as in *Science* (Scientists chase fast-moving and **deadly global** illness, March 2003) and in the *Pharmaceutical Journal* (SARS - a **worldwide threat**, April 2003). Many of the early projections did not take into account factors such as the interventions to decrease transmission and the potential for increasing herd immunity.

continued on page 4...



Certification in Cardiovascular Nursing

Sandra Matheson, RN, MN, MEd, CCCN(C), CCN(C), and Anna Svendsen, RN, MS, CCN(C)

Why Should I Write the Cardiovascular Nursing Certification Exam?

The certification program is valued by the Canadian Nurses Association (CNA) and the Canadian Council of Cardiovascular Nurses (CCCN) as an opportunity for Canadian nurses to confirm their competence within the speciality of cardiovascular nursing. Successful completion of the certification exam allows you, as a registered nurse, to demonstrate competence in cardiovascular nursing by meeting the national standards of our speciality.

Certification is a voluntary process that provides a sense of personal achievement. Certification in the speciality of cardiovascular nursing demonstrates to your patients, nursing colleagues, and employers that you have the knowledge and skills required to provide safe and efficient cardiovascular care.

By setting national standards of proficiency in numerous specialized areas, the CNA certification program goes a long way toward ensuring that the nursing care Canadians receive is uniformly excellent (CNA, 1993). The certification program also provides valued credentials to nurses who meet national standards. Certification in the speciality of cardiovascular nursing earns the credential of CCN(C). Example: J. Smith, RN, CCN(C).

What is the Speciality of Cardiovascular Nursing?

The speciality practice of cardiovascular nursing was validated by CCCN and CNA through the development and publication of *CCCN's Standards for Cardiovascular Nursing* (2000). The development of the CCCN's standards was an extensive process,

Editorial - continued from page 3...

How should this affect you and me as cardiovascular nurses? In the 1920s, we had the 'great' influenza epidemic, AIDS came along in the '80s, and now we are coping with SARS and West Nile Virus. There will always be new communicable disease entities with which we need to cope and the major first world killers, chronic diseases, will have to compete with these new entities for resources. Cardiovascular disease, while not new news, is still there and is still causing morbidity and mortality in North America in larger numbers than all of these recent communicable diseases combined. Clearly there is a need to assess the risk of epidemics/pandemics with high and widespread communicable disease mortality, but

how can this be done in a reasonable way without diverting much-needed resources from other causes of morbidity and mortality? How do we rationally allocate resources in the face of unfamiliar health threats like SARS? How do we keep the public informed without causing undue panic? What lessons have we learned from SARS? As health professionals, we need to share our expertise by being proactive in advocating for and participating in the development of appropriate plans **before** the next one comes along! As cardiovascular nurses, we must remember that the burden of cardiovascular disease remains heavy and that our work to reduce it must continue. ♥

Kirsten Woodend, Editor, CJC/N

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bringing together nurses from across Canada to identify the unique and diverse practice of cardiovascular nursing. The standards focus on the cardiovascular health of all Canadians within five key areas: health promotion, disease prevention, management of acute episodes and chronic conditions, and palliation and rehabilitation to resume optimal heart healthy living.

The standards are designed to guide cardiovascular nurses in providing quality care to patients and their families while they practise in a wide range of settings (example: providing care to individuals,

families, groups, communities and populations from tertiary care institutions to community health care agencies).

The nursing standards reflect a minimum of two years practice in cardiovascular nursing and do not address the pediatric practice of cardiovascular nursing.

Understanding and Preparing for the Exam

The CNA certification program is responsible for the development and maintenance of the cardiovascular exam in collaboration with CCCN.

The certification program utilizes competency-based testing. A competency describes an observable behaviour that would be expected of a competent individual (CNA, 2000). In the case of cardiovascular nursing, the competencies outlined in the *Blueprint for the Cardiovascular Nursing Certification Exam* (CNA, 2000) represent the core knowledge and skills expected of a nurse with at least two years experience within the speciality of cardiovascular nursing.

Experienced nurses from across Canada developed the cardiovascular competencies. They are divided into an 11-category classification scheme representing the broad areas of practice encountered in our speciality, to help organize cardiovascular nursing knowledge (CNA, 2000). These competencies form the basis of the test questions that are developed for the exam, targeting the unique body of knowledge within the speciality of cardiovascular nursing practice.

The cardiovascular competencies can be utilized in preparing to write the exam. Each of the 11 broad competency categories can be used as a reference guide to select appropriate chapters to review from a cardiovascular nursing text. You will be quite comfortable answering multiple-choice questions on the topics and clinical situations that you encounter on a daily basis. However, you will encounter knowledge and clinical situations that may be out of your comfort zone and you will need to review cardiovascular content using the appropriate reference texts. For example, a nurse who works on a general cardiology ward will be familiar with the knowledge/skill in caring for patients with ischemic heart disease. This broad competency category is “*care of the person with ischemic heart disease*”. One of the 19 subcategories within the broad competency “*care of the person with ischemic heart disease*” is “*the cardiovascular nurse selects appropriate nursing interventions to improve coronary artery blood flow and reduce the demand for oxygen related to angina*”. A multiple-choice test question constructed from this competency would examine your ability to choose an appropriate nursing intervention to deal with angina.

Table 1

Competency category	% of questions
Care of the person with ischemic heart disease	15-25% of questions
Core concepts related to health promotion, prevention and rehabilitation	10-20% of questions
The care of the person with heart failure	5-15% of questions
The care of the person who needs cardiac surgery intervention	5-15% of questions
The care of the person who needs non-surgical cardiac interventions/procedures: angiogram, angioplasty, electrophysiological studies/ablation	5-15% of questions
Care concepts related to cardiac electrocardiographic rhythms	3-13% of questions
The care of the person with valvular heart disease	1-11% of questions
The care of the person with vascular disease	4-13% of questions
The care of the person with heart disease related to inflammatory/infectious process: pericarditis, endocarditis, myocarditis	1-10% of questions
Core concepts related to psychosocial needs	1-9% of questions
The care of the person with cardiogenic shock	1-8% of questions

Cardiovascular Nursing Certification Exam Prep Guide (CNA, 2000, p.103)

However, as a general cardiology nurse, you may need to review content related to the broad competency “care of the person who needs cardiac surgical intervention”. One of the 21 subcategories within the broad competency of “care of the person who needs cardiac surgical intervention” is “the cardiovascular nurse selects appropriate post-operative nursing interventions to detect, monitor and manage potential bleeding”. A multiple-choice question constructed from this competency would examine your ability to select an appropriate nursing intervention to detect, monitor and manage potential post-operative bleeding.

The competencies can be used as a checklist to verify the clinical knowledge and skill you have as a result of your work experience. After reviewing all of the competencies, you will be able to identify the competencies/content areas where you have expertise, as well as the competencies/content areas that you will want to review and study in more depth.

The *Blueprint for the Cardiovascular Nursing Certification Exam* (CNA, 2000) provides you with information regarding the development of the cardiovascular exam. For example, the weighting for the 11 broad competency categories is provided to help you prepare for the exam. From Table 1 you can appreciate how the 170 questions on the cardiovascular exam are distributed.

All questions on the certification exam are multiple-choice. The questions test specific competencies and also measure your ability to answer three types of questions: knowledge/comprehension, application,

and critical thinking questions. Questions are either case-based or independent. Case-based questions will provide you with a brief situation followed by four to six questions based on that clinical situation. Independent questions are not associated with a case situation.

It is important to appreciate the different kinds of questions as you prepare for the exam. If you understand the types of multiple-choice questions that appear on the exam, this should help decrease your anxiety on exam day. A knowledge/comprehension question will test your ability to recall previously learned material and to understand its meaning. An application question will test your ability to apply knowledge and learning to situations. Finally, a critical thinking question will test your ability to interpret data, evaluate options and solve problems (CNA, 2000).

The *Blueprint for the Cardiovascular Nursing Certification Exam* (CNA, 2000) provides information regarding the type and method of multiple-choice question on the exam. (Table 2)

CNA’s Cardiovascular Nursing Certification Exam Prep Guide (CNA, 2000) is an excellent resource to help prepare for the exam. This guide is provided by CNA to each applicant once your certification application has been processed. Valuable background information as well as practice questions are included in the prep guide to help you prepare for the exam.

A final strategy that has been found to be successful in preparing for the exam is for cardiovascular nurses to come together to share their expertise and knowledge. These study groups can be composed of nurses from various clinical settings (cardiology, cardiac surgery, cardiovascular/coronary intensive care, cardiac catheterization/intervention, rehabilitation, ambulatory areas) who meet to share their expertise and knowledge in the various areas of health promotion, disease prevention, management of acute episodes and chronic conditions, palliation, and rehabilitation to resume optimal heart healthy living. Nurses have commented that the support of these groups helps to motivate and sustain their preparation for writing the exam and provides peers with whom to celebrate following achieving their certification.

Good luck in advance on becoming a certified nurse in cardiovascular nursing in Canada. ♥

Table 2	
Question presentation	% of questions
Independent	50-60% of questions
Case-based question	40-50% of questions
Question type	% of questions
Knowledge/comprehension	20-30% of questions
Application	35-45% of questions
Critical thinking	30-40% of questions
Cardiovascular Nursing Certification Exam Prep Guide (CNA, 2000, p.103)	

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Reducing Cardiovascular Risk: Identifying Predictors of Smoking Relapse

Clara E. Miller, MSN, RN, Pamela A. Ratner, PhD, RN, and Joy L. Johnson, PhD, RN

Although smoking relapse is the most frequently reported outcome of smoking cessation, with reported rates as high as 83% to 89% depending on the treatment format tried (Fiore et al., 2000), understanding the factors associated with relapse is not simple. The purpose of this study was to identify predictors of smoking relapse in a Canadian sample of former smokers. A secondary analysis was conducted of data collected in the Survey on Smoking in Canada, a national survey panel with four-cycle intervals in 1994-1995.

In this study, all respondents who reported that they were former smokers at cycle one (N = 3,875) were included and divided into two groups. One group (N = 3,582) remained abstinent from smoking throughout the survey's four cycles, and a second group (N = 293) experienced a smoking relapse sometime between cycles one and four.

Multiple logistic regression analysis of sociodemographic variables indicated that age, education, marital status, and employment status were associated with relapse. Differences were found between the two groups (relapsers versus non-relapsers) with respect to the presence of other smokers in the household. Differences were also noted between the groups when comparing subjects' exposure to smoke from cigarettes ($p < .001$); if subjects were bothered by cigarette smoke ($p < .001$); and if cigarette smoke caused any physical irritation ($p < .001$). Relapsers also differed from non-relapsers in that they reported smoking initiation at a much younger age. In all four cycles of follow-up, relapsers reported that "stress" was the primary reason for their smoking relapse.

Key words: smoking cessation, smoking relapse, tobacco, cardiovascular risk factors, recurrence, surveys

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Introduction

The cardiovascular nurse actively determines strategies in partnership with clients to reduce their risk of cardiovascular disease (Canadian Council of Cardiovascular Nurses, 2000). Because smoking is identified as one of the most potent modifiable cardiovascular risk factors, nurses need to partner with their smoking clients and develop sound strategies towards attaining a smoke-free future (Pearson, 2002; Stampfer, Hu, Manson, Rimm, & Willett, 2000). One such strategy is to better understand and prevent smoking relapse. The purpose of this study was to identify predictors of smoking relapse in a community-based, nationally representative population. This sample included

smokers who had ceased smoking by using a variety of strategies, particularly those not associated with formal programming. It was postulated that identifying predictors of smoking relapse might help guide cardiovascular nurses to a better understanding of the smoking relapse process, and to better identify and aid those most likely to relapse.

Literature Review

Although relapse is the most frequently reported outcome of smoking cessation attempts, with reported rates as high as 83% to 89% depending on the treatment format tried (Fiore et al., 2000), understanding the factors associated with relapse is not simple. Researchers have identified several variables that may be important. These variables include: sociodemographic characteristics; work and household tobacco smoke exposure; cigarette cost and availability; and emotional, psychological and social factors (see Table 1).

Sociodemographic characteristics such as age, income, marital status, gender, and education have been associated with successful smoking cessation (Curry,

Table 1

Variables associated with smoking relapse

- sociodemographic characteristics
- work and household tobacco smoke exposure
- cigarette cost and availability
- emotional, psychological, and social factors

Thompson, Sexton, & Omenn, 1989; Ockene, Benfari, Nuttall, Hurwitz, & Ockene, 1982). As well, researchers have reported that wealthier people and those with higher levels of education are more successful in quitting smoking (Brummett et al., 2002; McWhorter, Boyd, & Mattson, 1990; Willemsen, Hoogenveen, & Van Der Lucht, 2002).

Wewers and Ahijevych (1991) suggested that workload stress and exposure to others smoking in the workplace are consistent predictors of relapse during the first year following cessation. Several studies have identified that the presence of other smokers in one's immediate environment, particularly in the workplace and household, predisposes the "quitter" to relapse (Brandon, Tiffany, Obremski, & Baker, 1990; Daughton, Roberts, Patil, & Rennard, 1990; Garvey, Bliss, Hitchcock, Heinold, & Rosner, 1992; Secker-Walker et al., 1995).

Although the price of cigarettes and their availability have not been well-studied in the context of smoking relapse, the price and availability of cigarettes have been associated with the initiation of smoking. Health Canada (1995) reported an increase in smoking initiation, especially among youth, in provinces that reduced provincial tobacco sales tax, thus lowering the cost of cigarettes.

Researchers have reported that negative emotional states such as anger, anxiety, depression, and boredom predispose individuals to smoking relapse (Bliss, Garvey, Heinold, & Hitchcock, 1989; Borland, 1990). Social support, in the form of encouragement from significant others, is also associated with positive smoking cessation outcomes (Brandon et al., 1990; Brandon, Zelman, & Baker, 1987; Garvey et al., 1992). Mermelstein, Lichtenstein, and McIntyre (1983) found that subjects whose partners provided positive encouragement, rather than "policing" and "nagging," reported fewer relapses.

Although researchers point to these variables as important in the field of smoking relapse, many of the studies reported are associated with organized or formal smoking cessation programs, and they are not representative of a national Canadian sample. Therefore, additional research is required examining predictors of smoking relapse in a nationally representative Canadian sample that examines the "self quitter" population, a population not associated with formalized programs.

Methods and procedure

The purpose of this study was to identify predictors of smoking relapse in a nationally representative Canadian sample of smokers who had ceased smoking using a variety of strategies, particularly those not associated with formalized programming.

A comparative, correlational design was employed that involved a secondary analysis of data collected for the Survey on Smoking in Canada (Health Canada, 1995). The survey involved data collection over a four-cycle period: May 1994; August 1994; November 1994; and February 1995.

