University of Alberta

UNDERGRADUATE NURSING STUDENTS' LEVEL OF THINKING AND SELF-EFFICACY IN PATIENT EDUCATION IN A CONTEXT-BASED LEARNING PROGRAM

by

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Abstract

The purpose of this comparative descriptive study was to examine the level of thinking and self-efficacy in stroke-patient education of first- and third-year nursing students in a context-based learning (CBL) program. The students' self-efficacy and level of thinking were measured using Tresolini, Saluja, and Stritter's (1995) health promotion counselling self-efficacy scale (HPCSES) and the knowledge application questionnaire (KAQ). The results from the study reveal a significant difference between first- and third-year students' self-efficacy only in the smoking domain. Third-year students were more efficacious and were rated at a higher thinking level than first-year students. There was no significant relationship between students' self-efficacy and level of thinking. The students chose receiving factual information about risk factors and practicing counselling strategies as the most helpful sources of self-efficacy. The study findings show that the CBL method is as effective in developing students' self-efficacy and level of thinking as the traditional teaching method.

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CHAPTER 1

INTRODUCTION

Cerebrovascular accident (CVA) or stroke is the third leading cause of death each year in the United States, Canada, Singapore, and England (Bradley, 2003; Grant, 1996; Greenwood et al., 2001). In Australia CVA is the second highest cause of death after ischemic heart disease (O'Connell, Baker, & Prosser, 2003). In the United States each year about 350,000 people suffer their first stroke (Wentworth & Atkinson, 1996) and 3 per 1,000 in the UK (Henderson & Scott, 2001). Seniors make up 75%-80% of stroke patients over 65 years of age (Grant, 1996), and these clients are left with a variety of disabilities that result in high social and financial costs. The total annual cost of caring for stroke patients in the United States is about $17 billion (Wentworth & Atkinson, 1996). Thus, stroke management has a tremendous impact on health care resources and the affected individuals. Educating patients is one recognized strategy to reduce risks and, consequently, the costs associated with stroke care (Rausch & Turkoski, 1999; Rodgers, Atkinson, Bond, Suddes, & Curless, 1999). In addition, the identification of patients' health risks and effective application of skills and knowledge in counselling patients on risk reduction are viewed as essential (Holloway & Watson, 2002). If nurses are to engage in health education on CVA, they must be knowledgeable about stroke management and confident in their application of that knowledge to patient education. Undergraduate nursing education programs must be structured to build students' self-efficacy (Biley & Smith, 1998; Laschinger & Tresolini, 1999) and their ability to apply their knowledge in patient education (Walton & Matthews, 1989).

Bandura (1995) viewed self-efficacy as an emerged individual resource that is closely related to forming behaviour intentions and behaviour change. Laschinger (1996) noted that students who are exposed to more than one source of self-efficacy information during their educational program are more likely to be efficacious in patient counselling. Furthermore, Holloway and Watson (2002) reported that patients learn self-efficacy behaviours from their health care providers. Researchers in nursing education agree that nurses' development of higher levels of cognition and self-efficacy in health education is a critical role of undergraduate nursing programs (Biley & Smith, 1998; Laschinger & Tresolini, 1999; Walton & Mathews, 1989). For undergraduate nurses to be effective practitioners, their learning experience must incorporate activities that facilitate the building of strong self-efficacy. Bandura (1995) suggested that self-efficacy is developed from four sources: (a) actually performing a behaviour, (b) seeing another person perform that behaviour, (c) verbal persuasion, and (d) emotional arousal. Of the four factors, Bandura believed that performance or practice of behaviour has the strongest influence on self-efficacy.

Nurse educators have advocated for context-based learning (CBL) in nursing given its potential to develop students' problem-solving skills, higher-level thinking, self-directed learning, self-confidence, and effective communication skills (Biley & Smith, 1998; Frost, 1996; Walton & Matthews, 1989). CBL as an educational approach may be particularly suited for developing self-efficacy and higher-level thinking because it places students in functional contexts that simulate situations that they would typically encounter in nurses' work environments. The CBL approach offers students opportunities to explore health determinants in different contexts. The premises of the CBL approach

are that students learn through active participation in the learning process and that they are responsible for their learning. Although CBL may be particularly suited for developing students' self-efficacy and higher-level thinking, the self-efficacy and level of thinking in relation to patient education has not been studied with undergraduate nursing students in CBL programs.

Purpose and Objectives

The purpose of this study was to increase our understanding of the impact of a CBL undergraduate nursing program on students' self-efficacy in patient education and their level of thinking. There were four objectives: (a) to compare the self-efficacy in the patient education of first- and third-year students, (b) to compare the level of thinking of first- and third-year students in similar situations, (c) to determine the relationship between students' self-efficacy in patient education and their level of thinking, and (d) to compare first- and third-year students' perceptions of the important sources of self-efficacy. Four research questions guided the study.

Research Questions

1. Do third-year nursing students differ from first-year nursing students in self-efficacy in patient education?
2. Do third-year nursing students differ from first-year nursing students in their level of thinking?
3. Is there a relationship between first- and third-year nursing students' self-efficacy and levels of thinking?
4. Do first- and third-year students differ in the sources of self-efficacy that they perceive as important?

Definition of Terms

The conceptual definitions of terms used in this study are as follows:

Context-based learning (CBL): A philosophical variation of problem-based learning (PBL) that emphasizes the holistic nature of nursing and stimulates learning with scenarios structured around real nursing practice that students will encounter in professional practice (Williams & Day, in review).

Level of thinking: This describes the six levels of the cognitive domain in Bloom, Engelhart, Furst, Hill, and Krathwohl's (1956) taxonomy, which include knowledge, comprehension, application, analysis, synthesis, and evaluation. The cognitive domain involves the intellectual processes that occur during learning.

Self-efficacy: An individual's perceived ability to organize and execute an action to achieve a specific goal (Bandura, 1995).

