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The Relationship between CABG Patient Characteristics and Perceived Learning Needs:

A Secondary Analysis

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Keywords from CINAHL Subject Heading

Heath education

Cardiovascular disease

Clinical nursing research

Patient education

Acknowledgements

The author wishes to acknowledge the financial support received from the University of Toronto, and to thank the Nursing and Medical staff from the University Health Network for their ongoing assistance throughout the data collection process. The author also wishes to thank Dr. Souraya Sidani, Dr. Judy Watt-Watson and Dr. Daniel Shugurensky for their invaluable feedback and comments which are reflected throughout the design and conduct of the main study.

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Abstract

Background: Patients' learning needs are influenced by socio-cultural characteristics such as level of formal education, sex, and age. Limited research has examined this influence. Purpose: The purpose of this study was twofold: 1) to describe the number and type of learning needs identified, and 2) to examine the relationships between learning needs and socio-cultural characteristics (education, sex, and age). Design: This study was a substudy of a randomized clinical trial (RCT) that evaluated the most appropriate time for delivering education to patients who had CABG surgery. Sample: Individuals having CABG with 1-4 grafts for the first time and who were literate and cognitively oriented to person, place, and time were included in this study. Analysis: Descriptive and correlation statistics were used to analyze the data. Results: A significant difference between learning needs and sex (p = 0.00) was noted, while a significant relationship between learning needs and age (p = 0.03) was identified. Conclusion: This study represents a first step towards identifying the association between perceived learning needs and sociocultural characteristics.

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Within the current in-patient Cardiovascular Surgical (CVS) setting, patient education is provided for all clients who have had coronary artery bypass graft (CABG) surgery during their hospitalization prior to discharge, to enhance the individual's selfcare knowledge (Health Canada, 1993; Jaarsma, Halfens, Abu-Saad, Dracup, Diederiks, & Tan, 2000). The trend in CABG patient education has been to provide teaching that meets the individual's learning needs (Beckie, 1989; Weaver & Doran, 2001). Learning needs are the topics identified by the patient as important to learn about related to a specific condition and its treatment. They reflect personal experiences that are influenced by patients' characteristics such as their level of formal education, sex, and age (Rankin, 2001). While research exists that describes the learning needs and process of recovery for CABG patients, research in this area has been traditionally conducted using individuals who had on average a high school diploma (Goodman, 1997, Jickling & Gravdon, 1997; Newton & Killien, 1988;) and consisted primarily of males, averaging 63.4 years of age. As a result of the increase in the percentage of individuals with a post-secondary education (Livingstone, 1999), the promotion for early diagnosis of cardiac disease in women (Heart and Stroke Foundation of Canada, 2008), and the tendency for individuals older than 75 to receive CABG surgeries (Ivanov, 1998), many of the findings pertaining to learning needs post-CABG are no longer relevant to the current CABG population. Further description of the learning needs that are reflective of the societal demographic trends, as well as the examination of the relationship between the characteristics of the patient and specific learning needs are required to redesign current educational content that is relevant to the individual.

Literature Review

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In hospital, post-operative CABG patient education curricula are based on learning needs identified through a critical review of the empirical evidence (Marshall, Penckofer, & Llewellyn, 1986; Moore & Dolansky, 2001). Three studies have described the post-operative learning needs of CABG patients (Goodman, 1997; Jickling & Graydon, 1997; Newton & Killien, 1988). Cross-sectional and repeated measures designs were used to collect data on the patient's learning needs pre and post-discharge. The instruments used differed across studies, but their content addressed similar needs/concerns. In a few studies, open-ended questions were added to identify additional needs (Goodman, 1997; Jickling & Graydon, 1997).

Findings were consistent across all studies despite differences in research design and instruments used. The results indicated that the topic areas related to complications (specifically, how to recognize complications and which complication to give priority for treatment), activities, medication (particularly what are different strategies for medication management), symptom management and control (related to interventions for relieving incision and chest pain, nausea, vomiting, fatigue, sleep disturbance, constipation, and edema/water retention), and emotional reactions (specifically, why do I feel this way? and how to manage?) are important to learn.