The Sample

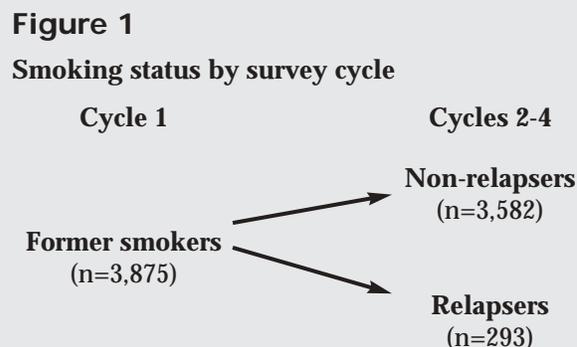
The target population for the primary study, the Survey on Smoking in Canada, was all persons 15 years of age and older living in Canada. Because the survey was conducted using a sample of telephone numbers, households that did not have telephones were excluded. However, people without telephones account for less than 3% of the Canadian population (Health Canada, 1995), and the survey estimates were weighted to account for persons without telephones.

The primary study sample was obtained using a refinement of random-digit dialling, namely the Elimination of Non-Working Banks method (Health Canada, 1995). The sample included respondents from Atlantic Canada, Quebec, Ontario, the Prairies, and British Columbia, and was stratified by age group (15-19, 20-24, 25-64, and 65+ years).

A subgroup was derived from the Survey on Smoking in Canada (n=15,804). The subgroup, the sample for this study, consisted of respondents who reported that they were former smokers at cycle one (n=3,875). These former smokers who reported that they were currently not smoking at cycle one of the survey and who had smoked at least 100 cigarettes in their lifetime (n=3,875) were divided into two groups. The first group (n=3,582) were former smokers who remained abstinent from smoking throughout the survey's four cycles. The second group (n=293) were respondents who experienced a smoking relapse between cycle one and cycle four (i.e., they reported being a current smoker at cycles two, three, or four) (see Figure 1).

Data Collection

Data collection for the Survey on Smoking in Canada (Health Canada, 1995) used computer-assisted telephone interviewing. The interviewer first read the



question to the respondent and then entered the respondent's answer. Thus, data collection and data capture occurred simultaneously, and the software application was programmed to ensure that only valid answers were entered.

Data Analysis

Descriptive statistics were used to characterize the sample, and the prevalence rate of smoking relapse was determined. Chi-square analyses and t-tests were used to determine the bivariate relationships between potential predictors and smoking relapse status. Multivariate logistic regression analyses were conducted to identify the unique contributions of the predictors, and to identify those factors with the strongest relationships with smoking relapse.

Reliability and Validity

Reliability of Data Collection.

Every effort was made by Health Canada and Statistics Canada to eliminate any potential sources of systematic or random error of the primary study, the Survey on Smoking in Canada (Health Canada, 1995). Random error was kept to a minimum by monitoring all computer-assisted telephone interviewing. This monitoring was conducted by senior interviewers who were responsible for ensuring that all interviews were done correctly, and that all interviewers were familiar with the concepts and procedures of the survey. Monitoring of the interviewers consisted of supervisors listening to select telephone interviews and observing the responses as they were entered into the computer-assisted telephone interview application.

Content Validity of the Questionnaire.

Experts who attended a workshop on data monitoring for tobacco use assessed the content validity of the survey questions and predetermined responses. These experts were members of Health Canada and Statistics Canada, as well as independent and university-based researchers and analysts specializing in the field of tobacco use.

Ethical Considerations

In that this research study consisted of a secondary analysis of data available in the public domain, few ethical considerations were relevant. The office of research services at the university waived the necessity of an independent ethical review. The data were provided on microdata tapes with no identifying characteristics, and the anonymity of the subjects was guaranteed. The investigator adhered to the guidelines for tabulation, analysis, and release as instructed by Health Canada (1995).

Results

Sociodemographic Characteristics of Relapsers and Non-Relapsers

To examine the sociodemographic characteristics multivariately, a multiple logistic regression analysis was conducted. All relevant sociodemographic variables were entered simultaneously. Age, education, marital status, and employment status were treated as "dummy" variables. Only four of these variables contributed significantly to the prediction of relapse: marital status, age, employment status (work activity), and education. The results of the multiple logistic regression model are reported in Table 2.

Work and Household Tobacco Smoke Exposure

There were no differences between the groups' (relapsers versus non-relapsers) exposure to workplace smoking restrictions. Significant differences were found, however, when the presence of other smokers (excluding the subject) in the household was examined. An independent t-test revealed significant differences; the number of people who smoked in relapsers' households was greater ($M = 0.6$; $SD = 1.1$) than in non-relapsers' households ($M = 0.3$; $SD = 0.8$) ($t = -4.10$, $df = 313.5$, $p < .001$). Significant differences were also noted between relapsers and non-relapsers when examining the respondents' exposure to smoke from cigarettes. If respondents were exposed less often to cigarette smoke ($\chi^2_{(df=4)} = 40.4$, $p < .001$), if they were bothered by cigarette smoke ($\chi^2_{(df=1)} = 47.1$, $p < .001$), and if cigarette smoke caused any physical irritation ($\chi^2_{(df=1)} = 27.9$, $p < .001$), they were less likely to relapse.

Cigarette Cost and Availability

Only one of 197 (0.7%) respondents who relapsed reported that his or her relapse was due to an increased availability of cigarettes; however, 43 of 197 (22%) participants who relapsed during one of the four cycles reported resuming smoking because the cost of cigarettes was lowered.

Emotional, Psychological and Social Variables

In open-ended questioning, 79 of 212 (37.3%) subjects reported that "to relax or calm down" was the primary reason for their smoking relapse. Twenty-six of 212 (12%) subjects reported that their reason for restarting smoking was to "combat boredom," and only two of 212 (1%) subjects reported that "curiosity" led to their smoking relapse. Table 3 displays, in rank order, the various reasons reported by relapsers for their smoking relapse, in all four cycles.

Discussion

Smoking relapse is the most commonly reported outcome of a smoking cessation attempt. Because cardiovascular nurses provide comprehensive care to their clients (Canadian Council of Cardiovascular Nurses, 2000), it is paramount that cardiovascular nurses are sufficiently knowledgeable to identify the risk factors associated with smoking relapse. Competent with this knowledge, cardiovascular nurses can implement strategies to aid in the prevention or minimization of their clients' smoking relapse.

The analysis of this study pointed to four significant predictors of smoking relapse. First, separated and divorced respondents were 3.5 times more likely than married respondents to relapse. Second, youth were more likely to relapse. Fifteen to 24-year-olds and 25 to 34-year-olds were 19 and 10 times more likely, respectively, to relapse than were 70+ year-olds. Third, those who were retired, keeping house, or looking for work were slightly more likely (1.5 times) to relapse than those who were employed. And fourth, although there was no trend noted across all educational strata, those with completed college (non-university) and trade school programs were 2.3 times more likely to relapse than were people with less than a high school diploma.

These study findings are mostly consistent with what has been reported in the published literature related to risk factors of relapse in smokers participating in cessation programs. Sociodemographic characteristics including age, income, marital status, gender, and education have all been associated with successful smoking cessation in other studies.

Researchers have reported that wealthier people are more successful in quitting smoking (Brummett et al., 2002; McWhorter et al., 1990; Willemsen, Hoogenveen & Van Der Lucht, 2002). The results of this study, however, did not establish the same association. An

explanation for this discrepancy and non-association may be attributed to the study's measurement of income. In this study, income was measured using the variable income adequacy, whereas in most studies household income variables are not adjusted for the number of residents dependent on the income.

Table 2

Summary of multiple logistic regression analysis of sociodemographic variables associated with smoking relapse

Variable Category	Non-relapser	Relapser	Odds ratio (95% CI)
Income adequacy			0.99 (0.85 - 1.15)
Marital status			
Married	2412	159	1.00 (referent)
Widowed	297	9	2.12 (0.84 - 5.37)
Separated/divorced	303	51	3.49 (2.36 - 5.19)
Single	570	74	1.19 (0.82 - 1.73)
Age group			
15-24 years	124	44	19.40 (7.38 - 50.99)
25-34 years	498	92	10.33 (4.45 - 24.00)
35-54 years	1418	128	4.80 (2.21 - 10.86)
55-69 years	974	15	0.67 (0.27 - 1.63)
70+ years	568	14	1.00 (referent)
Employment status			
Employed	1648	165	1.00 (referent)
Student	78	24	1.47 (0.77 - 2.80)
Retired/looking for work/keeping house	1514	94	1.47 (1.04 - 2.06)
Sex			
Male	2114	137	1.00 (referent)
Female	1468	155	1.21 (0.89 - 1.63)
Education			
Less than secondary	993	51	1.00 (referent)
Completed secondary	1373	122	.91 (0.61 - 1.35)
Completed community college/trade school	386	73	2.34 (1.52 - 3.60)
Completed university	468	37	1.08 (0.66 - 1.76)

Table 3

Reasons for smoking relapse

Reason	Frequency (n=212)	%
To relax or calm down	79	37.3
Lower costs	43	20.3
Family/friends smoke	36	17.0
To combat boredom	26	12.3
Going out more to bars/parties	22	10.4
Smoking habit	4	1.9
Curiosity	2	0.9

In all four cycles of follow-up, the primary reason subjects reported a smoking relapse was “to relax and calm down.” The need for relaxation has been identified as a response by individuals to life stresses (Wright & Leahey, 1991). It has been argued that life stresses can interfere with the ability to maintain smoking cessation, and should be taken into account when treating relapsers (Shiffman, 1982; Swan et al., 1988). Certainly, cardiovascular nurses have specialized skills to empower clients to make the necessary changes to better cope with life stresses, thus aiding in the prevention of smoking relapse.

This study also found significant differences when the presence of other smokers (excluding the respondent) in the household were examined. When more household members smoked, participants were more likely to relapse. Differences were also noted between the two groups (relapsers and non-relapsers) when former smokers' exposure to smoke from cigarettes, if they were bothered by cigarette smoke, and if cigarette smoke caused any physical irritation, were examined. The findings indicate that participants were at greater risk for relapse when they were frequently exposed to other smokers and that they were not bothered by secondary smoke. These findings suggest that there may be an association between a person's tolerance of secondary smoke and their risk of relapse. Armed with this knowledge, cardiovascular nurses can encourage and advocate for clients engaged in the smoking cessation process to avoid secondhand smoke. This finding also identifies the need for family-based smoking cessation interventions and points out how all members of a household should support one another in their cessation efforts.

Many studies have examined issues pertaining to the initiation of smoking by youth (Abernathy, 1997). Most researchers suggest that there is very little new smoking initiation after age 21 (Chen & Kandel, 1995). Chassin, Presson, Sherman, Corty, and Olshavsky (1984) and Chassin, Presson, Rose, and Sherman (1996) reported that ‘tobacco tolerance’ in young people is associated with the commencement of smoking. For example, if youths are physically bothered by cigarette smoke, they are less likely to begin smoking. It is plausible that the

tobacco intolerance observed in those who do not initiate smoking might also be related to smoking relapse. This is an interesting finding that directs researchers to further investigate the association between a person's lack of tolerance of tobacco smoke and smoking relapse.

Limitations

A major limitation of this data set, as is true with all secondary analyses, is that the original study, commonly referred to as the primary study, was designed before the research question of this study was formulated. Because this research study was based within the framework of a secondary analysis, certain factors that may have been relevant to smoking relapse may too have been absent from the original data set. This lack of information is a problem in most, if not all, secondary analyses simply because the research question of the secondary analysis is limited to the data collection procedures designed for the primary study.

Implications for Practice

Nurses can make a significant difference in the smoking cessation outcomes of their smoking clients by implementing client-centred strategies that include the prevention of smoking relapse (Johnson, Budz, Mackay, & Miller, 1999; Taylor, Houston-Miller, Killen, & DeBusk, 1990; Taylor et al., 1996). The Canadian Nurses Association (1997) advocates that nurses can make a significant difference, and has recommended that nurses assist Canadians who are affected by tobacco and nicotine addiction by becoming involved in tobacco prevention, protection, and cessation. Major building blocks toward successful smoking cessation include a better understanding of the prevention of smoking relapse.

This study has contributed to cardiovascular nurses' knowledge about variables associated with smoking relapse in a Canadian population. Because cardiovascular nurses are skilled in the principles of behaviour change (Canadian Council of Cardiovascular Nurses, 2000), they are capable of incorporating into their practices a process of aiding clients toward the prevention of smoking relapse. First, the cardiovascular nurse should identify clients engaged in the smoking cessation process, including those who are former smokers. Second, the cardiovascular nurse should assess the client's degree of risk by identifying the predictors of smoking relapse. Third, proficient in the principles of behaviour change, the cardiovascular nurse should implement client-centred strategies to prevent or minimize smoking relapse (see Table 4).

Summary

Although the health consequences of smoking are well-known, an estimated 5.4 million Canadian aged 15 years and older continue to smoke (Statistics Canada,

Table 4

Prevention of smoking relapse: implications for practice

1. Identify clients engaged in the smoking cessation process, including former smokers.
2. Assess client's degree of risk by identifying predictors of smoking relapse.
3. Implement client-centred strategies to prevent or minimize smoking relapse.

2003). The contribution of cigarette smoking to disease is significant in terms of both overall morbidity and mortality, and, consequently, it is the leading cause of preventable deaths in Canada (Health Canada, 1995). Even though numerous Canadian smokers attempt to reduce their health risk by engaging in the smoking cessation process, their most frequently reported outcome is relapse.

In an attempt to better understand smoking relapse, this study set out to identify predictors of smoking relapse in a community-based, nationally

representative population which included smokers who had attempted to stop smoking using a variety of strategies. Because cardiovascular nurses have specialized skills and practice in a wide range of settings, they need to recognize former smokers who are at high risk of relapse and incorporate into their practices relapse prevention activities in addition to smoking cessation interventions. If these objectives are met, cardiovascular nurses will pave the way for clients to achieve the critical health goal of attaining a smoke-free future. ♥

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Positive Outcomes in Cardiac Rehabilitation: The Little Program That Could

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Cardiac rehabilitation programs (CRPs) are receiving increasing attention because they restore, maintain, or improve both physiologic and psychosocial client outcomes (Evenson, Rosamond & Luepker, 1998). However, less attention has been paid to the effect such programs may have on the health-related quality of life of participants. The objective of this study was to measure health-related quality of life outcomes before and after participation in a CRP. Participants were 64 clients entering one of five CRP groups at the Lethbridge Regional Hospital in southern Alberta. Participants completed the Short Form 36 Health Survey (SF-36) (Ware, 1997) both at the beginning and at the end of one 13-week CRP intervention. The SF-36 examines eight health concepts: physical functioning (PF), role-physical

(RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE), and mental health (MH). Analysis showed a significant difference between the pre-test and post-test scores for six of the eight categories. Larger effect sizes were found for PF ($d=.746$), RP ($d=.657$), and VT ($d=.593$). Smaller effects were found for BP ($d=.299$), SF ($d=.337$), and RE ($d=.271$). The findings of this study highlight improved health-related quality of life outcomes for clients participating in comprehensive cardiac rehabilitation programs.