Significance of the Study

Bandura (1995) noted that people's desire to change behaviour depends on their cognitive expectations. Self-efficacy emerged as the most effective factor in determining their desire to change their behaviour. In nursing education, health education has been embraced as a community health strategy. If nursing students are to be involved in health education, then their educational programs must include strategies that strengthen their self-efficacy and their ability to apply knowledge. Laschinger (1996) contended that students who are exposed to more than one source of efficacy information during their education are more likely to be efficacious in counselling patients. Furthermore, there is a positive association between self-efficacy and successful performance of a task (Bandura, 1995; Laschinger, 1996). Therefore, it is expected that if CBL education can be shown to

increase students' self-efficacy and level of thinking applied to patient education, students will be more likely to become effective patient educators. The findings from this study will contribute to our understanding of self-efficacy and the level of thinking of undergraduate nursing students enrolled in a CBL program.

CHAPTER 2

LITERATURE REVIEW

The literature review for this study begins with an examination of cerebral vascular accident (CVA), or stroke, the impact of health education on stroke patients' behaviour, and Bandura's (1977) social learning theory. The theoretical basis of CBL, the components of the CBL program that the University Of Alberta Faculty Of Nursing has adopted, and the results of research into the impact of educational approaches (lecture-based learning, PBL, and CBL) on students' self-efficacy and level of thinking are also investigated.

Stroke

Strokes are the third leading cause of death each year in America, Canada, Singapore, and England, exceeded only by heart disease and cancer (Bradley, 2003; Grant, 1996; Greenwood et al., 2001). However, in Australia stroke is the second highest cause of death, with ischemic heart disease the highest (O'Connell et al., 2003). Seniors are primarily affected; about 75%-80% of stroke patients are 65 years of age and older (Grant, 1996). The incidence of stroke is highest among women; for example, in the United States 90,000 women and 60,000 men suffer strokes each year (Caplan, 2000).

Public knowledge of the risk factors for stroke is limited compared to the knowledge of heart attacks (Caplan, 2000). However, Caplan explained that public knowledge of the risks of heart attacks has reduced the incidence of stroke in the United States. Several factors contribute to the risk of stroke. Age, ethnic background, gender, and a history of stroke or a family history of cardiovascular disease are positively correlated, and these risk factors cannot be modified. Other risk factors such as

hypertension, diabetes mellitus, smoking, increased blood lipids, alcohol consumption, the use of oral contraceptives, obesity, the lack of exercise, and the incidence of transient ischemic attack (TIA) can be modified by a change in lifestyle (Caplan, 2000; Lindsey, 2000).

The findings of surveys that the US National Stroke Association conducted in 1991 and 1996 (as cited in American Heart Association, 2000) indicate that many Americans know very little about stroke and the factors that could predispose them to a stroke. Only 35% of the respondents to the 1991 survey and 43% of the respondent to the 1996 survey were able to identify hypertension as a risk factor for stroke. Less than 20% of the respondents to the 1996 survey were able to identify other risk factors of stroke such as smoking, high cholesterol level, and obesity (American Heart Association, 2000). Given the low level of public knowledge of stroke, health education has been identified as an important strategy to increase public awareness and foster lifestyle change.

There is evidence to suggest that population health will be significantly improved through health promotion (Wass, 2000). Wass defined *health promotion* as the process of enabling people to increase control over and improve their health. According to Wass, health promotion could change people's lifestyles and have an impact on the determinants of health. However, in stroke education, studies have shown that although stroke patients acquire more knowledge, they do not necessarily change their health behaviours (Rausch & Turkoski, 1999; Rodgers et al., 1999). This means that an effective approach is needed to promote behavioural change in individuals at risk of stroke. Increasing patients' self-efficacy has been identified as an influential source of behaviour change in patients (Holloway & Watson (2002).

Bandura's Social Learning Theory

The origins of social learning theory emerged from Skinner's operant conditioning and Bandura's cognitive learning theorizing (Bandura, 1977; Holloway & Watson, 2002). In social learning theory, symbolic, vicarious, and self-regulatory processes are essential factors in determining future behaviour. Observing the behaviour of others impacts learning related to the direct performance of an action. People use verbal and schema to process and store experiences that guide future behaviour. Self–regulatory strengths are externally formed to exercise control over behaviour. Once self-regulatory capacity is formed, it partly determines what kind of activity the individual will undertake. Bandura noted that, in professional education, students' choice, success, and perseverance in a profession is positively linked to their perceived self–efficacy. Students with high self-efficacy will choose to be involved in difficult and challenging situations, whereas those with low self-efficacy tend to avoid difficult situations.

Self-Efficacy

Bandura (1995) defined *self-efficacy* as an individual's perceived capability to organize and execute an action to achieve a specific goal. According to Tresolini and Stritter (1994), self-efficacy is confidence in one's ability to perform a certain task. Furthermore, self-efficacy is considered an indication of individuals' judgment of their capability to perform an action (Laschinger, 1996). Bandura proposed four sources of efficacy information and described how they influence an individual's behaviour. Self-efficacy is formed through cognitive processing of information gained from (a) task performance, (b) vicarious experience/modeling, (c) verbal persuasion/feedback, and (d) physiological states such as muscle coordination in relation to a task (Bandura, 1995;

Laschinger, 1996; Laschinger & Tresolini, 1999; Tresolini & Stritter, 1994). Mastery experiences are the most influential means of developing a strong sense of confidence. Thus educators must create an opportunity for learners to develop the capacity to carry out patient education within their undergraduate programs. When people successfully complete a task, they become convinced about their success and are more likely to persevere when faced with future difficulties (Bandura, 1995).

The second source of efficacy information is vicarious experience, which is acquired through observing others. People who observe others who are similar to themselves successfully completing an action develop perseverance and create the confidence to succeed in the completion of similar tasks (Bandura, 1995). The more similar the model is to the observer, the greater the level of influence on the observer. Thus, participating in peer-teaching situations should have a positive effect on students' application of health education.