With the exception of Jickling and Graydon's (1997) study which reported the needs of men and women as being similar prior to discharge, patient characteristics pertaining to level of formal education, sex, and age were not examined in other studies. As well, the samples from the three studies consisted of predominantly white, males, averaging 63.4 years of age, with a high school diploma. The sample is not representative of the current CABG population which is 43.2 % female, and 35 % older than 75 years of

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Study Purposes

The purpose of this study was twofold: 1) to describe the number and type of learning needs identified as very important or extremely important to learn, during the inhospital post-CABG recovery period, and 2) to examine the relationships between learning needs identified and education, sex, and age.

Conceptual Framework

Patients with less than 8 years of formal education, and who were identified as females older than 75 years of age were reported to have a significantly higher (greater than 10) number of learning needs than young males with intermediate (between 12-14 years) levels of formal education (Orem, 2001). Education is conceptually defined as a social construct that is a major personal characteristic of the individual. The higher one's education, the more likely he/she will engage in a higher order of thinking to influence behaviour performance. Higher order of thinking goes beyond rote memorization. It requires an understanding, manipulation, and application of materials to solve and/or address new or existing problems. A higher order of thinking results in less information on which to guide behaviours (Orem; Renpenning & Taylor, 2003). For the purposes of this study, education was defined as the highest level of formal educational training an individual achieved which was measured at less than high school, high school, trade school, college, undergraduate, or graduate level.

With regard to sex, Jickling and Graydon (1997) and Kattainen et al. (2004) stated that the evaluation of the importance of learning needs may be influenced by sex,

Running head: CABG PATIENT CHARACTERISTICS AND LEARNING NEEDS as men and women have different considerations of the CABG recovery process which results in the identification of varying learning needs. Keresztes, Merritt, Holm, Penckofer, & Patel (2003) noted women and men do experience symptom relief after CABG; however, women perceived poorer quality of life and health than men. The biological and physiological factors of women may be attributed to these differences as women have smaller coronary arteries, poorer revascularization, smaller body size, and longer life expectancy than men (Keresztes et al.,). As well, Chambers, Bagai, & Ivascu (2007) stated that women have a 3 to 7-fold increased risk of diabetes, a 2 to 3-fold elevation of coronary artery disease, and an increased risk for hypertension than men after the age of 65 years. For the purposes of this study, sex will be defined as the biological differences in which individuals are classified as either males or females.

Age may also influence the CABG patient's learning needs. Kattainen et al. (2004) found individuals who had CABG surgeries who were older than 65 years had a greater number of learning needs than younger patients (less than 65) before hospital discharge. This finding may be due to older adults having less familiarity and/or access to health related resources (Rankin, 2001). The learning needs of the older adult (> 65 years of age) focused on complications and symptoms, medications and activities of daily living (Holtta, Hupli, & Salantera, 2002). For the purposes of this study, age will be defined as the length of time an individual has existed from the time of birth to present in years.

Learning needs are reflective of patients' perceived need for educational information. This perceived need is influenced by the individual's level of formal education, sex, and age (Rankin, 2001). Learning needs are self-reported based on level

Running head: CABG PATIENT CHARACTERISTICS AND LEARNING NEEDS of importance for learning about a particular topic pertaining to CABG self-care behaviour. Level of importance is categorized as not important, slightly important, moderately important, very important, and extremely important.

Based on the review of the literature, the relationship between learning needs and patient characteristics has not been examined. The aim of this study will be to explore the relationships between learning needs and education, sex, and age in individuals who had CABG. This study is of significance as it will provide information to address the demographic trends that are prevalent and include an increase in the number of women undergoing CABG, the increase in the percentage of individuals with a post-secondary education, and the tendency for individuals older than 75 to have CABG surgery. Having an understanding of the differences in learning needs based on these variables will allow for future CABG educational interventions to be designed to reflect the characteristics of the patients, which may ultimately enhance their overall process for recovery.