Key words: cardiac rehabilitation program, cardiac, heart disease, program evaluation, quality of life, stress management, therapeutic exercise

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Cardiac rehabilitation programs are receiving increasing attention because rehabilitation restores, maintains, or improves both physiologic and psychosocial client outcomes (Evenson et al., 1998). Researchers have found that cardiac rehabilitation programs (CRPs) are an important strategy in comprehensive cardiac health care because they have been shown to reduce mortality and morbidity (Bittner & Oberman, 1993; Thompson, 1996), improve psychological health (Gavin et al., 2000), and cut medical costs (Blackburn et al., 2000; Thompson, 1996). However, less attention has been paid to the impact that CRPs might have on the overall health-related quality of life for CRP participants. Therefore, the objective of the present study was to assess the overall health-related quality of life of CRP participants, both before and after involvement in a CRP at a small, regional centre in southern Alberta.

Cardiac rehabilitation is a relatively new and rapidly expanding intervention that has been

largely developed, delivered, and evaluated by nurses (Thompson, 1996). In recent years, there has been a trend toward more comprehensive and preventative cardiovascular programs. For example, national cardiac rehabilitation guidelines in the United Kingdom (UK) include medical, psychosocial, exercise-based, educational, and vocational components (Thompson, 1996). In the UK and the United States, risk factor modification, participation of partners, stress management, and psychological intervention are considered as equal, fundamental components of a comprehensive, interdisciplinary CRP (Harper et al., 1999; Thompson, 1996). There is evidence that comprehensive CRPs that integrate these components result in both medical and psychosocial improvements, such as significant reductions in anxiety for both client and partner, significant improvement in sexual adjustment, and resumption of leisure activities (Thompson, 1996).

Fridlund, Hogstedt, Lidell, and Larsson (1991) evaluated a multifactorial rehabilitation program based on biopsychosocial content and interdisciplinary caring efforts for myocardial infarction (MI) clients. In terms of biophysical improvements, re-infarctions were significantly lower 12 months after MI among the intervention clients. Physical capacity was also increased, and intervention clients reported decreased pain, breathlessness, and exertion. Psychological improvements were not as pronounced, but were demonstrated in higher life satisfaction for the intervention group. Social improvements were manifested in better leisure situations and improvements in relationships with spouses/partners. Fridlund et al. (1991) concluded that self-ratings of health, in combination with objective measurements by health care professionals, are clearly important.

Daumer and Miller (1992) found that the level of psychosocial functioning and perception of life satisfaction were strongly related in cardiac rehabilitation clients. They concluded that rehabilitation nurses could enhance their clients' quality of life by directing their practice toward enhancing the psychosocial functioning of their clients. They also emphasized the importance of considering the client within the context of family, a theme echoed by Harper and Groves et al. (1999) in their discussion of cardiac rehabilitation support groups.

Jette and Downing (1994) used the Short Form Health Survey (SF-36) to measure the self-perceived health status of 789 individuals entering a cardiac rehabilitation program. The SF-36 is a self-administered survey designed to measure health-related quality of life (Jette & Downing, 1994; Ware, 1997). It measures eight health-related concepts that make up a multidimensional scale: physical functioning; social functioning; role limitations due to physical problems; role limitations due to emotional problems; mental health; energy/fatigue; bodily pain; and general health perception. Jette and Downing's study showed that cardiac disease was associated with reductions in health-related quality of life. Clients were most disabled or limited in their performance of roles by physical problems. Limitations affected the kind of activities performed, the amount of time spent on activities, and the ability to perform activities taken on. Clients also experienced considerable lack of energy or fatigue. Health was least limited by bodily pain. Jette and Downing concluded that the SF-36 has potential as a useful instrument for objectively measuring the health-related quality of life of cardiac rehabilitation clients, and identifying the dimensions of health most affected. Nevertheless, their study was restricted to

clients *entering* a CRP and did not address the question of whether participation in a CRP actually influences health-related quality of life (as measured by the SF-36).

In the present study, the authors aimed to extend the work of Jette and Downing (1994) by measuring health-related quality of life of clients both before *and after* participation in a CRP. The SF-36 survey was chosen, not only due to its wide acceptance as a health-related quality of life tool (Anderson, Aaronson & Wilkin, 1993), but also for its ability to capture quality of life facets particularly important to cardiac patients, such as vitality (Corcoran & Durham, 2000; Smith, Taylor & Mitchell, 2000; Ware, 1997). Therefore, the objective of the present study was to assess health-related quality of life (as measured by the SF-36) both before and after participation in a comprehensive 13-week cardiac rehabilitation program (CRP). The hypothesis of this study was that there would be a statistically significant difference between the paired pre-test and post-test SF-36 scores, with higher post-test scores reflecting the positive effect of the CRP on the participant's health-related quality of life.

The Cardiac Rehabilitation Program

The present study took place at the Lethbridge Regional Hospital (LRH) in southern Alberta. The LRH serves the Chinook Health Region (CHR), and the cardiac rehabilitation program (CRP) was developed as a comprehensive recovery, rehabilitation, and risk-reduction program for cardiac clients in the CHR. The CHR population is approximately 120,000, and the number of annual referrals to the CRP is approximately 300. The program is small, with the equivalent of 1.2 full-time positions being shared by two nurses. Despite a lack of funding and human resources, creative partnerships have been developed to secure resources and to integrate multi-agency support services funded both by the CHR and outside agencies. To ensure consistency of the program, the CRP nursing staff is responsible for coordinating all components of the program, among various disciplines and community partners. This administrative activity is combined with responsibilities in clinical assessment, as well as education and fitness/exercise leadership and programming.

The referral process is consistent for the majority of clients who ultimately participate in the CRP. Automatic referral for all MI clients takes place as a function of admission to any hospital in the region with acute coronary syndrome; a standardized "clinical pathway" has been developed for health care providers caring for this population. The pathway cues the nurse early in the process to begin to establish connections between the client and the

CRP to ensure early follow-up and to introduce program services. Other referrals are received directly through physicians' offices and other health care providers, as well as directly from clients and families.

Once the referral occurs, the client receives a regionally developed "survival" package of cardiac educational materials. Information is standardized throughout the CRP: the materials are consistent with – and complement – information distributed by external health care agencies specializing in cardiopulmonary health. The package provides information about specific resources and services available, as well as more general introductory information on topics such as lifestyle management, angina, common medications, activity, nutrition, and stress. Tobacco users receive additional information about smoking and heart disease, smoking cessation techniques, coping tips and available resources. Additional resources including videos, journals, newsletters, and other printed materials are available at no charge from the Heart Health Resource Centre. While they are in the hospital, clients are invited to tune in to an inhouse televised "Medicine Show" which delivers the same information, but in a different format.

Upon discharge from hospital, a CRP staff member contacts all clients personally. If appropriate and possible, the client is then scheduled for a rehab/risk reduction assessment, ideally within one month of discharge. Depending on acuity, disability, comorbidity, and individual client need, this assessment can either be scheduled as a separate outpatient visit or in conjunction with a Heart "CHEK" (Cardiac Health Education Klass). The one-day Heart "CHEK" involves group presentations and discussions on heart health issues, and provides an opportunity to reinforce important heart health messages. Also built into this day is a one-on-one discussion between the client and a CRP nurse; during this discussion, the health history, unique needs, attainable goals, and available resources/consult services are explored in-depth. Partners, spouses, and other interested support persons are invited to participate in all aspects of programming. A "teamwork" approach is strongly encouraged in the hope of relieving anxiety, promoting confidence, and improving long-term outcomes (Trodden, 2001).

Following assessment, clients are scheduled for a 10-week exercise and education program. Each group session involves a twice-a-week exercise program led by a CRP nurse. The exercise session incorporates intensity modification, upper body exercise, and light resistance training, given an overall objective of

improvement of cardiovascular and functional fitness. This session is followed by a half-hour education session provided by health care professionals from various disciplines. Upon completion of the program, clients are encouraged to continue with their new healthy habits at home. Clients may be connected with community resources that will assist them. The popular option is a twice per week exercise session offered by the "Be Fit for Life" Centre at the local community college and taught by the CRP staff nurses.

Method

Participants

Participants were 64 clients joining in one of five CRP sessions at the LRH between September 1999 and January 2001. Although 214 surveys were initially collected, only matched pre-test/post-test pairs which had consistent wait and program start times of less than three months from initial assessment until exercise start were included in this study. Eight surveys which did not have consistent wait times were discarded, and 51 surveys were discarded for incomplete data. Twenty-seven individuals completed a pre-test but no post-test. Of these 27 individuals, 11 chose not to complete the survey, and 16 did not complete the program for a variety of reasons, including return to work, lack of transportation arrangements, co-morbid problems, and non-heart-related surgery. Therefore, 128 surveys representing 64 participants were included in this study (n=64).

All participants met the admission requirements to the CRP as set out in the Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention (Canadian Association for Cardiac Rehabilitation, 1999). The average age of the entire sample was 65.25 years, with five clients over the age of 80 and four clients under the age of 50. Eighty per cent of the participants were male, and 20% were female. Fifty-seven per cent of the males had partner participation, while only 30% of the females had partner participation.

The majority of clients were accepted into the CRP based on automatic referral from their physicians. Thirty-eight per cent of the subjects were referred for cardiac rehabilitation with a diagnosis of PTCA (percutaneous transluminal coronary angioplasty), 31% had undergone coronary artery bypass graft (CABG) surgery, 27% were referred post-myocardial infarction (MI), and 5% had congestive heart failure.

Procedure

Ethical approval for the research study was received from the regional research ethics committee. All participants were informed about the general goals

and nature of the study, and signed an informed consent form prior to their participation. Participants completed the SF-36 surveys twice: at the beginning (pre-test) of the 13-week CRP session, and at the end (post-test) of the CRP session. The questionnaire takes about 10 minutes to complete. All pre-test surveys were mailed to the participants, who brought the completed documents to their initial assessments. The post-tests were completed on site at the last class, or, if the client was absent on that day, at the post assessment session.

Instrument

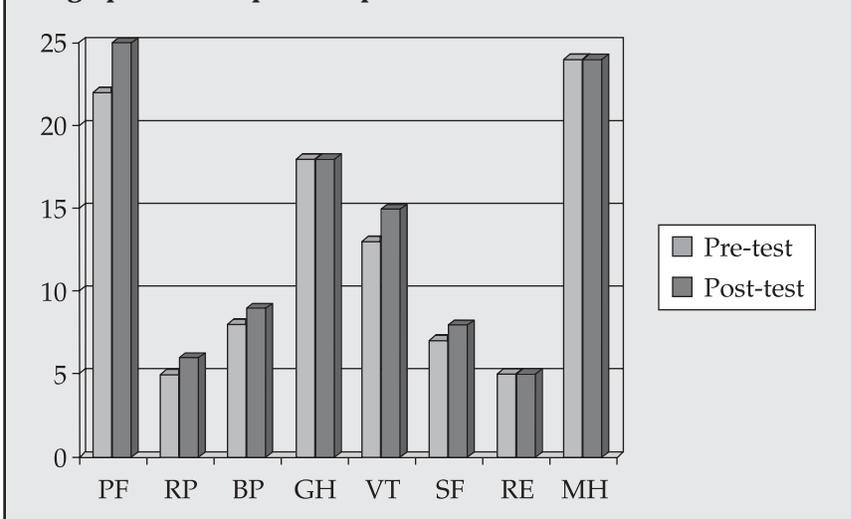
The SF-36 is one of the most widely-used international health-related quality of life tools, and has proven reliability, precision, and validity (Failde & Ramos, 2000; Gandek et al., 1998; Ware, 1997). The SF-36 has 36 questions, which are primarily Likert-type questions generally containing five or six choices (e.g., ranging from 'all of the time' to 'none of the time.'). The 36 questions are grouped to form scores for eight health concepts, which are measured on a scale of 0 to 100, with a higher score indicating better health (Ware, 1997). Physical functioning (PF) measures the limitations in performance of self-care, mobility, and physical activities. Highest scores indicate an ability to engage in vigorous activity without limitations due to health (10 items). Role-physical (RP) measures the degree to which an individual performs or has the capacity to perform activities typical for a specified age and social responsibility. These activities include working at a job, housework, school work, child care, community activities, and volunteer work. Highest scores indicate that no problems with work or other daily activities are occurring as a result of physical health (four items). Bodily pain (BP) measures the intensity, duration, and frequency of bodily pain and limitations in usual activities due to pain, such as headaches or backaches. Highest scores indicate no pain or limitations due to pain (two items). General health (GH) measures the beliefs and evaluations of a person's overall health, including current and prior health, health outlook, and resistance

to illness. Highest scores indicate a self-perception of health as excellent (five items). Vitality (VT) measures feelings of energy, pep, fatigue, and tiredness. Highest scores indicate self-perception of energy and pep all of the time (four items). Social functioning (SF) measures the ability to develop, maintain, and nurture social relationships including relationships with family, friends, neighbours; marital functioning; and sexual functioning. Highest scores indicate an ability to perform normal social activities without interference due to physical or emotional problems (two items).

Table 1
Comparison of pre- and post-test scores to USA general population

Pairs categories	Mean scores	Highest possible score	Mean as %	US population mean as %
PF1	22.06	30	74	
PF2	24.78	30	83	84.2
RP1	4.82	8	60	
RP2	6.06	8	76	81
BP1	7.94	12	66	
BP2	8.86	12	74	75
GH1	17.72	25	71	
GH2	17.67	25	71	72
VT1	12.67	24	53	
VT2	14.96	24	62	60.9
SF1	7.39	10	74	
SF2	8.27	10	82	83.3
RE1	4.92	6	82	
RE2	5.32	6	89	81.3
MH1	23.36	30	78	
MH2	23.78	30	79	74.7

Figure 1
Bar graph of mean pre- and post-test results



Role-emotional (RE) measures problems/ limitations with role due to emotional problems. Highest scores indicate no problems with work or other activities as a result of emotional problems (three items). Mental health (MH) measures emotional, cognitive, and intellectual status. Highest scores indicate self-perception of feeling peaceful and happy all of the time (five items).

Data Analysis

Statistical analysis was possible for this sample size ($n = 64$) since, according to Ware (1997), tests of statistical significance for SF-36 surveys may be conducted on sample populations with a minimal size of $n = 30$. Survey results were recoded and scored according to Ware (1997), and recoded data was entered and analyzed using SPSS 10.0 computer software (Paired Samples *t*-Test). Means and standard deviations were calculated for each of the scales, and SF-36 scores were compared with scores reported for a general population (see Table 1).

Results

Statistical analysis showed a significant difference between the pre-test and post-test scores in six of the

eight SF-36 categories: physical functioning (PF); role-physical (RP); bodily pain (BP); vitality (VT); social functioning (SF) and role-emotional (RE). In the categories PF, RP and VT, $p < .0001$. In the categories BP, SF and RE, $p < .05$. There were no statistically significant differences in categories GH ($p = .908$) or MH ($p = .323$) (see Table 2).