Verbal persuasion is the third source of strengthening efficacy beliefs. Bandura (1995) noted that verbal encouragement is likely to increase effort and maintain it. Learning through effective and constructive feedback increases students' self-efficacy. Finally, physiological feedback received from internal processes has been used to evaluate success and failure. Some people associate increased physiological stimulation—for example, increased heart rate and sweating—with decreased performance, whereas success has been linked to the absence of such internal arousal (Bandura, 1995). Apart from the four sources of efficacy information, an individual's desire to change behaviour depends on three kinds of cognitive expectations: situation and action outcome expectations and perceived self-efficacy. Outcome expectations and

self-efficacy are essential in the adoption of health behaviours, removal of dangerous health practices, and maintenance of change. Bandura wrote that outcome expectancies support the health decision to change behaviour, whereas self-efficacy serves as a controlling factor when problems develop during the adoption and maintenance of health behaviours. Bandura explained that people who are not confident see little point in trying if they believe that they do not have what it takes to succeed. This suggests that self-efficacy is the primary factor in people's adoption of new, healthful ways of living. Therefore, self-efficacy must be promoted among students and patients to encourage them to engage in health promotion programs that lead to healthy lifestyle changes.

Context-Based Learning/Problem-Based Learning

CBL evolved from the PBL approach. In PBL learning begins with the analysis of a problem situation, a query, or a puzzle, with the aim of understanding or resolving the situation. Students assume ownership of their learning through a self-directed learning process (Biley & Smith, 1998; Boud ,1985; Frost, 1996; Miller, 2003; Milligan, 1999). The concept 'problem' used in PBL is of concern to nursing because it assumes that there is a right answer; however, in complex social situations there may be only a limited number of alternatives. Lacking in PBL is the recognition that the context in which the situation occurs affects the possible resources and strategies that may be used to understand or resolve the situation.

In a nursing context the situation in which patients find themselves, the personal resources that they bring, and the context are likely as important as their medical condition (Finucane & Nair, 2002; Rideout, 2001). Thus, the focus of CBL is broader than just a problem; the CBL approach is based on the assumption that nursing is holistic

and that nurses must appreciate their patients' life context (Profetto-McGrath, Smith, Day & Yonge, 2004; Williams & Day, in review). The CBL approach places students in a learning context that is similar to the real nursing practice environment in which they will find themselves when they graduate (Walton & Matthews, 1989). The situation is structured through real case-based scenarios from clinical practice. The information provided in the scenarios is often incomplete, as it is in practice. Although information is included to mirror situations that students will encounter in real nursing practice, not all of the details are included (Williams & Day, in review). The purpose is to elicit students' pre-existing knowledge and help them to identify what they need to know. The situation engages students in discussion and active involvement in the discovery and creation of their own knowledge. According to Williams and Day, CBL is successful when the scenarios engage and stimulate students to probe deeply into their learning.

Theoretical Foundation of Context-Based Learning

PBL was not based on any theoretical framework when it began. However, as the process evolved and with increased research, PBL has been linked to educational theory such as andragogy, constructivism, and cognitive learning theory (Rideout, 2001; William & Day, in review).

Andragogy emerged in the 20th century at the beginning of World War II from pedagogy, which originated in the 7th and 12th centuries in the monastic and cathedral schools in Europe from experience with teaching teenage boys for priesthood (Knowles, HoHon, & Swanson, 2005). Andragogy is viewed as the antithesis of pedagogy, which is the art and science of teaching children. Pedagogy is used to describe childlike and traditional teaching methods, whereas andragogy is about adult learning (Knowles,

1985). Knowles et al. defined *andragogy* as the art and science of assisting adults to learn. Andragogy as an adult learning theory describes how adults learn, with key emphasis on the learners' experience. Adults learn well when their needs and interests, life situations, experiences, self-concepts, and personal differences are considered. Knowles noted that the main difference between pedagogy and andragogy is the attitude of the learners. He explained that adults are self-directed in their learning, which means they take the initiative and responsibility for their learning needs. Thus, in adult education there should be flexibility in the learning. Students should be allowed to be self-directed to learn what they are interested in, when they are willing to learn, and the way that is interesting to them to facilitate learning. PBL/CBL is based on principles of adult learning. Biley and Smith (1999) wrote that a PBL/CBL program recognizes and uses students pre-existing knowledge and experiences in the learning process. The CBL process is flexible and gives students the opportunity to identify their own learning needs from the scenario presented.

Another theory with which CBL has also been associated is the constructivist theory (Rideout, 2001; Williams & Day, in review). Constructivism emerged in the late 1970s from the work of different social and cognitive theorists such as Jean-Jacques Rousseau, Johann Heinrich Pestalozzi, John Dewey, Jean Piaget, and Paulo Freire (Lang, 2004; Marlowe & Page, 2005). Marlowe and Page explained that *constructivism* means "constructing, creating, inventing, and developing of our own knowledge" (p. 7). This implies that learning is an active mental process of forming one's own knowledge. There are different categories of constructivism. Lang grouped constructivism into two main categories based on its definitions: (a) individualistic or social and (b) the level of

objectivity (objective or relative). Individualistic constructivists believe that knowledge is personal; each person independently creates his or her own truth. Individualistic constructivism could be further classified as subjective or objective based on one's belief that knowledge is an outcome of an individual subjective or objective construction process. The social constructivist suggests that knowledge is socially developed as students interact with their social environment. Three principles of constructivism evolved based on the interpretation of the development of knowledge: (a) Knowledge is a human construction, (b) knowledge is socially constructed, and (c) knowledge is tentative. According to Lang, constructivists claim that humans invent their own knowledge, which is influenced by the subjective experience of the viewer. Thus, teachers cannot easily transfer knowledge to their students; they can only motivate students to create their own knowledge. Furthermore, constructivists claim that the creation of knowledge occurs within a particular social situation and is affected by forces such as religion, politics, economics, human interest, and group process. Finally, constructivists claim that truth is temporal and changes with time. Based on these three principles, constructivists believe that students' learning and teaching should emphasize five points: (a) that students have matured preconceptions; (b) that student learning involves active processing of information and creating of knowledge using pre-existing knowledge; (c) that as learning occurs, the students' conceptions should be modified; (d) that the construction of knowledge occurs within a certain social and material situation; and (e) that students are purposive and completely accountable for their own learning.

Williams and Day (in review) suggested that constructivist theory provides a framework for CBL, because in the CBL program learning occurs in the social context of the students. The scenarios used in CBL are structured on clinical cases similar to those that students will encounter during practice. As they discuss the scenarios and clarify issues, they construct their own knowledge. Students learn and acquire skills in a context that reflects the environments that they will encounter in their future professional practice.