Methods

This study was a sub-study of a randomized clinical trial (RCT) that evaluated the most appropriate time (1 - 2 days pre-discharge versus 1 - 2 days post-discharge) for delivering education to patients who had CABG surgery. In the RCT, all participants received the individualized educational intervention that focused on meeting learning needs for the management of self-care following CABG surgery. Prior to the delivery of the educational intervention, patient's perceived learning needs were assessed. The perceived learning needs did not differ between the two groups. The design of this sub-study allowed examination of the relationship between level of formal education, sex, and

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Setting, Sample, Sampling Method

Approval was received from the Research Ethics Board at the participating institution. The setting for this study was a CVS unit at a university-affiliated teaching hospital in a large Canadian urban center. The accessible population included people having CABG surgery with 1-4 grafts. The average length of stay on a step-down unit was 5 days. Mean patient age was 68 years, and the male/female ratio was 3:1. Patients were ethnically diverse. Approximately 70% of the population met eligibility criteria. Participants who met the following eligibility criteria were included in the study:

- Underwent CABG surgery for the first time, with no additional surgical interventions (valve surgery, Maze procedure, pacemaker insertion, stent insertion, stem cell related procedures, or other surgical procedures).
- 2. Understood English language.
- 3. Oriented to time, place, and person post-operatively as ascertained by nursing staff.

Patients were approached for study participation within 24-48 hours of the admission to the post-operative CVS unit. The unit staff were provided with the study inclusion criteria and asked to use these criteria in identifying eligible patients. The staff members used a standardized script, to inform the eligible patients of the study and asked if they would like to hear more about it. The research assistant approached patients, who expressed interest in hearing about the study, to explain the study in detail, answer any questions that the patient may have, and obtain written consent to participate.

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Baseline data (level of formal education, sex, and age) collection and the administration of the PLNS occurred once consent was obtained (24-48 hours on admission to CVS). The researcher administered the questionnaires through face-to-face interview. Completion of these instruments took between 5-7 minutes. A convenience sampling technique was used in which available consenting patients were entered into the study until the required sample size of 150 was reached. In total, 130 patients completed the follow-up data collection.

Variables and Measures

The Patient Learning Needs Scale (PLNS) (Galloway, Bubela, McCay, McKibbon, Ross, & Nagle, 1993) was used to assess the individual patient's perception of the topic areas that they wanted to learn about. This tool was designed and validated for use with surgical CABG inpatients and outpatients. The topic areas identified on the PLNS were reflective of the CABG patient's learning needs that were identified throughout the literature review. The response options are a Likert scale with scores ranging from 1 (not important) to 5 (extremely important). Patients were asked to rate how important each item was to know about before going home in order to manage their care at home. The authors stated that convergent validity (Pearson r = 0.78) with a similar instrument that assesses patient's learning needs was supported. In addition, Cronbach's alpha ranged from 0.80 to 0.90 in a CABG sample (Galloway et al., 1993). Items rated as very important (# 4 on PLNS) or extremely important (#5 on PLNS) were considered as a learning need.

On review of the PLNS, two questions related to access to community resources (Where can I get help in handling my feelings about my illness? and How to contact

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A standard demographic questionnaire was used to collect information related to the patient's level of formal education, sex, and age. This information was obtained from interviews with the client, after the patient consented to participate in the study.

Data Analysis

Descriptive statistics (i. e, measures of central tendency and dispersion) were used to describe the sample in terms of demographics and learning needs. Learning needs that were identified as very important or extremely important were included in the analysis. Analysis of variance was used to examine differences in learning needs across four (high school, college/trade school, undergraduate education, graduate education) categories pertaining to level of formal education. T-test was used to examine differences in learning needs for men and women and Pearson correlation coefficient was used to examine relationships between patients' perceived learning need and age.