A bar graph depicting the mean pre-test and post-test scores of each category visually represents the differences between the eight categories (see Figure 1). The higher post-test scores in six categories indicate an improvement in the health concepts represented by these categories. These findings are supported by the large effect size in the categories PF ($d = .746$) and RP ($d = .657$), and the moderate effect size in the category VT ($d = .593$) (Ware, 1997) (see Table 3).

Discussion

The hypothesized difference between the paired pre-test and post-test SF-36 scores was supported by the data. Statistical analysis showed a significant difference between the pre-test and post-test scores of six of the eight SF-36 categories. These findings highlight the value of comprehensive cardiac rehabilitation programs in improving health-related quality of life, as measured by the SF-36.

In placing the results of this study within the larger context of cardiac rehabilitation research, it is of note that the socio-demographic characteristics of the sample population were consistent with other studies. For example, the average age of participation (65) and the substantially higher percentage of male versus female participation (80% versus 20%) are comparable to other studies in which older clients and women have been shown to have lower participation rates in CRPs (Bittner & Oberman, 1993; Blackburn et al., 2000; Evenson et al., 1998).

The reasons for referral to the physician in the present study are also consistent with other studies. For example, the sample population consisted of a higher percentage of clients referred post-PTCA

	Mean	Standard Deviation	t-value	Degrees of freedom	Significance
Pair 1 – PF1 – PF2	-2.72	3.64	-5.967	63	.000
Pair 2 – RP1 – RP2	-1.24	1.89	-5.180	61	.000
Pair 3 – BP1 – BP2	-0.92	3.08	-2.389	63	.020
Pair 4 – GH1 – GH2	5.39	3.68	0.116	62	.908
Pair 5 – VT1 – VT2	-2.29	3.87	-4.744	63	.000
Pair 6 – SF1 – SF2	-0.87	2.59	-2.678	62	.011
Pair 7 – RE1 – RE2	-0.39	1.45	-2.030	55	.029
Pair 8 – MH1 – MH2	-0.41	3.32	-0.997	63	.323

Pairs categories	d - value	Effect size
PF	-0.746	Large
RP	-0.657	Large
BP	-0.299	Small
GH	0.015	-
VT	-0.593	Medium
SF	-0.337	Small
RE	-0.271	Small
MH	-0.1246	-

(38%) and post-CABG (31%), compared to myocardial infarction (MI) clients (27%). Researchers have found that surgical clients (e.g. CABG) were more likely to enter rehabilitation than MI clients (Blackburn et al., 2000; Bunker, McBurney, Cox, & Jelinek, 1999). Richardson et al. (2000) reported a dramatic increase in the absolute and relative number of clients entering and completing cardiac rehabilitation after PTCA.

Where the sample population differed from populations reported elsewhere is in the overall rating in some of the categories; this may have influenced the results. For example, no statistically significant differences were found between the pre-test and post-test scores in the general health [GH] and mental health [MH] categories. However, the high initial scores of the MH category suggest that there was not much room for improvement in this category from the outset, a circumstance which may have influenced the final results of “no difference.” In addition, it is interesting to note that the mean post-test scores of the population under study exceeded the mean of the general population of the United States according to Ware (1997) in the categories vitality [VT] (62 versus 60.9%), role-emotional [RE] (89 versus 81.3%), and mental health [MH] (79 versus 74.9%). Finally, in the category of role-pain [RP], even the pre-test score (60%) was substantially higher than that reported by Jette and Downing (1994) in their study of 789 men and women entering cardiac rehabilitation programs (RP = 27.1%). Thus, even with high pre-test scores, participants’ health-related quality of life improved in a statistically significant way.

Limitations

The major advantage of a one-group pre-test/post-test design is that extraneous variation among participants is controlled (each participant acts as his or her own control) (Daniel, 1999). There were a number of threats to validity in this study, however, including reactive effect (where the participants react to the characteristics of the research situation rather than the treatment itself, for example, wishing to please the CRP staff); testing (where taking a pre-test may affect the post-test scores); and history effect (where an event that is not related to the study may influence the responses of the participants, such as favourable media attention to the CRP) (Burns & Grove, 2001; Norwood, 2000). However, since addressing such limitations would involve a randomized trial without ensuring clinical significance, the present design was considered the most appropriate.

Another limitation that may have influenced the results was self-selection: the participants may have intrinsic characteristics that affect the outcome scores (Norwood, 2000). For example, since only matched pairs of surveys were included (128 surveys in total), 86

surveys were rejected. This raises the possibility that those participants who completed both pre- and post-tests were different from participants who did not complete a post-test, and different from the total population of CRP participants (e.g., greater motivation/commitment to the program; greater ability to comprehend written instructions and communicate written responses).

A final limitation is the potentially limited generalizability of our findings to large, urban settings. Given the comparatively small and non-random sample taken from a smaller, rural setting, additional research using a larger, randomly-selected sample from a different type of setting would help to establish the impact of CRPs on participants’ health-related quality of life.

Implications for Nursing Practice

The present study confirms the value of comprehensive cardiac rehabilitation programs. Given their statistical significance, these findings are generalizable to CRPs in similar (rural) settings, with similar approaches to cardiac rehabilitation. Of particular relevance is that the CRP under review has had measurable success in health-related quality of life outcomes despite its small size and lack of specialized on-site resources (i.e., cardiologist; exercise specialist; dietitian; social worker). This is particularly important for nurses involved or interested in CRPs in rural and remote settings where it might be assumed that lack of local resources precludes outstanding patient care and education, thereby precluding significant outcomes for cardiac patients. This study confirms that *nurses can and do make a difference*.

Although this study supports the findings of other investigations as to the benefits of CRPs, it is worth noting that, despite such benefits, CRPs in general – including the CRP under review – are woefully under-utilized. For example, Blackburn et al. (2000) found that only 11% of eligible clients participated in a hospital-based CRP. Bunker et al. (1999) found that only 32% of those eligible to attend CRPs participated at least once. Evenson et al. (1998) found that 47% of myocardial infarction clients and 21% of angina clients were referred to and participated in CRPs. In the Chinook Health Region Cardiac Rehab Program in southern Alberta, initial participation rates are generally much higher than those reported in other studies (i.e., roughly 80% of the 300 annual referrals come for the initial session), but only half of eligible clients actually follow through with the exercise program. Reasons cited by clients include lack of time, transportation, finances and support. Considering the demonstrable benefits of CRPs, the greatest challenge may be to find ways to address the needs of those not accessing the services.

Implications for Further Research

Further research focusing on the underserved population of potential CRP participants (those who did not access or follow through on program) could provide insight into how to further extend CRP benefits (e.g., effect on participation rates if exercise classes were offered at various rural sites more accessible to patients). Also, further research looking at the effectiveness of CRPs among patients differing in age, gender, and social support could provide insight into how to adapt the programs to meet more specific needs (e.g., married versus widowed or otherwise single patients). Finally, a larger, randomized study would increase the generalizability of the findings.

Studies focusing on cardiac rehabilitation are vital. This is an era when hospital stays are becoming shorter, the population is aging, and cost containment is increasingly important (Bittner & Oberman, 1993). As a result of cost constraints and

limited resources, there is growing pressure for accountability and emphasis on outcomes measurement (Harper et al., 1999). Measures of health status help to assess the effectiveness of health care interventions, help practitioners in decision-making, and supplement other measures of impairment in clients with cardiovascular disease, thus resulting in a more comprehensive assessment of health (Jette & Downing, 1994). The present study confirms the value of comprehensive CRPs. The small program size (limited staff and funding) of the CRP under study exemplifies the importance of characteristics such as creativity, interdisciplinary communication, and coordination as well as consistent client-focused support. The broad skill base and holistic approach to client care brought to this program by the expert nursing staff has been instrumental to its success. The findings of this study should lend support to other "little programs who think they can." ♥

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Besoins et santé mentale d'aidants naturels primaires de patients en attente de pontages aortocoronariens

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Le temps d'attente pour une chirurgie électorique de pontages aortocoronariens (PAC) est reconnu comme étant stressant pour les patients et leur famille. Cette étude de thèse de maîtrise a pour but d'examiner les besoins perçus et le niveau de détresse mentale d'aidants naturels primaires (ANP) de patients en attente de PAC. Le devis de recherche consiste en un pré-post-test auprès d'un échantillon aléatoire de 19 ANP. L'Inventaire des Besoins des Familles (IBF) et le Brief Symptom Inventory (BSI) ont servi à mesurer respectivement les besoins et la détresse mentale auprès de la clientèle cible, les ANP, avant (T₁) et suivant (T₂) une session d'information. Les résultats démontrent une différence significative ($p=0,015$) à la dimension besoins physiques entre T₁ et

T₂ auprès des ANP. Au T₂, la force de corrélation augmente de façon significative entre le nombre total de besoins (NTB) à l'échelle IBF-A et les deux scores globaux de l'échelle BSI, l'indice global de sévérité (IGS) ($r=0,49$; $p<0,05$) et le total des symptômes positifs (TSP) ($r=0,52$; $p<0,01$). L'âge est corrélié positivement ($r=0,51$) avec l'indice de détresse mentale au T₁. Les ANP ayant une scolarité post-secondaire présentent un score plus élevé ($p=0,02$) au score du nombre total de besoins comparativement aux ANP ayant une scolarité moindre.

Mots clés: famille, aidant naturel primaire, pontage aortocoronarien, période d'attente, besoins, santé mentale

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Introduction

Le temps moyen d'attente pour une chirurgie électorique de pontages aortocoronariens (PAC) en Ontario varie de trois à six mois (Higginson, Cairns, Keon, & Smith, 1992). Cette période est identifiée comme étant des plus stressante pour les patients et leurs familles (Artinian, 1989; Bengtson, Karlsson, Währborg, Hjalmarson & Herlitz, 1996; Cozac, 1988; McRae, & Chapman, 1991). Selon Bradley et Williams (1990), la procédure chirurgicale sous-entend, de façon simultanée et paradoxale, une menace à la survie et la promesse d'une meilleure vie. McCrae et Chapman (1991) rapportent que l'aidant naturel primaire se voit à la fois responsable, à titre de soutien du patient, et préoccupé par le sort incertain de la personne chère.

Depuis les premières études de Molter (1979) et de Leske (1991), de nombreux auteurs se sont intéressés aux besoins des familles de patients hospitalisés dans un milieu de soins critiques (Coutu-Wakulczyk & Chartier, 1990; Daley, 1984; Hickey, 1990; Rukholm, Bailey, Coutu-Wakulczyk, & Bailey, 1991b; Ward, Constancia & Kern, 1990). Par contre, moins nombreuses sont les études sur les besoins des familles

de patients en attente de procédures majeures telles que la chirurgie de PAC. Dans ce contexte, les besoins les plus importants identifiés par les familles sont: 1) le besoin d'information et; 2) le besoin de soutien (Bradley & Williams, 1990; Lindsay, Sherrard, Bickerton, Doucette, Harkness, & Morin, 1997; Monahan, Kohman & Coleman, 1996). En réponse aux besoins exprimés par les familles de patients en attente de PAC, une intervention infirmière est offerte dont un programme de préparation à la chirurgie cardiaque au **début** de la période d'attente. Cet article rapporte les résultats d'une thèse de maîtrise qui est une sous-étude d'une recherche principale.

Revue de la littérature

L'état de santé mentale de l'ANP devant l'attente de chirurgie de PAC de l'être cher est relié aux besoins perçus par l'ANP (Chartier & Coutu-Wakulczyk, 1989). Les ANP sont préoccupés par la réussite de l'opération de PAC, la survie du patient et les complications possibles (Bradley & Williams, 1990). La façon dont la famille compose avec la situation évolue avec le temps en fonction de la condition du patient et de la relation inter-familiale (Anderson & Naess, 1986). Toutefois,

chez l'ANP, le besoin d'information quant à l'état du patient prime sur les besoins de confort personnel (Bradley & Williams, 1990; Miracle & Hovekamp, 1994). Reconnaître les besoins ressentis par l'ANP permet aux professionnels de santé d'intervenir pour combler les besoins et ainsi faciliter la reprise d'un équilibre/contrôle permettant de composer avec l'événement menaçant (Duhamel, 1995).

Malgré la probabilité d'une meilleure qualité de vie pour le patient, l'attente de la chirurgie de PAC provoque de la détresse chez le patient et l'ANP (Pieper, Lepczyk, & Caldwell, 1985; Staples & Jeffrey, 1997). L'incertitude et la peur ressenties par l'ANP sont liés au risque de mortalité et de morbidité de l'être cher devant la chirurgie anticipée de PAC (Artinian, 1989; Cozac, 1988; McRae & Chapman, 1991; Radley, Green & Radley, 1987). Les ANP vivent un niveau élevé d'anxiété, de dépression, d'irritabilité ainsi que des difficultés de sommeil et des conflits au sein de la famille (Bengtson et al., 1996). De plus, selon certains auteurs, les conjoints rapportent plus de stress que les patients (Gilliss, 1984; Raleigh Lepczyk, & Rowley, 1990). Par contre, l'étude de Mulgan et Logan (1990) n'a pu démontrer de différence au plan de l'anxiété entre les patients et les ANP. Également, le niveau de difficulté vécue par le conjoint serait relié à celui du patient (Radley et al., 1987). Ainsi, plus le patient éprouve des difficultés physiques et/ou émotionnelles en attente de la chirurgie de PAC, plus la capacité de l'ANP à composer avec la situation se traduit en comportements mal adaptés. Par ailleurs, 45% des ANP accusent une diminution de leur propre santé physique suite à la maladie du patient (Mulgan & Logan, 1990).

Relativement aux patients hospitalisés à l'unité de soins critiques, plusieurs auteurs notent que l'anxiété des membres de familles est supérieure ($p < 0,0001$) aux scores de la population générale (Chartier & Coutu-Wakulczyk, 1989; Chartier, Coutu-Wakulczyk, & Boisvert, 1990; Rukholm et al., 1991b). Une corrélation positive a été retrouvée entre l'anxiété situationnelle et les besoins des familles (Chartier & Coutu-Wakulczyk, 1989) tandis que les variables âge et besoins montrent une relation inversement proportionnelle (Rukholm et al., 1991b). Aussi, à part le niveau primaire, plus le niveau de scolarité augmente, plus l'anxiété diminue que l'échantillon provienne du Québec, de l'Ontario ou de la France (Chartier & Coutu-Wakulczyk, 1989; Chartier, Coutu-Wakulczyk, & Boisvert, 1990; Rukholm et al., 1991b). Cependant, selon Ward, Contancia et Kern (1990), l'anxiété est moindre chez les membres des familles ayant reçu une intervention éducative relativement aux soins critiques comparativement à ceux qui n'en ont pas reçu.