CBL has been linked to cognitive learning theory, which emphasizes the interpretation of sensory information. Cognitive learning theory emerged in the late 1950s with Jean Piaget as one of the main founders (Beckett, 2002; Mergel, 1998). Cognitive learning theory is concerned about the way that people process and interpret messages. Cognitive learning theorists emphasize concepts such as *schema*, which is an internal memory structure to which new messages are compared, and practice effects, which emphasize that constant practice will improve retention. Also, cognitive learning theory proposes that humans process information in three ways: receiving it through the sense organs, storing it in the short- or long-term memory, and retrieving information (Mergel, 1998). Mergel suggested that in applying cognitive learning theory to teaching, students' prior schema should be used and the major learning goal divided into smaller parts to develop learning outcomes, with the analyzed information moving from simple to complex.

The CBL process utilizes the cognitive learning approach: Students are required to review prior knowledge, formulate hypotheses, and store the information in the context of the learning for easy retrieval during practice (Rideout, 2001). The process enables

students to form contextual cues from the information presented, activate past knowledge, and link current knowledge to past information for easy retrieval in the future (William & Day, in review). As students go through the CBL process, they are actively engaged in extensive amounts of processing information.

In summary, CBL has been linked to andragogy, constructivism, and cognitive learning theory. In andragogy, the learners' experience is used, with emphasis on self-directed learning. Constructivism is subjective. The content of instruction is not predetermined, and the student decides what to learn. The teacher acts as a mentor who provides the appropriate environment to facilitate knowledge construction. Cognitive learning theory involves setting learning objectives and evaluating students based on the predetermined objectives. Given the various educational theories to which CBL has been linked, it can also be associated with social learning theory because it encourages a mental process of learning using real-life situations with the key focus on the context of the learner. It is believed that CBL has the potential to facilitate students' acquisition of higher-level thinking skills and self-efficacy.

CBL Process

The literature on the process of CBL identified two key elements that separate CBL from other approaches: the presentation of scenarios on real-life situations and the identification of learning issues. Students actively learn best through information gathering in a collaborative group-centered learning environment of 7-10 students. The teacher is a facilitator who guides the learning and assists students in reflecting on the learning process (Biley & Smith, 1999; Frost, 1996; Liotta-Kleinfeld & McPhee, 2001; Rideout, 2001; Walton & Matthews, 1989; Williams, 2002). The CBL process elicits

prior knowledge as students brainstorm to identify knowledge gaps and acquire information to resolve the learning issues. In addition, the CBL process has been shown to enhance retention of information for long periods, facilitate the transfer of facts into practice, and promote interest and ongoing self-directed learning (Liotta-Kleinfeld & McPhee, 2001; Walton & Matthews, 1989).

Williams and Day (in review) identified four phases in which student learning in CBL occurs. Phase 1 begins with the tutorial group's discussion of a scenario, where the students identify their learning needs in relation to the scenario by analyzing clients' health situation and personal strengths and their role as student nurses. The learners think aloud, using discussion to identify their knowledge, knowledge gaps, and the information that they need to function in nursing situations. Students critique each others' thinking, set up goals, and develop strategies to meet those goals. Students learn critical reflection during the first phase.

Phase 2 engages students in self-directed learning to meet the goals set in phase 1. This includes searching for information from the literature and consulting experts on the topic. In this phase, students identify differences in their beliefs and assumptions and develop the why, what, and how questions that they need to answer.

Phase 3 involves learners' coming together to continue to work on the scenario, share their research findings, and integrate information pertaining to the situation in the scenario. The students are encouraged to link the current findings to previous knowledge and to identify new learning issues. By doing this, they are more likely to be able to recall information in the future when they are presented with a similar situation. Learners continue to use what, how, and why questions to critique each others' ideas and develop

their critical reflection skills. At the end of phase 3 the students summarize what they have learnt and discuss how the information and skills could be used in future practice. The tutor evaluates what students have learnt in a final assessment, which may involve, for example, asking them to role-play the proposed solutions.

Phase 4 involves students' reflecting on their individual contribution to the learning exercise and critiquing the group process. Reflection on the group process is essential in CBL because it enables students to identify what went well and what changes they would like to make before the next scenario. In addition, learners have the opportunity to give each other constructive feedback. In this way they learn how to provide constructive feedback to their peers and tutor as well as to develop self-confidence in their own level of knowledge. At the end of phase 4 of the CBL process, students evaluate their performance with regard to their role in and contribution to the group (Profetto-McGrath et al., 2004).

The CBL Program Adopted by the University of Alberta's Faculty of Nursing

The scenarios used in the CBL program emphasize how to promote the health of patients by using the health determinants. Each scenario is designed to highlight one or more of the nine determinants of health as defined by the Public Health Agency of Canada (2003). This agency proposed that there are factors and conditions within and outside the individual that work together to affect health status. These factors are called *determinants of health*. They vary and range from family history, quality of relationships, where and how one lives, the political and economic forces that influence the wellness of the community, and one's workplace and environment. The determinants of health are as follows: income and social status, social support networks, education, employment and

working conditions, physical environment, biologic and genetic endowment, personal health practices and coping skills, healthy child development, health services, gender and culture. By the end of the third year, nursing students have dealt with two scenarios that feature individuals and families coping with cardiovascular disease. In the second year of the program students are given a scenario describing an adult who has suffered a stroke and in the third year, students deal with to a scenario involving a lady who sustained a myocardial infarction.

To strengthen students' skills, each six-week course, which is comprised of four or five learning packages, is followed by six weeks of clinical practicum (Williams, 2002). During the practicum, first-year students are required to assess the learning/health needs of different populations (individuals and families) and to engage in health education. First-year students have their practicum in the community, where they are exposed to toddlers', school-age children's, or seniors' care. By the third year the students will have completed a practicum in acute care settings where individuals and families are the focus. In addition, each year students are required to attend support courses designed to supplement knowledge development in sociology, psychology, philosophy, political science, anatomy, and physiology (Appendix A).