Results

Participants had on average a post-secondary education (42 %), were male (60.0 %), and on average 64.2 years of age.

The learning needs most frequently identified by the total sample as being either very important or extremely important to learn about were: how to recognize complications, how can you prevent/manage the onset of edema (i.e., swelling)?, how to decrease or avoid complications during post-operative recovery period, what are important physical activities that should or can be performed during the first three weeks Running head: CABG PATIENT CHARACTERISTICS AND LEARNING NEEDS post-discharge, and what to do if you experience chest and/or incision pain (See Table 1). The topic that was rated the least important to learn about was how to manage nausea (i.e., sick to stomach). The percentage of individuals who did not request any information was 19.3, while the percentage of individuals who requested all information be reviewed was 2.0.

The relationship between patients' perceived learning need and level of formal education, sex, and age were examined. No statistically significant differences were noted between sum of learning needs and level of formal education F (3, 140) = 1.209, p > 0.05); however, a statistically significant difference was noted between sum of learning needs and sex (t (142) = 0.59. p = 0.00) in which males reported a higher number of learning needs (mean = 10.2, SD = 2.3) than females (mean = 4.2, SD = 1.7). In particular, females did not request information pertaining to how to manage nausea, how to manage vomiting, what to do if you feel fatigue or tired, what to do if you cannot sleep properly, how to manage constipation, and how to prevent/manage the onset of edema (Table 2). As well, the relationship between sum of learning needs and age (r = -0.77, p = 0.03) was found to be statistically significant.

Discussion

General characteristics of the sample were similar to those of the current CABG surgical population supporting the representativeness of the sample. This particular sample had a higher level of education, was slightly older, and had a somewhat higher proportion of women than similar studies that used previous CABG participants (Beckie, 1989; Jickling & Graydon, 1997;; Moore & Dolansky, 2001); thus, supporting the data

Running head: CABG PATIENT CHARACTERISTICS AND LEARNING NEEDS that the current CABG patient population are more educated, older, and are comprised of a higher number of women (Heart and Stroke Foundation of Canada, 2008).

The total number of learning needs identified and the total number of individuals who requested that all information be reviewed was quite small, which may have related to patients having received the usual education before discharge and their learning needs were assessed just prior to discharge. If this was the case, then the identification of needs after the delivery of usual education indicates that patients still have learning needs.

Types of learning needs most frequently reported included: how to recognize complications, how to prevent/manage the onset of edema (i.e., swelling), how to decrease or avoid complications during the post-operative recovery period, what are important physical activities that should or can be performed during the first three weeks post-discharge, and what to do if you experience chest and/or incision pain. The learning needs are consistent with those reported by hospitalized patients (Wheby & Brenner, 1999). They reflect the experience of patients around the time of discharge. However, the number of perceived learning needs differed across gender. Males reported a higher number of perceived learning needs than females. This could be due to traditional social roles females may hold (e.g., caregiver role) which may have exposed them to information related to caring for others, specifically those recovering from CABG surgery (Eastwood & Doering, 2005). Thus, females may place less importance on particular learning needs compared to males. This is evident in the findings in which females did not request information relating to symptom management indicating that females may already have some understanding of how to care for individuals experiencing nausea, vomiting, fatigue, inability to sleep, constipation, and edema.

Furthermore, findings indicated older individuals reported having a lower number of perceived learning needs. This finding may be due to the supposition that older individuals have had more opportunity to be exposed to individuals who may have had heart or CABG surgery and thus, may have acquired self-care knowledge through these interactions (Lynott & McCandless, 2000).

Limitations

As this was a sub-study of a larger randomized clinical trial (RCT), there needs to be continued evaluation of the relationship between CABG patients' perceived learning needs and level of formal education, sex, and age to rule out the possibility that the associations identified are a result of unstudied variables such as an individual's socioeconomic status, personal attributes, or a residual effect from the main trial's intervention effect.