Puisque la famille entière est affectée par l'expérience chirurgicale de PAC d'un être cher (Anderson & Naess, 1986; Bermann, 1973; Brecht, Dracup, Moser, & Riegel, 1994; Radley & Green 1986; Staples & Jeffrey, 1997), le programme d'enseignement doit être dirigé aux membres de la famille qui offrent un soutien physique et/ou affectif au patient et débiter pendant la période d'attente (Dracup, 1993; Gilliss, 1984; Lamarche, 1993; Lindsay et al., 1997; Monahan et al., 1996; Staples & Jeffrey, 1997). Le désir de recevoir de l'information en période préopératoire est partagé par les dyades patient-ANP et les ANP veulent savoir comment offrir du soutien au patient (Lindsay et al., 1997; Monahan et al., 1996). De plus, l'enseignement pendant la période de préadmission donne un message puissant aux patients et à leurs familles soit qu'ils sont valorisés et que leurs expériences personnelles sont considérées importantes (Goulart, 1989).

De façon générale, même si la littérature rapporte qu'un enseignement préopératoire augmente le niveau de connaissances (Cupples, 1991; Mikulaninec, 1987; Rice, Mullin & Jarosz, 1992), les écrits sont moins clairs quant au moment le plus propice à l'apprentissage cognitif lors d'un enseignement préopératoire (Artinian, 1989; Long, 1983; White, Lemon & Albanese, 1980). Pour composer avec l'attente, Cozac (1988) a identifié quatre stratégies utilisées par l'ANP: 1) générer l'espoir; 2) chercher de l'information; 3) aider le patient; et 4) rester près du patient. Enfin, Raleigh et al. (1990) suggèrent que les informations concernant la maladie cardiovasculaire et la chirurgie cardiaque soient fournies tôt durant la période d'attente puisque leur étude ne montre pas d'augmentation significative au niveau des connaissances lorsque la session d'information préopératoire est offerte au moment de l'admission du patient à l'hôpital le jour précédant l'opération.

Le CCFNI conçu par Molter en 1979 a servi d'outil dans de nombreuses études examinant les besoins d'information et de soutien des familles de patients hospitalisés aux soins critiques (Daley, 1984; Hickey, 1990; Molter & Leske, 1983; Ward et al., 1990). Le travail de Coutu-Wakulczyk et Chartier (1990) a démontré que parmi les 48 besoins (énoncés) identifiés au CCFNI, quinze sont considérés essentiels pour des soins infirmiers de qualité et par conséquent, ne doivent pas être inclus dans une échelle de besoins des familles. L'inventaire des besoins des familles (IBF) de Chartier et Coutu-Wakulczyk (1990) a été construit de façon à pallier les faiblesses et les lacunes du CCFNI. L'analyse factorielle des 33 énoncés de besoins a permis l'identification de cinq dimensions de besoins dont: les besoins face à l'environnement, les besoins face à l'événement, les besoins face à soi, les besoins physiques, et les comportements traduisant les besoins.

Cadre conceptuel

L'interprétation des résultats de cette étude s'appuie sur le cadre conceptuel perceptuel du comportement décrit par Combs et Snygg en 1959 et représenté schématiquement en 1989 par Coutu-Wakulczyk, Montgomery et O'Brien (1989). La théorie de perception est sous-jacente à l'instrument IBF et dans la présente étude porte sur le vécu de l'ANP dans la situation d'attente de PAC de l'être cher. C'est la perception de la situation selon le point de vue de l'ANP qui détermine les besoins ressentis. Tel que montré à la Figure 1, l'expérience de l'ANP est déterminée par: a) la perception de sa propre personne; b) l'événement même (la chirurgie de PAC anticipée pour l'être cher); et c) l'environnement humain (incluant le patient en attente de PAC, les autres membres de la famille et le personnel de soins de santé) et physique (ressources matérielles). L'intensité des besoins telle que perçue se manifeste en comportements (D) alors que l'ANP cherche à composer avec la situation d'attente de PAC.

But et objectifs de l'étude

Le but de la présente étude est d'évaluer les besoins et l'état de santé mentale auprès d'ANP de patients en période d'attente de PAC lorsque mesurés au moment de l'inscription à la liste d'attente (T_1) et à quatre semaines (T_2) à l'occasion d'une session d'information.

Les objectifs spécifiques de l'étude sont:

1. Décrire les profils des besoins et de la santé mentale des aidants naturels primaires
2. Mesurer les différences entre le pré et post session d'information pour les besoins et la santé mentale des aidants naturels primaires
3. Vérifier les corrélations entre les besoins et la santé mentale
4. Examiner l'influence des variables socio-démographiques et concomitantes sur les besoins et sur la santé mentale.

Méthodologie

La présente étude découle d'une étude principale « Meeting Cardiac Surgery

Patients' Preoperative Educational Needs » examinant plusieurs variables concernant les patients en attente de pontages aortocoronariens. Les patients de l'étude principale sont assignés de façon aléatoire à trois groupes de traitements différents : 1) groupe contrôle – soins habituels; 2) appels téléphoniques; 3) sessions d'information (Tableau 1). Des mesures répétées ont été menées à l'inscription au moment de la première rencontre avec le chirurgien, à quatre semaines d'attente et à huit semaines d'attente. La présente étude s'intéresse au groupe trois dans lequel les patients et leurs ANP assistent à la première session d'information à quatre semaines d'attente depuis la première rencontre avec le chirurgien.

Figure 1

Représentation schématique du comportement (besoins) en fonction de la perception de soi, de l'événement et de l'environnement

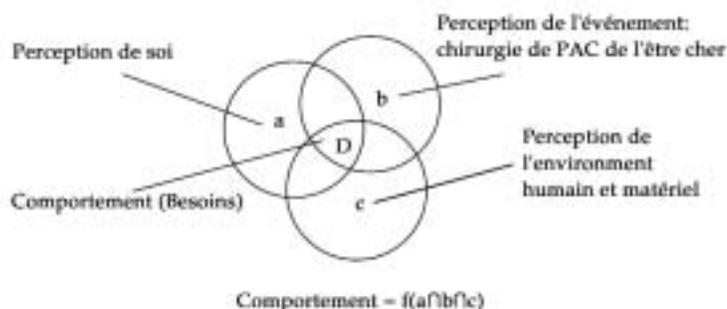


Tableau 1

Devis de recherche de l'étude auprès des ANP dans le cadre de l'étude principale

T_1	T_2	T_3
Recrutement de patients à l'étude principale : 1 ^{ère} rencontre avec le chirurgien et inscription à la liste provinciale d'attente pour une chirurgie de PAC Assignation aléatoire à un des trois groupes	4 semaines d'attente	8 semaines d'attente
Groupe 1 : contrôle Information écrite remise		
Groupe 2 : téléphones Information écrite remise	Première intervention téléphonique	Deuxième intervention téléphonique
Groupe 3 : sessions d'information Information écrite remise	Première session d'information : patient et ANP	Deuxième session d'information : patient et ANP

La taille échantillonnale est calculée selon la formule de Friedman, Furberg et DeMets (1982, p. 96) en utilisant l'écart type de l'indice globale de sévérité du BSI ($\sigma=0,31$), pour détecter une différence (δ) d'un écart type à une précision (α) de 0,05 et une puissance ($1-\beta$) de 0,80. Cependant, pour obtenir un échantillon final de 16 aidants naturels primaires ayant complété toutes les étapes de l'étude, une proportion de 25 % est ajoutée pour pallier une perte échantillonnale. Le recrutement de 20 sujets ($16 + 4 = 20$) est nécessaire pour assurer un nombre suffisant de sujets à la fin de l'étude. Or, 26 sujets ont été recrutés tandis que 19 ont complété toutes les étapes de l'étude. Quoique la taille échantillonnale soit petite ($N=19$), la différence détectée à un écart type ($\sigma=0,31$) a été jugée acceptable pour faire des analyses non paramétriques. Ainsi, les analyses paramétriques ont été menées à fin d'explorer le sujet.

Le devis de recherche de la présente étude consiste en un pré-post-test auprès d'un échantillon aléatoire de 19 ANP de patients en attente de pontages aortocoronariens ayant complété toutes les étapes de l'étude. Suivant une étude pilote de quatre mois, le devis de recherche de l'étude principale a été ajusté pour diminuer la perte échantillonnale. L'échantillon a été obtenu sur une période de 10 mois entre mai 1997 et mars 1998. Les aidants naturels sont recrutés au moment de l'inscription des patients à la liste d'attente pour une chirurgie cardiaque. Lors du recrutement (T_1), les ANP complètent l'Inventaire des besoins des familles adapté (IBF-A), le Brief Symptom Inventory (BSI) et un questionnaire général. À quatre semaines d'attente (T_2), après la session d'information en groupes de 2 à 3 dyades de patient-ANP, les ANP complètent l'IBF-A et le BSI. La session d'information ainsi que tous les documents écrits sont offerts en français ou en anglais au choix de l'ANP. L'approbation déontologique pour l'étude a été obtenue de l'Institut de cardiologie de l'Université d'Ottawa ainsi que de l'Université d'Ottawa. Les sujets doivent répondre aux critères d'inclusion suivants : 1) Être l'ANP d'un patient en attente d'une première chirurgie de PAC; 2) Parler et écrire la langue française ou anglaise; 3) Pouvoir se présenter aux sessions d'information; 4) Donner un consentement éclairé. Le seul critère d'exclusion est : 1) Le patient doit subir la chirurgie de PAC avant que la période d'attente ne soit écoulée.

Les instruments de mesure

Le Brief Symptom Inventory (BSI) est une forme abrégée du Symptom Check List (SCL 90) conçu par Derogatis (1977). Les cinquante-trois (53) items du BSI mesurent l'intensité de détresse que ressent l'individu face à un symptôme durant les derniers sept jours qui précèdent la passation du test. Neuf dimensions de symptômes psychologiques sont mesurées à l'aide de

cet instrument. Le BSI permet de calculer trois indices globaux afin de fournir un profil de l'intensité de la détresse du sujet dont l'*Indice Global de Sévérité* (IGS), le *Total des Symptômes Positifs* (TSP) et l'*Indice de Détresse des Symptômes Positifs* (IDSP) (Derogatis, 1993).

Les scores normalisés (score T) ont été établis pour la version anglaise (Derogatis & Cleary, 1977) ainsi que pour la version française (Fortin & Coutu-Wakulczyk, 1985). La stabilité de la version originale anglaise obtenue au moyen du test-retest (stabilité) à sept jours d'intervalle fournit des coefficients de corrélation variant entre 0,78 à 0,90 (Derogatis, 1977; Derogatis, Rickels, & Rock, 1976). Les coefficients alpha varient de 0,77 à 0,90 pour les neuf dimensions de symptômes (Derogatis, 1977). Pour la version française, le degré de correspondance élevé des coefficients alpha pour chacune des dimensions confirme la stabilité du SCL-90-R (Fortin & Coutu-Wakulczyk, 1985). L'alpha de Cronbach indique un coefficient de 0,96 pour l'ensemble des 90 items du SCL-90-R. Les coefficients alpha pour les dimensions varient entre 0,90 et 0,92 (Fortin & Coutu-Wakulczyk, 1985). La validité de concomitance a été établie dans la version originale anglaise (Wiggins, 1966) pour les neuf dimensions. Selon le manuel d'utilisation (Derogatis, 1977), la validité de différenciation du SCL-90-R a été établie dans plusieurs études avec des patients atteints de différents cancers, de dépression, d'obésité morbide, de douleurs chroniques et de désordres sexuels.

Étant donné que l'Inventaire des Besoins des Familles (IBF) (Chartier & Coutu-Wakulczyk 1990) a été validé et utilisé dans un contexte où le patient est hospitalisé dans une unité de soins critiques, il a été nécessaire d'ajouter une phrase d'introduction au questionnaire pour situer l'ANP dans le contexte anticipé du patient qui va subir l'intervention de PAC. L'IBF-adapté (IBF-A) inclut la phrase: << Présentement, quelle est l'importance de chacun des énoncés suivants par rapport à l'hospitalisation prévue >>.

L'IBF (Chartier & Coutu-Wakulczyk, 1990) est une échelle auto-administrée composée de 33 items dont 30 items subdivisés en cinq dimensions de besoins et trois items hors dimensions dont deux items se rapportant à la vie spirituelle et 1 item se référant à la mort. S'appuyant sur un cadre conceptuel perceptuel, l'IBF permet une interprétation structurée des résultats. De plus, l'IBF dans sa version originale a été validé auprès de populations anglophones et francophones en Ontario, au Québec et en France. En plus de fournir un score pour chacune des cinq dimensions de besoins, l'IBF fournit trois sous-scores qui renseignent sur différents aspects des besoins tels que perçus par les sujets dont le *Score Global des Besoins* (SGB), l'*Indice d'Intensité des besoins* (IIB) et le *Nombre Total des Besoins* (NTB).

Le coefficient alpha de Cronbach de L'IBF se situe à 0,90 pour une population québécoise. Les corrélations entre les items ont généré un coefficient alpha de 0,76 pour l'échantillon québécois (Chartier et al., 1990). Dans sa version anglaise, le coefficient alpha de Cronbach se situe à 0,91 pour l'échantillon de 166 sujets en Ontario (Rukholm, Bailey, & Coutu-Wakulczyk, 1991a). La validité des concepts a été vérifiée dans la version originale française et dans la version anglaise par l'analyse en composantes principales d'où cinq facteurs distincts ont été retenus, expliquant 82 % de la variance totale des items du IBF (Chartier & Coutu-Wakulczyk, 1990).

Plan des analyses

Étant donné un échantillon final de 19 sujets, des analyses non paramétriques sont indiquées. En dépit du nombre restreint de sujets, le test-t de Student a été choisi afin d'explorer à titre d'intérêt certaines différences entre le T₁ et le T₂. Le plan des analyses inclut: 1) Des test-t de Student pour déterminer les différences en besoins et en santé mentale entre le T₁ et le T₂; 2) Des corrélations de Spearman pour vérifier l'association entre les besoins et la santé mentale au T₁ et au T₂; et 3) Des tests de Mann-Whitney pour explorer l'influence des variables socio-démographiques sur les besoins et la santé mentale.