Impact of Educational Approaches on Students' Self-Efficacy

A literature search on CBL and its impact on students' self-efficacy were not fruitful; there was no direct study relevant to the population of interest. Therefore, literature on students' self-efficacy in health education and their experience of satisfaction and confidence with PBL is presented. Studies on self-efficacy show that there is a positive correlation between self-efficacy expectations, achievement, and the

successful performance of an action (Clark & Dodge, 1999; Laschinger, 1996; Tresolini & Stritter, 1994). Tresolini and Stritter used a qualitative case-study approach to analyze the learning experiences that contributed to medical students' (n = 28) self-efficacy in conducting patient education. The findings from this study show that students who practiced counselling had the highest self-efficacy scores, followed by those who were exposed to vicarious learning sources such as observing a practitioner role model counselling strategies. Verbal persuasion and physiological sources were the least useful facilitators of self-efficacy. Tresolini and Stritter also noted that students who were exposed to more than one source of self-efficacy information had stronger self-confidence in conducting patient health education.

Laschinger and Tresolini (1999) found that nursing students increased their self-efficacy by learning about health-promotion strategies in class and through actual performance in clinical practice, whereas medical students increased their self-efficacy by practicing and receiving feedback on their performance and role modeling. The authors concluded that students' self-efficacy increases as they are exposed to more information on efficacy. Laschinger and Tresolini also noted that nursing programs have more sources of efficacy information; thus, overall, the nursing students gained more in self-efficacy than the medical students gained in relation to their knowledge and ability to counsel patients on health education. Although the study used a sample of convenience, the findings provide a guide to examining the relationship between students' level of thinking and their ability to counsel patients.

In an earlier study using the Self-Confidence in Patient Education for Health Promotion Questionnaire (SPEHPQ), Laschinger (1996) suggested that students were

moderately efficacious about their knowledge and ability to engage in counselling in three areas: nutrition, smoking, and exercise. Although third-year students demonstrated higher self-efficacy, efficacy decreased from first year to second year. All the students reported significantly lower confidence in their ability to engage clients in an educational program that promotes behaviour change. Laschinger and Tresolini (1999) explained that mastering health education content is easier than starting and maintaining effective counselling with clients in clinical environment.

Despite the lack of published studies, Tresolini and Stritter (1994) suggested that CBL has a greater potential to enhance students' self-efficacy than do traditional educational approaches. There were no reports of research on the impact of CBL on self-efficacy in the literature search conducted for this study. However, the results of studies conducted on PBL graduates show that PBL enhances students' transition into the work setting, increases their self-confidence, increases their responsibility for their own learning, and creates open-minded, research-oriented professionals (Biley & Smith, 1998; Celia & Gordon, 2001). Biley and Smith, Celia and Gordon suggested that PBL be combined with supervised clinical experience to assist new nursing graduates in making smooth transitions into acute-care settings.

The Impact of Educational Approaches on Students' Level of Thinking

Knowledge acquisition has been categorized in different ways. Bloom et al.'s (1956) early work is the most widely used in the classification of the three learning domains: cognitive, affective, and psychomotor. The cognitive domain includes the following levels: knowledge, comprehension, application, analysis, synthesis, and evaluation. Knowledge, comprehension, and application have been described as lower

levels of thinking; and analysis, synthesis, and evaluation are considered higher levels of thinking (Gronlund, 1970). Caffarella (1994) suggested that the lecture method and large group discussions are appropriate for knowledge acquisition, whereas case studies and reflections are more conducive to promoting thinking skills such as synthesizing and integrating content.

Several studies that compared the PBL method with the traditional/lecture-based learning method using the results of students' written examinations showed no difference in cognitive level between the two groups (Albanese & Mitchell, 1993; Antepohl & Herzig, 1999; Bovee & Gran, 2004; Liotta-Kleinfeld & McPhee, 2001). Rideout (2001) found that students in conventional/lecture-based learning situations performed better on standard recall examinations than those in PBL situations. However, some study results showed a difference in students' performance between PBL and lecture-based approaches on clinical problem-solving skills. Whitfield, Manger, Zwicker, and Lehman (2002) studied medical students' clerkship performance and found that the PBL students had better performance levels. Similar studies that involved third-year family-medicine, psychology, and nursing students revealed that the students were able to transfer their knowledge during practice and acquired higher clinical decision-making skills (Hueston, Mallin, & Kern, 2002; Needham & Begg, 1991; Uys, Gwele, McInerney, Rhyn, & Tanga, 2004). In the undergraduate program at the University of Alberta, the final performance of CBL students on a National Professional Nurse Registration Examination was excellent. All of the students passed, and CBL was shown to be an effective teaching and learning method (Williams & Day, in review). The research results from the literature reviewed are inconclusive; the impact of PBL/CBL on students' cognitive level

has yet to be shown as superior to other methods. However, it is widely held that PBL/CBL students can achieve higher levels of clinical functioning and are able to transfer their knowledge to new problems (Needham & Begg, 1991; Rideout, 2001).

Relationship Between Self-Efficacy and Level of Thinking

Studies on the relationship between self-efficacy and level of thinking have found positive correlation between self-efficacy and academic performance (Chan, 1999; Pintrich, 1988; Schunk, 1985). During learning, students use self-regulation skills, which depend on their feeling self-efficacious about their performance. Students' learning is improved when different motivational and cognitive strategies are used. Self-efficacy is an important motivation for learning that involves aspects of self-regulated learning such as metacognition and cognitive strategies (Pintrich, 1988; Schunk, 1985). Bandura (1977) proposed that self-efficacy influences students' choice of task, the effort put into the task, and persistence in the task. Students with high self-efficacy in finishing an activity easily become involved in the task, put in more effort, and endure longer than their colleagues with low self-efficacy do. Students obtain information from the performance of a task, observation of similar people completing the task, verbal persuasion, and physiological reaction such as sweating and increased heart rate. According to Bandura, students cognitively evaluate this information that they have received to self-appraise their abilities.

In student learning, self-efficacy is an important and basic skill required for them to be self-regulatory. Zimmerman and Martinez-Pons (1990) defined *self-regulation* as the students' activation and sustenance of cognitions, behaviours, and emotions that are systematically directed towards the achievement of a goal. Students who are self-

regulated in their learning are active cognitively and affectively during learning (Schunk & Zimmerman, 1994). Such students are able to arrange, change, and rehearse information and to use memory cues to be able to recall the information in the future. Perceived self-efficacy can determine the amount of effort that students will put into a task and how long they will endure. Apart from self-efficacy, other factors such as the having the requisite knowledge and skills contribute to high academic performance (Chan, 1999; Schunk & Zimmerman, 1994).