Implications

Since the results were obtained from a secondary analysis, further investigation into the nature of the relationship between learning needs and patient characteristics is required to support earlier findings as well as continue to explore this relationship using a large sample and other instruments to examine learning needs.

As well, further investigation is required to determine reasons as to why individuals self identify a particular learning need which can be helpful for the design and implementation of future educational interventions. Furthermore, reasons for not identifying learning needs as important to learn should also be examined to determine As findings suggests that differences in learning needs exist based on sex and age, nurses involved in the delivery of current post-discharge CABG patient education programs could begin to redesign their educational content to reflect some of these differences. Beckie, T. (1989). A supportive-educative telephone program: Impact on knowledge and anxiety after coronary artery bypass graft surgery. *Heart and Lung*, *18*, 1-55.

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Table 1: Learning needs identified

Learning Need	Average[mean (SD)] number of
	times learning need identified by
	natient as very important or
	extremely important
How to recognize complications	2.07(1.92)
now to recognize complications	2.97 (1.82)
How can you prevent/manage the onset of edema (i.e.:	2.96 (1. 18)
swelling)	
How to decrease or avoid complications during post-	2.95 (1.83)
operative recovery period	
What are appropriate physical activities that should or	2.94 (1.74)
can be performed during the first 3 weeks post-discharge	
What to do if you experience chest and/or incision pain	2.54 (1.67)
How to manage constipation	2.52 (1.67)
What are different strategies for medication management	2.19 (1.42)
What to do if you cannot sleep properly	2.18 (1.43)
Why do you feel this way (i.e., anxious/down)	2.15 (1.44)
How to manage these emotional reactions	2.13 (1.40)
What to do if you feel fatigue or tired	1.87 (1.16)
How to manage vomiting (i.e., throw up)	1.78 (1.08)
How to manage nausea (i.e., sick to stomach)	1.73 (1.02)

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Learning Need	Average [mean (SD)] number of times learning need identified based on sex
How to recognize complications	Male: 132.9 (15.6)
	Female: 65.6 (12.5)
How to decrease or avoid complications during	Male: 137.0 (18.4)
post-operative recovery period	Female: 74.3 (9.6)
What are appropriate physical activities that	Male: 134.6 (15.7)
should or can be performed during the first 3	Female: 42.5 (10.7)
weeks post-discharge	
What are different strategies for medication	Male: 138.6 (20.3)
management	Female: 46.7 (16.5)
What to do if you experience chest and/or	Male: 130.6 (11.6)
incision pain	Female: 32.7 (10.7)
How to manage nausea (i.e.: sick to stomach)	Male: 126.8 (23.0)
	Female: 0.0 (0.0)
How to manage vomiting(i.e., throw up)	Male: 129.6 (29.6)
	Female: 0.0 (0.0)
What to do if you feel fatigue or tired	Male: 125.5 (20.9)
	Female: 0.0 (0.0)
What to do if you cannot sleep properly	Male: 130.8 (18.6)
	Female: 0.0 (0.0)
How to manage constipation	Male: 129.9 (20.6)
	Female: 0.0 (0.0)

Table 2: Number of learning needs reported based on sex

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How can you prevent/manage the onset of	Male: 127.9 (21.4)
edema (i.e.: swelling)	Female: 0.0 (0.0)
Why do you feel this way (i.e. anxious/down)	Male: 115.6 (14.6)
	Female: 9.8 (4.5)
How to manage these emotional reactions	Male: 105.2 (23.5)
	Female: 7.6 (6.3)

This manuscript has been accepted for publication by Pappin Communications; Fredericks, S. (2009). The relationship between CABG patient characteristics and perceived learning needs: A secondary analysis. Canadian Journal of Cardiovascular Nursing, 19, 1, pp. 13-19.