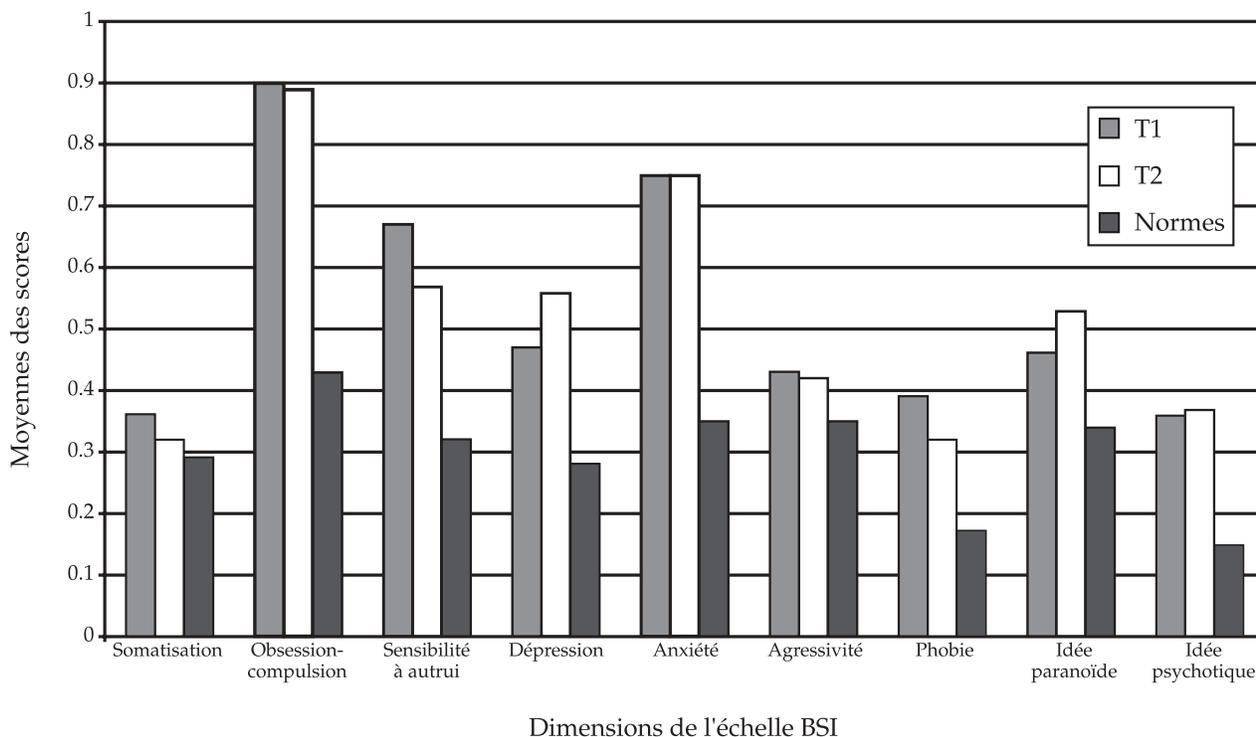
Les résultats

Le profil des 19 sujets à l'étude indique un âge moyen de 62 ans ($\bar{x}=62$, $\sigma=11$, min.=42, max.=78) variant entre 42 et 78 ans et un écart type de 11 ans. L'échantillon est composé de 18 femmes et d'un homme. Parmi les aidants naturels, on constate 17 épouses, 1 fils et 1 tante. Tous les sujets du groupe comprennent la langue anglaise orale. Cependant, la langue maternelle auto-identifiée au profil démographique révèle 12 anglophones, 6 francophones et 1 polonais. Quoique les trousse d'information, les questionnaires et les sessions d'information soient offerts dans les deux langues officielles canadiennes, quatre des six sujets francophones ont choisi d'avoir une trousse d'information écrite en anglais et de participer à la session d'information en anglais. Onze sujets ont atteint une scolarité primaire-secondaire et 8 sujets ont atteint une scolarité collégiale-universitaire.

Pour le BSI, entre le T₁ et le T₂, aucune différence significative (<0,05) est notée (Figure 2). Les résultats pour certaines dimensions augmentent (la somatisation, l'obsession-compulsion, la sensibilité à l'autrui, l'agressivité, la phobie) tandis que d'autres diminuent (la dépression, l'idée paranoïde, l'idée psychotique). Point intéressant à souligner, en regard de la dimension de l'anxiété, les résultats demeurent stables ne montrant littéralement aucune différence entre le T₁ et le T₂.

Figure 2

Scores moyens des dimensions de l'échelle BSI selon les T₁, T₂ et normes



Pour l'IBF-A, les différences entre le T₁ et le T₂ démontrent une légère augmentation au T₂ (Figure 3). Seulement l'importance des besoins physiques augmente de façon significative (p<0,05). Les scores globaux (SGB-Score global des besoins; IIB-Indice

d'intensité des besoins; NTB-Nombre total des besoins) de l'échelle IBF-A ne montrent aucune différence significative entre le T₁ et le T₂ (Tableau 2).

Au T₁, l'association entre les scores globaux des besoins (SGB, IIB, NTB) et du niveau de détresse mentale (IGS, TSP, IDSP) varie entre r=-0,23 et r=0,23 expliquant un maximum de 5 % (r²=0,053) de la variation des scores et n'atteint pas un niveau statistiquement significatif (Tableau 3). L'âge (r=0,51) présente un lien d'ordre moyen avec l'indice de détresse de symptômes positifs (IDSP) expliquant 26% (r²=0,26; p<0,05). La Figure 4 montre la relation positive entre l'âge et l'IDSP. Au T₂, l'association entre le Nombre Total de Besoins (NTB) de l'échelle IBF et l'Indice Global de Sévérité (IGS) (r=0,49) ainsi que le Total des Symptômes Positifs (TSP) (r=0,52)

de l'échelle BSI montrent des liens de moyen ordre expliquant respectivement 24 % (r²=0,24; p<0,05) et 26 % (r²=0,26; p<0,05) de la variation du NTB (Tableau 4). Il est à noter qu'à ce moment, le lien entre l'indice de détresse de symptômes positifs et l'âge (r=0,09) est plus faible, expliquant moins de 1 % (r²=1) de la variation du IDSP.

Parmi les autres variables socio-démographiques et concomitantes examinées (religion, scolarité et santé auto-évaluée), la variable scolarité retient l'attention (Tableau 5). En effet, les sujets possédant une scolarité collégiale-universitaire démontrent un nombre total de besoins plus importants que les sujets possédant une scolarité primaire-secondaire.

Discussion

Parmi les dimensions de besoins à l'IBF-A, à l'exception de la dimension de besoins face à l'événement, les quatre autres dimensions de besoins ont tendance à augmenter au T₂. De plus, l'augmentation de la

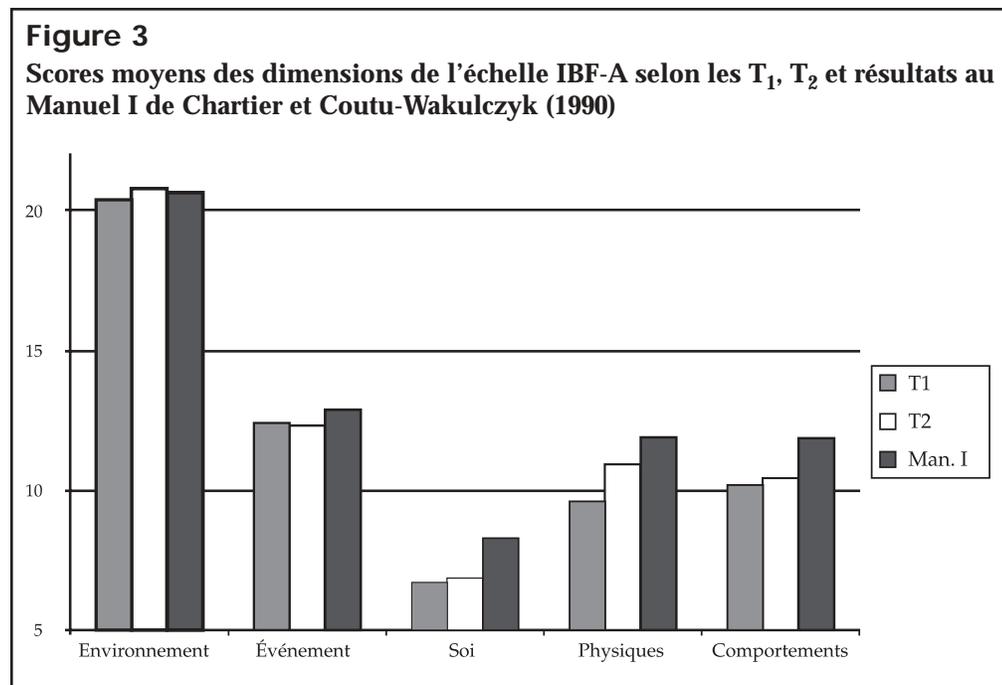
Tableau 2
Moyennes des scores globaux à l'IBF-A selon les T₁, T₂ et scores au Manuel I de l'IBF

Scores globaux	T ₁	T ₂	Manuel I
SGB	66,00	68,58	70,86
IIB	1,97	2,04	2,15
NTB	29,21	29,95	30,13

Tableau 3
Matrice de corrélation Spearman (r_s) des scores globaux aux échelles IBF-A et BSI et de l'âge au T₁. (n=19)

	SGB	IIB	NTB	IGS	TSP	IDSP	ÂGE
SGB	1,00						
IIB	0,98**	1,00					
NTB	0,50*	0,43	1,00				
IGS	-0,13	-0,06	0,23	1,00			
TSP	-0,04	-0,09	0,23	0,99**	1,00		
IDSP	0,05	-0,05	-0,23	0,57*	0,52*	1,00	
ÂGE	0,16	0,16	-0,05	0,05	-0,01	0,51*	1,00

* p<0,05; ** p<0,01



dimension de besoins physiques est statistiquement significative. L'augmentation de ces besoins entre le T₁ et le T₂ peut être due à la session d'information permettant ainsi la conscientisation de l'ANP à ses propres besoins. Or, au T₂, la réalité de la chirurgie se rapprochant, les besoins tendent à augmenter. Selon certains auteurs, l'interaction avec le patient qui compose lui-même avec l'événement anticipé peut contribuer à l'augmentation des besoins de l'ANP (Gilliss, 1991; Radley et al., 1987; Staples & Jeffrey, 1997).

À part le résultat au T₂ pour la dimension environnement, tous les autres résultats sont moindres que ceux de Chartier et Coutu-Wakulczyk (1990) lorsque l'être cher de l'aidant naturel est hospitalisé aux soins intensifs. Les dimensions des besoins au T₁ touchant le soi, l'aspect physique et les comportements ainsi que les besoins physiques au T₂ montrent une différence statistiquement ($p < 0,05$) significative avec les résultats de la méta-analyse de Chartier et Coutu-Wakulczyk (1990).

La comparaison des résultats des scores globaux (SGB-Score global des besoins; IIB-Indice d'intensité des besoins; NTB-Nombre total des besoins) de l'échelle IBF-A au T₁, au T₂ et avec les résultats de l'IBF de Chartier et Coutu-Wakulczyk (1990), montre que les ANP en période d'attente d'une chirurgie de PAC possèdent une importance de besoins moindre que les besoins des ANP pour qui les patients sont hospitalisés en milieu de soins critiques (Tableau 3). Néanmoins, aucun des scores globaux, ni au T₁, ni au T₂, ne montrent une différence statistiquement significative ($p < 0,05$) avec les scores obtenus par Chartier et Coutu-Wakulczyk (1990).

La santé mentale de l'ANP demeure stable pendant la période d'attente mais le niveau de détresse est plus élevé que celui de la population générale spécialement en ce qui concerne l'obsession-compulsion et l'anxiété.

Le niveau de détresse mentale élevé en situation d'attente de chirurgie cardiaque d'un être cher corrobore les études de Bengtson et al. (1996), Monahan et al. (1996), et Mulgan et Logan (1990). De plus, plusieurs études ayant utilisé l'instrument State-Trait de Spielberger, Goruch et Lushene (1983) viennent appuyer l'anxiété élevée des sujets de l'étude en question (Chartier & Coutu-Wakulczyk, 1989; Chartier et al., 1990; Rukholm et al., 1991a). Toutefois, en dépit de la

session d'information, aucune différence significative n'est démontrée entre le T₁ et le T₂ en regard de la dimension anxiété. Des résultats semblables ont été trouvés par Raleigh et al. (1990), mais sont contredits par les résultats de l'étude de Ward et al. (1990).

Cependant, les normes du BSI établies par Dérogatis (1993), pour une population d'adultes non hospitalisés, sont moindres que les résultats de l'étude en question pour toutes les dimensions aux deux temps. Les différences significatives de symptômes de détresse mentale ($p < 0,05$) incluent les dimensions obsession-compulsion et anxiété au T₁ et au T₂. Seul le score global <<Total des symptômes positifs>> au T₂ révèle une différence statistiquement significative ($p < 0,05$) avec les scores normalisés de Derogatis (1993).

Les résultats de l'étude en question montrent que les liens entre la réponse aux besoins et la santé mentale deviennent plus forts avec le temps. Au T₂, l'indice

Figure 4
Indice de détresse des symptômes positifs selon l'âge au T₁ de l'IBF-A

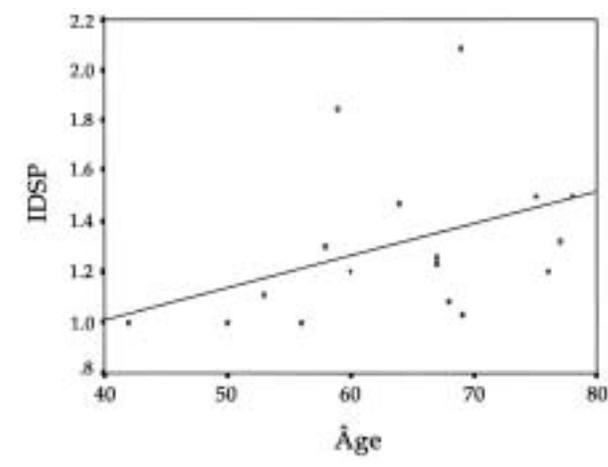


Tableau 4

Matrice de corrélation Spearman (r_s) des scores globaux aux échelles IBF-A et BSI et de l'âge au T₂. (n=19)

	SGB	IIB	NTB	IGS	TSP	IDSP	ÂGE
SGB	1,00						
IIB	0,99**	1,00					
NTB	0,22	0,20	1,00				
IGS	-0,02	-0,07	0,49*	1,00			
TSP	-0,01	-0,06	0,52*	0,97**	1,00		
IDSP	-0,14	-0,19	-0,05	0,58*	0,43	1,00	
ÂGE	-0,08	-0,08	-0,22	-0,08	-0,04	0,09	1,00

* $p < 0,05$; ** $p < 0,01$

global de sévérité (IGS) ($r=,49$) et le total de symptômes positifs (TSP) ($r=,52$) montrent une relation d'ordre moyen avec le nombre total de besoins (NTB) expliquant respectivement 24 % ($r^2=,24$) et 26 % ($r^2=,26$) de la variation du NTB. Cette relation positive tend à montrer que plus les scores de l'indice global de sévérité (IGS) et le total de symptômes positifs (TSP) sont élevés, plus le nombre total de besoins (NTB) est grand. De façon semblable, Chartier et Coutu-Wakulczyk (1990) ont trouvé que l'anxiété situationnelle est corrélée positivement aux besoins des familles ($r=0,30$) expliquant 9 % de la variation des besoins.