In summary, stroke care is costly in terms of health care resources and personal costs such as cost of time lost from not working and diminished functional capacity. Patient education has been identified as an effective means of reducing the impact of stroke. Therefore, it is recognized that undergraduate nursing education must include strategies to develop nursing students' self-efficacy and levels of thinking in patient education. The CBL approach has been identified as a learning strategy that could increase students' self-efficacy and levels of cognition. However, limited research has addressed this area. Thus, this study will examine the influence of CBL on students' self-efficacy and levels of thinking on stroke patients' education.

CHAPTER 3

METHOD

The purpose of this study was to increase our understanding of the impact of a CBL program on students' self-efficacy in patient education and level of thinking. The four study objectives were (a) to compare first- and third-year students' self-efficacy in patient education, (b) to compare the level of thinking that first- and third-year students employ in similar situations, (c) to determine the relationship between students' self-efficacy in patient education and their level of thinking, and (d) to compare first- and third-year students' perceptions of the important sources of self-efficacy. In this chapter the research design, sampling, procedure, instrument, data analysis, and ethical considerations are described.

Design

A comparative descriptive design was used to answer four research questions: (a) Do third-year nursing students differ from first-year nursing students in self-efficacy in patient education? (b) Do third-year nursing students differ from first-year nursing students in their level of thinking? (c) Is there a relationship between first- and third-year nursing students' self-efficacy and levels of thinking? and (d) Do first- and third-year students differ in their perceived sources of self-efficacy?

Sample and Setting

A random sample of undergraduate nursing students enrolled in the baccalaureate program in the Faculty of Nursing, University of Alberta, was invited to participate in the study. The sample was drawn from two pools of undergraduate students, those in their first year and those in their third year of the nursing program. One hundred students were

randomly selected from each group. Few students were not yet 18 years of age; however, as university students, they were considered capable of making independent decisions regarding their participation in the study. Thus, students under the age of 18 were not excluded from the study.

It was estimated that a minimum sample size of 63 in each group would capture a moderate effect size with a power of 0.8 and an alpha (two-tailed) of .05 (Cohen, 1988). One hundred students from each of the two years (first- and third-year program) were invited to participate in the study to ensure an adequate sample size with a response rate of 60 percent.

Procedure

Following ethical approval of the study on April 2005, the Coordinator of Flexible Delivery, Faculty of Nursing, drew a random sample of first-year students (n = 100) and a random sample of third-year students (n = 100) from an electronic database of undergraduate nursing students. The Coordinator then sent a notice of the survey to the identified sample by electronic mail (Appendix B) with directions on how to access the survey. Students who were interested in participating in the study were invited to go to the University of Alberta website https://vista.srv.ualberta.ca to access the survey by clicking on the icon *Research Survey*.

The survey was comprised of four parts (Appendix C). Part A included an information letter that described the purpose of the survey and the nature of the students' participation. After reading the information letter, the students could then proceed through the remaining components. Part B was designed to obtain demographic information; Part C, to measure self-efficacy (Health Promotion/Disease Prevention

Inventory); and Part D, to measure level of thinking (KAQ). Five days after the initial invitation to participate in the survey, a second recruitment notice was sent to the selected students to encourage them to participate in the study (Appendix D). After three weeks the response rate was 20 (20%) first-year and 26 (26%) third-year students. Given the low response rate, all students in the first and third years were invited to participate in the study.

The electronic responses to the survey were anonymous, and were compiled in the WebCT Vista program. The Coordinator of Flexible Delivery sent me an electronic spreadsheet containing all of the raw data three weeks after the initial recruitment notice. The data did not include any information that would allow identification of any of the students who participated in the study.

Instruments

Part A: Demographic Questionnaire

The demographic questionnaire included age, gender, year of program, and the type of health teaching study that the participants had experienced (Appendix C). The purpose of collecting these demographic variables was to explore possible factors that might have an impact on students' self-efficacy and levels of thinking.

Part B: Health Promotion Counselling Self-Efficacy Scale (HPCSES)

A modified version of Tresolini et al.'s (1995) HPCSES was used to measure students' self-efficacy in knowledge and ability to counsel patients in areas relevant to stroke risk reduction. This modified version was comprised of three domains: smoking, exercise, and nutrition. Each domain had 15 items, for a total of 45 items. Ten of the 15 items in each of the domains asked the students to indicate how confident they were in

their knowledge on a specific health risk and how confident they were in their ability to counsel patients in that specific area of risk (smoking, exercise, and nutrition). Students were instructed to use a 4-point Likert-type scale to respond to the first 10 items in each domain (where 1 = *completely lacking in confidence* and 4 = *very confident*). The remaining five items in each domain inquired about the sources of students' self-efficacy information. They were instructed to use a 5-point Likert-type scale to answer the last five items in each domain (where 0 = *not experienced* and 4 = *extremely helpful*). The five items on efficacy sources examined students' ideas on receiving factual information/feedback, modeling efficacy information, and having an opportunity to practice (Appendix C).

The thesis committee and the researcher modified the HPCSES to reflect the philosophy of CBL, which involves students' learning and receiving information from peers rather than receiving factual knowledge from the instructor. For example, item 6 in the original version read "Received factual information about risk of smoking or health benefits of smoking cessation from instructor/preceptor." Item 6 in the modified version read "Received factual information about risk of smoking or health benefits of smoking cessation from classmates or tutor."

Laschinger and Tresolini (1999) developed the items in the instrument based on Bandura's (1982) suggestions for adequate testing of self-efficacy. The reported reliability for the original instrument was 0.71 and 0.94 (Laschinger & Tresolini, 1999).

Part C: Evaluation of Cognitive Ability

The KAQ was developed to measure each student's level of thinking—knowledge, comprehension, application, analysis, synthesis, and evaluation—according

to Bloom et al. (1956). It was anticipated that first-year students would utilize knowledge, comprehension, and application, but not the three higher levels; and that third-year students would utilize analysis, synthesis, and evaluation, but not the three lower levels.

The KAQ was comprised of a hypothetical situation (scenario) describing a patient (Mr. Singh) who was being discharged home following a TIA (Appendix D). The scenario provided information about Mr. Singh: ethnicity, social support, level of activity, blood pressure, body mass index, smoking history, and current medications. The students were asked to respond to three open-ended questions: (a) what specific patient-related factors would inform your decisions about what to include in your discharge teaching? (b) what is your rationale for your responses to the first question? and (c) how would you determine the effectiveness of your teaching? Brink and Wood (1994) recommended that questionnaires be pretested to ensure reliability and validity of results and to avoid different interpretations.

A group of four faculty members with expertise in CBL and cardiovascular risks were consulted for help in assessing the content validity of the KAQ and pretesting the proposed scoring procedures, as described below (Brink & Wood, 2003).

Ethical Considerations

Ethical approval for the study was obtained from the University of Alberta Ethics Review Board in April 2005. Further approval to access students was sought from the Dean of the Faculty of Nursing. The information letter included on the website informed students about their guaranteed anonymity if they chose to participate in the study. Their names did not appear, and they could not be linked to the information that they gave me. The information letter informed students that their participation would be voluntary and

that they were free to withdraw from the study at any time without penalty. The purpose, risks, and benefits of the study were explained to the participants. Completion of the electronic survey was considered as consent to use the information provided. Study participants were informed that any reports of the study would contain only group information and that the data analysed for the study would be stored in a locked cabinet in the Faculty of Nursing for a period of five years. Only the researcher and her thesis committee would have access to the data.

CHAPTER 4

RESULTS

In this chapter the results are presented as follows: (a) a description of the demographic characteristics of the first- and third-year students, (b) a summary of first- and third-year students' experiences in health promotion activities; (c) a summary of first- and third-year students' scores on the measure of self-efficacy, (d) comparisons of first- and third year-students' reported self-efficacy, (e) a description of the results of the content analyses for patterns in first- and third-year students' level of thinking, (f) an examination of the relationship between first- and third-year nursing students' self-efficacy in patient counselling and their level of thinking, and, finally, (g) a summary of first- and third-year students' sources of self-efficacy.

SPSS statistical software was used for all statistical analyses. Descriptive statistics helped to summarize the demographic, SPEHPQ, and KAQ data. Nominal data were summarized by using frequencies and percentages and continuous data by using means, standard deviations, and ranges. An independent t-test was used to compare first- and third-year students' total mean scores and the mean domain scores on the SPEHPQ and content analysis to assess the responses to the KAQ for patterns in first- and third-year students' levels of thinking.

Four research questions guided this study: (a) Do third-year nursing students differ from first-year nursing students in self-efficacy in patient education? (b) Do third-year nursing students differ from first-year nursing students in their level of thinking? (c) Is there a relationship between first- and third-year nursing students' self-efficacy in

patient education and their level of thinking? and (d) Do first- and third-year students differ in their perceived sources of self-efficacy?

Students' Demographic Characteristics

Although 72 students out of 300 first- and third-year undergraduate nursing students visited the University of Alberta's website https://vista.srv.ualberta.ca, only 58 completed part or all of the survey. Their demographic data included gender, age, year of program, program location (college/university), and previous experience in health education. The mean age for year 1 participants was 20.09 (SD = 3.21) and for year 3, 23.54 (SD = 4.18). All first-year students started their programs at the University of Alberta, compared to only 16 of the 36 third-year students. Table 1 summarizes the demographic characteristics of the sample by year in the program.

Table 1

Demographic Characteristics

Variable	First-year students n = 22	Third-year students n = 36
Gender		
Male	2(9%)	4 (11%)
Female	20 (91%)	32 (89%)
Mean age (SD)	20 (3%)	24 (4%)
Range of ages	18-29	18-39

Previous Experience in Health Teaching

Fifty students (20 first-years and 30 third-years) responded to the question on students' health education experience. Students' responses were analyzed, categorized,

and summarized to identify the type of previous health education experiences in which students had engaged and the type of audience involved. These included hand washing, smoking cessation, nutrition, exercise, postpartum teaching (sudden infant death syndrome and teaching new mothers about breastfeeding and immunization), medication use, pathology (arthritis, asthma, cardiovascular disease, such as hypertension), substance abuse (alcohol and cannabis), safety (prevention of falls and wearing of helmets), oral hygiene, friendship/self-esteem/stress management, and sexually transmitted infections. The target audiences for students' health education activities were kindergarten children, preschool children, elementary school children, classmates, new mothers, and seniors. First-year students were most frequently involved in teaching hand washing and nutrition. Third-year students were most frequently involved in teaching hand washing, smoking cessation, and postpartum. Other topics that third-year students had taught were medication use, pathology, and safety.

Self-Efficacy in Health Education

The modified SPEHPQ that consisted of 45 items was used to measure students' self-efficacy in three domains: smoking (15 items), exercise (15 items), and diet (15 items). Three mean scores were calculated for each student within each of the three areas: confidence in knowledge (5 items), confidence in counselling (5 items), and efficacy information (5 items). Thus, nine mean scores were obtained for each respondent. The items that measured confidence in knowledge and confidence in ability to counsel were rated on a 4-point Likert-type scale (1 = *completely lacking in confidence* and 4 = *very confident*). The total range of possible mean scores for confidence in knowledge and confidence in ability to counsel within each of the domains (smoking, exercise, and diet)

was 1 to 4. Higher mean scores indicate greater self-efficacy. The items measuring students' self-efficacy information (receiving factual information about risk factors, receiving factual information about counselling strategies, observing a role model during counselling, practicing counselling, and receiving feed back about counselling performance) were rated on a 5-point Likert-type scale (0 = *not experienced* and 4 = *extremely helpful*). The total range of possible mean scores for self-efficacy information within each of the three domains (smoking, exercise and diet) was 0 to 4. The higher the mean self-efficacy information scores, the more the students believed that their program contributed to developing their self-efficacy in counselling. The three mean scores for the SPEHPQ by student groups are presented in Table 2.