L'indice de détresse de santé mentale montre un lien positif d'ordre moyen avec l'âge au T₁. À l'opposé, Rukholm, et al. (1991b) ont obtenu une relation inversement proportionnelle entre l'âge et l'anxiété, laquelle est influencée de manière statistiquement significative par l'âge ($F=4,369$, $p<0,01$). De plus, au T₂ de la présente étude, l'âge montre une relation positive minime expliquant moins de 1 % de la variation de l'indice de détresse des symptômes positifs. Ces résultats conflictuels commandent une recherche ultérieure examinant la détresse mentale chez une population âgée. Également, l'influence d'une intervention éducative sur la détresse ainsi que les besoins méritent d'être examinés de plus près.

Dans cette étude, le nombre total de besoins est plus grand auprès des sujets ayant un niveau de scolarité collégial-universitaire. Cependant, la scolarité n'a aucune influence sur la santé mentale. Chartier & Coutu-Wakulczyk (1989) ont trouvé une influence significative ($p<0,01$) de la scolarité sur le niveau d'anxiété. En effet, plus la scolarité augmente, plus l'anxiété diminue.

Recommandations pour études futures

Étant donné le petit nombre de sujets de cette étude, il serait important de répéter l'étude avec un plus grand échantillon. Une étude longitudinale avec des mesures répétées à partir de l'angiographie incluant le moment de l'opération, permettrait d'examiner l'évolution des besoins et de la détresse des ANP tout au long de la période d'attente. Une étude quasi-expérimentale incluant un groupe contrôle pour déterminer l'effet de la session d'information serait de mise. De plus, les différences entre les femmes et les hommes ANP auraient lieu d'être étudiées. Finalement, une étude qualitative pour déterminer les besoins particuliers d'une population d'ANP en attente précoce d'intervention majeure telle que la chirurgie de PAC serait avantageuse pour examiner divers concepts émis par plusieurs auteurs tels que la mort du patient pendant l'attente, les changements de rôles des membres de famille, l'effet de l'attente sur la relation entre les membres de la famille et le fardeau financier (Artinian, 1989; Bradley & Williams, 1990; Cozac, 1988; Lindsay et al., 1997; McRae & Chapman, 1991).

Conclusion

Les enjeux des relations interfamiliales sont mis à l'épreuve pendant l'attente d'une chirurgie majeure. Les actions infirmières pour combler les besoins de l'ANP tôt durant la période d'attente ont un potentiel pour aider à composer avec la situation d'attente. L'étude renseigne sur l'importance de prendre en compte le temps d'attente, l'âge, et la scolarité de l'aidant naturel. ♥

Les références se trouvent à la page 28.

Tableau 5

Moyennes, médianes et tests Mann-Whitney selon la scolarité et les scores globaux des échelles IBF-A et BSI au T₁. (n=19)

		Scolarité							
		Primaire-secondaire			Collège-université			Mann-Whitney	
Échelle	Scores globaux	n	Moyenne	Médiane	n	Moyenne	Médiane	Z	p
IBF-A	SGB	11	64,18	72,00	8	68,50	69,50	-0,29	0,77
	IIB	11	1,92	2,12	8	2,05	2,09	-0,29	0,77
	NTB	11	27,55	28,00	8	31,50	32,50	-2,38	0,02*
BSI	IGS	11	0,68	0,40	8	0,38	0,34	-0,33	0,74
	TSP	11	18,91	19,00	8	17,00	15,50	-0,08	0,93
	IDSP	11	1,57	1,39	8	1,20	1,22	-1,16	0,25

* $p<0,05$

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White Coat Hypertension and Nursing Care

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White coat hypertension is a clinical phenomenon characterized by elevated arterial blood pressure during a visit to the physician. In this study, we will review the key published studies related to this concept as they evaluate and compare morphological and behavioural characteristics between normotensive individuals, essential hypertension, and white coat patients. A definition of white coat hypertension, as well as information about its prevalence and factors contributing

to it are also provided. We will comment on the implications of this type of hypertension in nursing practice, since readings of arterial blood pressure as ascertained by a nurse usually correlate well with those taken at home, a finding that should be considered in the diagnosis and treatment of hypertension.

Key words: white coat hypertension, white coat effect, hypertension, nursing

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Introduction

Recent research on hypertension often mentions white coat hypertension. Although this concept has been addressed only recently, there are records of home blood pressure measurements as early as 1930 as well as references to the white coat effect as early as 1940 (Ayman & Goldshine, 1940).

This work is a summary of systematic and comprehensive reviews of the literature on white coat hypertension. It involved a computerized literature and key word search (white coat hypertension and nursing and arterial blood pressure) among scientific articles published from 1983 to 2001.

The expression "white coat hypertension" refers to blood pressure values characterized as hypertension which result when measurements are taken in clinical settings but which tend to be normal when blood pressure is taken in other situations, such as at home or at an ambulatory blood pressure monitoring system (Mion Jr., Nobre & Oigman, 1998). This is a complex phenomenon that has generated controversy and several hypotheses concerning its causes and consequences. Its origins, possible consequences, and risk to patients are timely discussion topics, as is the question of need for pharmacological treatment for white coat hypertensive individuals.

The main purpose of this discussion is to highlight the fact that white coat hypertension needs to be carefully studied and analyzed, since conclusive data have not yet been published. Because error could aggravate a patient's condition, nurses must understand the

mechanisms underlying white coat hypertension, so that they follow up correctly with patients and thus meet their professional obligations.

Definition and Prevalence of White Coat Hypertension

White coat hypertension is a persistent elevation in arterial blood pressure when it is measured in the clinical setting, in spite of normal readings on other occasions. Sandvik and Steine (1998) define it as a consistent rise in arterial blood pressure in clinical situations, whereas normal values are observed when pressure is measured at home by the patient. Verdecchia et al. (1995) and Verdecchia (1999) suggest that measuring arterial blood pressure at the physician's office triggers a rise in the blood pressure readings. Its coexistence with normal values when measured outside the clinic leads to the designation of "white coat" hypertension. It is important to note that anyone can be subject to this effect, without necessarily being white coat hypertensive. Sandvik and Steine (1998) suggest that, for an individual to be considered as white coat hypertensive, the average systolic pressure readings taken at home and at the clinic should differ by at least 10 mmHg.

Pickering (1995) emphasizes that white coat hypertension cannot be defined on the basis of a single clinic visit, because many individuals present relatively high blood pressure when they are first measured. These measures generally decrease during following visits. A criterion routinely used to define white coat hypertension is that the arterial blood pressure must be higher than 140/90 mm/Hg in at least three visits to the clinic. Additionally, it should be confirmed that the

patient presents normal arterial blood pressure values outside the physician's office, as determined by a program such as the ambulatory blood pressure monitoring system.

In order to be classified as a white coat hypertensive, a patient has both systolic and diastolic blood pressure ambulatory readings below the upper limit. Pickering et al. (1998) determined this upper limit as being in the 90th percentile (or 134x90 mm/Hg) based on records from normal volunteers.

Depending on the definition criteria adopted and the type of population studied, the prevalence of white coat hypertension is between 20 to 40% in patients with mild to moderate hypertension (diastolic pressures of 90 to 105 mmHg).

Factors Contributing to White Coat Hypertension

According to Pickering (1995), factors contributing to white coat hypertension can be demographic, psychological and physiological.

Demographic Factors

This condition is more frequent in women than in men, as shown in a study by Martinez et al. (1999), where the frequency of white coat hypertension in a population of mildly to moderately hypertensive subjects was estimated. These patients were seen at a primary care setting, and epidemiological factors that could identify them were withheld. Interestingly, the occurrence of white coat hypertension was higher in women, especially when the arterial blood pressure was measured by a man, suggesting that blood pressure measurement may be affected by the interaction between patient and observer, with gender playing an important role in this effect (Millar & Accioly, 1996).

According to Lemne, Lindvall, Georgiades, Fredrikson and De Faire (1995), this phenomenon is surprisingly common in patients over 65 years of age; these patients are, on average, nine years older than the average hypertensive individual.

Although there are few studies relating this kind of hypertension to obesity, Julius, Jamerson, Gudbrandsson, and Nicholas (1992) reported that essential hypertension patients, as well as white coat hypertensives, tend to be heavier than normotensives (+13.5 kg and +7 kg, respectively). These authors calculated the percentage over ideal body weight for age and gender using Metropolitan Life Insurance tables.

Familial and Personal Factors

Studies relating white coat hypertension to familial history have also been reported by Julius et al. (1992). These researchers investigated 937 individuals between 18 and 38 years old who had never experienced antihypertensive treatment. These patients were advised to measure their arterial blood pressure at home twice a day for seven days. Following this activity, they presented their blood pressure records to a physician who classified the participants as hypertensive, normotensive, or white coat hypertensive. Analyzing these individuals' medical histories, the authors found that their blood pressure values had significantly increased from the time they were children and adolescents. Moreover, the authors examined the blood pressure readings of the subjects' parents which were also on record. When these readings were made, the mothers' average age was 32 and the fathers' 35. The results showed that the parents of white coat hypertensive individuals and sustained hypertensive subjects presented higher readings than did the parents of normotensive subjects. This suggested that patients with white coat hypertension had a history of familial hypertension.

Psychological Factors

Arterial blood pressure measurement involves several aspects that must be considered. Fear of the unknown and of experiencing a disease, expectations concerning physical conditions, an unfamiliar environment, and the presence of a professional can all physically and psychologically influence a patient, leading to responses such as conditioned stimuli and pressure elevation.

Several studies have attempted to associate white coat hypertension to individual response to stress. Julius et al. (1992) provided a good example of behaviour-induced blood pressure elevation. In this study, the authors submitted patients to physical and mental stress, while measurement of the arterial blood pressure was performed by an angiocatheter inserted into the cubital vein. They could not demonstrate, however, an exacerbated physical or mental response to stress in white coat hypertensive individuals.

Similarly, Coelho et al. (1999) did not find differences in the psychological profiles of normotensives and white coat hypertensives, although the latter had a higher daily variation in blood pressure. They concluded that this was unrelated to higher emotional reactivity. On the other hand, when evaluating arterial pressure variability and heart rate in hypertensives, normotensives, and white coat hypertensives

following mental stress, Lantelme, Milon, Gharib, Gayet, and Fortrat (1998) showed that the white coat effect was associated with enhanced blood pressure response to standing and to mental stress, suggesting a relationship with sympathovagal balance.

In summary, to date, there has not been a consistent demonstration of differences in anxiety levels or personality traits between white coat hypertensives and other individuals studied (Lerman, Brody and Hui, 1989).

Pathophysiological Factors and Target Organ Damage Related to White Coat Hypertension

The pathophysiology of arterial blood pressure elevation in white coat hypertensives remains obscure. Some authors have identified the risk of developing hypertension and coronary diseases through diagnostic, echocardiographic, metabolic, and neuroendocrine findings which differ when comparing white coat hypertensives to normotensives. More specifically, there were differences in cardiac function, higher levels of total cholesterol and LDL, higher levels of triglycerides and plasma insulin, and significant kidney involvement (Julius et al., 1992; Chang, Lay, Chen, and Wang, 1997; Cerasola et al., 1995; Hoegholm, Bang, Kristensen, Nielsen, and Holm, 1994).

Chang et al. (1997) studied three groups, balanced for gender, age, and body mass index: 50 sustained hypertensives, 25 white coat hypertensives and normotensives. The authors concluded that when compared to normotensives, white coat hypertensives presented more impaired diastolic function as well as higher plasmatic and urine norepinephrine levels, plasmatic and urine aldosterone, plasmatic renin activity, total cholesterol and LDL cholesterol. No difference was observed between white coat and sustained hypertensives. Additionally, Cerasola et al. (1995) compared cardiovascular risk in 62 hypertensive individuals, 27 of whom were white coat hypertensives, and 35 normotensives. All subjects underwent 24h noninvasive blood pressure monitoring and Doppler echocardiographic examination of the heart; urine was tested for microalbuminuria and the fundi of the eyes were examined for retinopathy. The results of this cross-sectional and, therefore, limited study led the authors to hypothesize that white coat hypertensives were at a higher risk than normotensives and at a lower risk than sustained hypertensives for developing cardiovascular damage.

There is controversy about whether white coat hypertension can compromise target organs, as seen in hypertension. Some authors claim that there is an increased risk of target organ lesions in these patients, as well as considerable increase on the mass index of the left ventricle, when compared to normotensive individuals (Palatini et al., 1998; Kuwajima, Suzuki, Fujisawa, and Kuramoto, 1993; Nalbantgil, Onder, Nalbantgil, Yilmaz and Boydac, 1998; Owens, Lyons, Rodriguez, and O'Brien, 1998).

Palatini et al. (1998), analyzing the results of echocardiographic tests, ambulatory blood pressure monitoring, and urinary albumin for 942 subjects who took part in a multicentre study, demonstrated that within a population of individuals with stage-I hypertension, patients with white coat hypertension presented a lower degree of hypertensive complications than those with sustained hypertension. However, in comparison with normotensive subjects, white coat hypertensive subjects seemed to be at greater risk, since all echocardiographic dimensional data were higher for the white coat than for the normotensive subjects.

Kuwajima et al. (1993) evaluated the morphological and functional characteristics of the heart in 67 patients over 60 years old (17 subjects with white coat hypertension, 34 patients with true hypertension, and 16 normotensive controls), and studied cardiac responses to an isometric handgrip exercise test used to evaluate functional reserve. The authors found that patients with white coat hypertension had a moderate increase in left atrial dimension and left ventricular mass, in addition to a tendency towards disturbed diastolic function, although systolic functional reserve remained the same. These findings suggest that white coat hypertension may not be totally harmless for the elderly.

Other researchers did not find lesions in target organs, variations of ventricle mass, or abnormal metabolic profiles in patients with white coat hypertension. In a study by Gosse, Promax, Durandet, and Clementy (1993), left ventricular mass indexed to height was measured by echocardiography in 204 essential hypertensive individuals. Patients were classified as white coat hypertensives according to office and daytime blood pressure records and as measured by a physician and by a noninvasive auscultatory device, respectively. The authors concluded that white coat effect had no influence on left ventricular mass; favouring the view that white coat hypertension is a benign condition.

Pierdomenico et al. (1995) also investigated target organ status and serum lipids in white coat hypertension in comparison with sustained hypertension and normotension. Subjects were divided into three groups, balanced for gender, age, body mass index, and smoking habit. Individuals were submitted to the following: echocardiographic examination to assess left ventricular mass index; carotid ultrasonography to evaluate intimal media thickness and atherosclerotic plaques; venous occlusion plethysmography to record minimum forearm vascular resistance; serum lipid profile, and 24-hour urinary albumin excretion. This study demonstrated that white coat hypertension does not show target organ damage, nor does it relate to an unfavourable lipid profile.

A similar study was conducted by Khattar, Senior, and Lahiri (1998), where a comparison was made between the risk conferred by white coat hypertension and that of sustained mild hypertension for the development of cardiovascular disease in 479 patients who were followed for a period of two years. Analysis of the subgroup of patients without complications revealed a lower incidence of left ventricular hypertrophy and lower degrees of carotid hypertrophy in the white coat group. These findings indicated a relatively benign outcome in white coat hypertension in comparison to sustained mild hypertension.

This divergence may be due to the cut-off points chosen for the definition of hypertension, white coat hypertension, and normotension. In other words, a different cut-off point might include a higher number of white coat hypertensives, which would consequently include a higher proportion of patients with target organ damage, thus leading to a different conclusion.

With this in mind, what should be considered the prognosis for white coat hypertension? According to most researchers, the prognosis is benign, although some suggest that risks are just as high as for general hypertension (Nalbantgil et al., 1998). This benign prognostic is surprising, since these patients seem to be at elevated risk for developing hypertension (Julius et al., 1992).

The Mechanisms Underlying White Coat Hypertension

The previous discussion presented several hypotheses which attempt to explain variations of arterial blood pressure in a medical environment. One hypothesis claims that an exaggerated alert response or generalized hyperactivity in face of new or stressful stimuli would lead to this

phenomenon. The second one sees white coat hypertension as a predictive of essential hypertension, while the third considers it to be a cognitive or conditioned response.

According to Pickering (1995), the fact that white coat hypertension is more common in elderly patients is an argument against the possibility that it could be the precursor of essential hypertension. The truth is that white coat hypertension is as common in renovascular as it is in essential hypertensive patients, a finding which shows that it may not be acquired.

There has been a great deal of evidence against the view that white coat hypertension corresponds to general hyperactivity. These findings point to the need for further studies.

Treatment of White Coat Hypertensives

Opinions concerning cardiovascular morbidity and the need for pharmacological treatment vary. Pierdomenico et al. (1995) believe that white coat hypertensive patients are at low cardiovascular risk, as previously described. They suggest that these patients should be referred to non-pharmacological therapy, whereas treatment using medication can be withheld or delayed. By contrast, Glen, Elliot, Curzio, Lees and Reid (1996) propose that white coat hypertension patients should receive exactly the same treatment prescribed for essential hypertension patients, as long as clinical data indicate that functional anomalies can be reversed by medication. Furthermore, according to others, in spite of evidence that the rate of events associated with coronary heart disease is similar in white coat hypertensive and normotensive patients, the absence of differences related in other studies may simply reflect a short study period (about seven years) and a lack of information on whether or not treatment was introduced. Cardiovascular morbidity and mortality associated with untreated hypertension may correspondingly be reduced by antihypertensive treatment in patients with white coat hypertension.

Notwithstanding controversy, there is no reason why white coat hypertensives should not be advised of medication-free methods for controlling elevated blood pressure and reducing coronary risk factors.

In the discussion that follows, nursing practice related to this type of hypertension will be addressed, considering the possible implications in diagnosis and treatment.

Discussion

In order to predict white coat hypertension, a deep understanding of blood pressure measurement is required, as is knowledge about diagnostic and prognostic performance. As previously shown, there are studies addressing these concerns, but major weaknesses in study design limit their value. One reason for this is the inherent variability of blood pressure and the distortions associated with measurement at the clinic. Lack of consensus on reference values is also an obstacle for the use of ambulatory blood pressure measurements (Verdecchia, 2001).

The definition of white coat hypertension is arbitrary and depends both on the cut-off point chosen to define hypertensive clinic pressure and normal ambulatory pressure (Pickering, 1998).

Through careful analysis of data in the literature, it is concluded that the characterization of white coat hypertension depends on the exact classification of the patient and that precise treatment should be standardized in order to improve the consistency of the investigations.

Implications for Nursing Care

One of the factors interfering in the measurement of arterial blood pressure is patient-observer interaction. Pickering (1995) points out that, when a nurse performs pressure evaluation, the alert response discharged is less intense than when it is performed by a physician. This was clearly shown by Pierin (1992), Mancina et al. (1983), and Mancina, Parati, Pomidossi, Grassi, Cadadei, and Zanchetti (1987) in hospitalized patients who had an immediate increase of arterial blood pressure, recorded by a continuous intra-arterial method, as soon as the physician approached the bedside; this elevation persisted during the whole procedure. In another study mentioned by Pickering (1995), the average pressure increase caused by the presence of the physician was 23/28 mm Hg, two times greater than the value obtained when nurses recorded the readings.

White and Baker (1986) also concluded that arterial blood pressure measurements performed by nursing professionals not only were lower than those recorded by physicians, but closer to the average daytime readings in ambulatory blood pressure monitoring programs.

Although scientific principles should always be the guideline for nursing techniques, the human component involved in this type of care cannot be ignored. Thus, we suggest that pressure readings

performed by nursing professionals may provide a better evaluation of pressure levels, since nursing professionals are usually in closer contact with patients, preventing stress induced by the unknown.

The location where arterial pressure is measured is important, since a person who comes to the physician's office may develop fear and anxiety. The single circumstance of entering a clinic may generate expectations and mental discomfort which must be taken into account when a reading is made. It should be noted that patients' sensation of impotence or inability to control the outcome of a procedure is such that their personal security may seem affected; this is the time when the patient needs to receive support and comfort from the professional with whom he or she is interacting. This is the person the patient expects to understand his or her needs and to help lessen anxiety.

The physician is responsible for diagnosis and prescription of treatment; this may be one of the reasons for the patient's peak in anxiety and changes in the arterial blood pressure readings when these readings are performed by a physician. Nurses, on the other hand, are regarded to be the principal providers of support and care to patients; they must make sure not only that the treatment is being correctly conducted, but also that they are aware of their patients' physical and emotional needs. Therefore, the nurse's role in this context is more than something technical; the nurse must enable a patient's free expression in order to restore confidence, emotional balance, and arterial blood pressure readings similar to those recorded at home.

Nurses who do not know about white coat hypertension may be solely concerned about the technical aspects of pressure reading and disregard the importance of interaction with the patient for establishing a correct diagnosis and/or therapeutics. By identifying the factors which affect the technique and by acting accordingly, the nurse will be able to keep disturbing elements to a minimum, and to assure the patient that the treatment suggested is the best for his or her condition.

Meanwhile, given the lack of other evidence related to the etiology of white coat hypertension, it should be recognized that stress triggers elevated pressure responses and that an effective nurse-patient relationship facilitates an arterial blood pressure reading that better correlates with the home measurement.

In short, nurses should keep in mind these theoretical and practical principles which will help them to better determine and safely perform their activities when dealing with hypertensive patients, including white coat hypertensive

individuals. Nurses need to combine scientific knowledge and practice to determine the prognosis and treatment of white coat hypertension to prevent this disease. ♥

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Research

R O U N D S

The Future is Now: New Opportunities for Research Training in Cardiovascular Nursing

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Making a decision to undertake research training is fraught with a number of issues. In this column, the authors review the path to research training, provide

some suggestions for choosing that path, and introduce a new program that will enhance opportunities for burgeoning cardiovascular nurse-scientists in Canada.

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In an earlier publication (Arthur & King, 2003), we argued that nurses can make unique and important contributions to the cardiovascular health research agenda in Canada, however, the current human resource capacity to realize these contributions is inadequate. Nurses are undertaking graduate education in unprecedented numbers, yet there is a current dearth of nurse scientists with suitable research training to lead investigations and develop independent programs of cardiovascular nursing research. If this situation continues, the nursing discipline surely will not have the impact that it could on the cardiovascular health of Canadians. In this column, we will describe the path that nurses can take for research training, provide some suggestions when considering that path, and highlight a new initiative that will strengthen the research training of cardiovascular nurse scientists in Canada.

Many begin their graduate work by undertaking a Masters degree. From a research training perspective, undertaking a **research-based** Masters degree is a mechanism to begin to understand and to gain valuable firsthand experience with the research process. A Masters degree is generally considered insufficient training if one's goal is to become an independent researcher. To do so, one must earn a PhD — the recognized level of training necessary to hold most major peer-reviewed grants-in-aid and personnel awards. PhD programs for nurses are relatively new to Canadian universities. As recently as 10 years ago, Canadian nurses had limited access to PhD programs unless they were willing to travel widely either within Canada or outside the country. PhD programs for nurses, both in nursing and in other highly relevant

health disciplines, are being offered at more institutions across the country. The programs that lead specifically to a PhD in nursing are not, however, consistent in their course offerings or in the depth of faculty experience in supervising students at this level. When undertaking academic cardiovascular research training, nurses must have access to supervisors and nurse-mentors who are best prepared to offer excellence in that training.

Choosing Research Training in Cardiovascular Nursing

How does one make a choice about where to undertake research training? Often for women (the predominant sex of nurses), the choice is mitigated by family and economic constraints. In an ideal world, however, nurses would make choices about their research training based on criteria such as the following:

1. The institution offers a balanced curriculum that highlights the critical elements of research training and the opportunity to study the theoretical underpinnings of the discipline and its research at an advanced level.
 2. There is an available supervisor with a demonstrated research track record who is: a) willing to accept a new PhD student and b) has the time to nurture the student's development.
 3. The environment values and lives the culture of
- Potential PhD students would want to evaluate a potential supervisor's program of research and would consider such things as: a) the supervisor's publication record, b) the supervisor's history of supervision and successful completion of graduate students and c) whether there is a reasonable match between their own clinical/research interests and those of the supervisor.

research. This includes the school or faculty as well as the local clinical and research environments.

Future for Cardiovascular Nurse Scientists Program

We recognize that not all schools/faculties of nursing can offer this 'package'. To provide the best possible opportunities for nurses pursuing graduate education, the FUTURE for cardiovascular nurse scientists program has recently been funded by the Canadian Institutes of Health Research (Institute for Circulatory and Respiratory Health) and the Heart and Stroke Foundation of Canada. FUTURE stands for "Facilitating Unique Training Using Research and Education". This is an innovative program for the research training of a new generation of nurse scientists who will contribute to research in cardiovascular health. The program, which offers specialized research training to nurses completing a PhD degree, will involve faculty and nurse scientists from a dozen universities across Canada. This will enable students to have unprecedented and coordinated access to leaders in cardiovascular nursing. Each participating institution will act as a "home-base" for its respective students, who will be expected to spend time at other universities to benefit from another supervisor's expertise and to gain different experience. A unique

feature of this program is its national perspective and the breadth of exposure for the trainees.

Another novel aspect of the curriculum includes a "virtual seminar" series, where existing cardiovascular nurse-scientists will speak to trainees via videoconference about their currently-funded research projects. Students across the country will then engage in real-time dialogue with researchers about their work. The program also features a distance education course and a two-week summer institute that will focus on research methodologies. The final key component of the syllabus is an annual scientific meeting at which trainees will present and defend their work to all program mentors. This yearly assembly will be instrumental in building a national network by allowing everyone involved to connect with one another.

Cardiovascular nursing is on the verge of significant development through training opportunities such as the FUTURE program. Nurses thus stand to make increasingly significant contributions to knowledge and to the cardiovascular health of Canadians. As the details of this program unfold, CCCN members will be kept informed through the website and related promotional materials, moreover, the nursing graduate programs in the country will be kept apprised of this program. Indeed, the FUTURE is now. Consider joining us! ♥

References

Arthur, H., & King, K.M. (2003). Building Capacity for Cardiovascular Nursing Research in Canada. *Can J Cardiovasc Nurs*, 13(2), 4-7.



The School of Nursing and the Centre for Continuing Education will be offering the on-line **Cardiac Care on the Web** program with courses starting in **September 2003**. This award-winning initiative is an opportunity for registered nurses to achieve speciality training, prepare for accreditation opportunities and acquire university-level credits with Laurentian University's Post-RN degree program.

L'École des sciences infirmières et le Centre d'éducation permanente ont le plaisir de vous offrir les **Soins cardiaques sur l'inforoute** à partir de **septembre 2003**. Cette initiative donne l'occasion au personnel infirmier de recevoir une formation spécialisée et de se préparer à la certification.

For information contact / Pour plus d'information, communiquez avec :

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Be part of our state-of-the-art Regional Cardiac Care Program!

Southlake Regional Health Centre is a progressive organization that is deeply committed to its people and to providing the highest level of personalized care to its patients. Our expanding regional health centre is the ideal place for people who seek new and exciting career opportunities and a chance to make a difference.

*At Southlake, we are dedicated to excellence in everything we do. Awarded the maximum **five stars** for patient satisfaction by the Hospital Report 2002: Acute Care, we offer our community close-to-home access to today's medical expertise and advanced health-care services. As an employer, our philosophy can be summed up in Our Promise to Our People: *To help you grow. To nurture your success. To ensure we are ready for the future.**

An exciting place to practise

Expansion is underway at Southlake Regional that will result in the construction of a new, six-storey building and the modernization of existing facilities. The introduction of such advanced services as electrophysiology, angioplasty and cardiac surgery can offer health-care professionals who reside within our region and face a long daily commute, the advantage of practising closer to home in a new, state-of-the-art facility. If you live anywhere else in Ontario, or in another province, here's your chance to join an expanding regional health centre in one of Canada's fastest growing regions.

The best-equipped cardiac care centre in Ontario

With the first phase scheduled for completion by Fall 2003, and the full launch expected in Spring 2004, our new **Regional Cardiac Care Program** will offer our residents the following expanded services:

- ◆ 2 operating rooms dedicated to cardiac surgery
- ◆ 9-bed Cardiovascular Intensive Care Unit
- ◆ 8-bed Coronary Care Unit
- ◆ 25-bed Cardiovascular Surgery Unit for patients recovering from open-heart surgery
- ◆ 33-bed Medical Cardiology Unit
- ◆ Cardiac Catheterization Laboratories
- ◆ Special procedure room for invasive cardiology procedures such as pacemaker insertions
- ◆ Cardiac rehabilitation/prevention program
- ◆ Enhanced cardiac clinics

www.southlakeregional.org

Get in on the ground floor

We offer qualified professionals a unique opportunity to participate in the design and evolution of this exciting new initiative. Join our new Regional Cardiac Care Program in one of the following roles:

Manager

Cardiovascular Surgery

Acute Care Nurse Practitioners

Cardiology & Cardiac Surgery

Registered Nurses

Cath Lab

Percutaneous Coronary Intervention (PCI)

Cardiac Short-Stay Unit

CCU

Cardiology

CVICU

Cardiac Inpatient Unit

We also have immediate openings for the following experienced professionals within the cardiac program: **Occupational Therapist, Social Worker, Kinesiologist, Pharmacist, Pharmacy Technician, SPD Technician, Physiotherapist, Inventory Clerk for CVOR, Medical Lab Technologist and Registered Respiratory Care Practitioner (RRCP).**

For full details, please visit our Web site. Relocation assistance is available. If, like us, you are dedicated to excellence in everything you do, send your resume, as soon as possible, to: **Southlake Regional Health Centre, Human Resources Department, 596 Davis Drive, Newmarket, ON L3Y 2P9.** Fax: 905-853-2218. E-mail (Word format): careers@southlakeregional.org

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