Table 2

Mean Scores of Students on the Health Promotion/Disease Prevention Inventory

	Year 1			Year 2			
Domain	N	Mean	SD	N	Mean	SD	P
Smoking							
Knowledge confidence	20	2.59	0.47	34	3.01	0.53	.01*
Counselling confidence	20	2.38	0.59	33	2.79	0.54	.01*
Self-efficacy information	20	1.11	1.08	34	1.59	0.87	.09
Exercise							
Knowledge confidence	20	3.30	.58	32	3.21	0.60	.58
Counselling confidence	19	3.03	.73	31	3.10	0.58	.72
Self-efficacy information	18	1.84	1.10	30	1.64	0.99	.51
Diet							
Knowledge confidence	18	2.97	0.61	29	2.80	0.70	.41
Counselling confidence	17	2.64	0.66	29	2.66	0.73	.90
Self-efficacy information	18	1.88	1.06	28	1.70	0.89	.54

* There is a statistically significant difference at $\alpha = .05$.

Comparison of First and Third Year Students' Self-Efficacy

For the purpose of this study, first- and third-year nursing students' self-efficacy in patient education was compared in three domains: smoking, exercise, and diet. First- and third-year students' mean scores in each of the domains of the HPSCES were compared using a series of independent t-tests. Levine's test was used to determine whether the assumption of equality of variance had been met. The results of the t-tests found statistically significant group differences on only two of the six dimensions of the self-efficacy scale. Third-year students were found to have significantly higher mean scores on confidence in knowledge about smoking ($df = 52$, $p = .005$) and confidence in counselling on smoking ($df = 51$, $p = .013$) than first-year students.

Paired t-tests indicated that first-year students' mean total scores on knowledge confidence (2.93, SD = .44) were significantly higher than the mean total scores on counselling confidence (2.45, SD = .60). The results of paired t-tests indicate that third-year students have significantly higher mean total scores on knowledge confidence (3.02, SD = 47) than on counselling confidence (2.74, SD = 47). The results of independent t-tests found no significant difference between first-year students' mean total scores on knowledge confidence (2.96, SD = .44) and third-year students' mean total score on knowledge confidence (3.02, SD = .46). In addition, first-year students' mean total scores on counselling confidence (2.45, SD = .60) did not significantly differ from third-years' total mean scores (2.73, SD = .56).

Levels of Thinking

Bloom et al. (1956) identified six levels of thinking associated with the cognitive domain: knowledge, comprehension, application, analysis, synthesis, and evaluation.

According to Bloom et al., knowledge is the ability to remember previously learned material and recall facts. Comprehension refers to understanding the meaning of material and involves explanation, which is a step above recall. Application involves the use of learned material in new settings; for example, the application of rules and concepts in new situations. Analysis refers to the ability to break down items into different parts to understand the organizational structure. Synthesis describes the ability to put different aspects or components together to form a new whole. Evaluation refers to the ability to judge the worth of an item for a given purpose using specific criteria.

To assess levels of thinking, students were asked to read a scenario and respond to three questions. Students were asked to list specific patient-related factors that would inform them in their decisions about what to include in their discharge teaching, to provide the rationale for their responses, and to explain how they would determine the effectiveness of their teaching.

In collaboration with two research advisors, a marking scheme was developed for the responses to the scenario questions. We then read the responses to identify examples of knowledge, comprehension, application, analysis, synthesis, and evaluation as defined by Bloom et al. (1956). A total of 39 students answered the KAQ question (measure of levels of thinking). The responses to all three questions were used to determine the students' highest level of thinking. The defining characteristics of each of the six levels of thinking are as follows:

1. Operation at a knowledge level: The students identified some risk factors in the scenario and recalled only a single teaching and learning principle

associated with evaluation (e.g., follow-up, feedback, or return demonstration).

2. Operation at a comprehension level: The students' responses to all three questions were beyond a simple listing of risk factors or recall of principles and explained the risk factors and their effects on the patient's health.
3. Operation at an application level: The students used knowledge about the cardiovascular system, pharmacology, and teaching and learning principles to promote health with regard to stroke and myocardial infarction.
4. Operation at an analysis level: The students explained the relationship among the risk factors and demonstrated an understanding of how the risk factors worked together to produce cardiovascular disease; for example, TIA, myocardial infarction, and stroke. The students stated that smoking causes constriction of blood vessels, which increases blood pressure and causes hypertension and rupture of blood vessels, which would lead to hemorrhagic stroke. In another example the student described how high blood cholesterol is deposited as fatty plaque, which narrows the blood vessels and causes increased friction to blood flow and high blood pressure and finally leads to cardiovascular diseases such as TIA and stroke.
5. Operation at a synthesis level: The students were able to produce something new, such as collaborating with the patient to identify unique needs and draw up a care plan.
6. Operation at an evaluation level: The students generated definite criteria (such as follow-up, patients' ability to recall what was taught) for evaluation and

> judged the accuracy of their evaluation. For instance, they re-evaluated the individualised plan in collaboration with the patient to identify specific changes that they would expect the patient to make (patient stops smoking or reduces the number of cigarettes smoked, reduces blood pressure to 130/70 mmHg, reduces the blood sugar level to 60-120mmol/l, reduces the BMI to 24, understands medication, and has no further TIA or occurrence of stroke).

First-Year Students' Levels of Thinking

Eight of the 14 first-year students who responded to the scenario questions demonstrated thinking at a knowledge level. These students listed some of the risk factors in the scenario and gave examples of evaluation for their discharge teaching that included asking the patient to recall what was taught, doing follow-up teaching, quizzing the patient, and receiving feedback from patient. One student's response was rated at the comprehension level. The student stated that "patient history of high blood pressure, type 2 diabetes, smoker, high BMI shows that patient may not be following guidelines to control his health." One student's response was rated at the application level based on her use of her previous knowledge on communication to teach the patient. An example of the student's response at the application level was to

> use an appropriate technique to benefit the age group, socioeconomic status—educational level—determines how simple to describe and explain things; you don't want to offend someone by assuming they need to be spoken to simply using too much in-depth explanation that the person gets lost as to what you are trying to teach.

The responses of two students were rated at the analysis level because they demonstrated their ability to explain the relationship among the risk factors using pathophysiology. For example, one student stated that the patient "had an ischemic attack because his blood

vessels are blocked off. Therefore, to decrease the chances of this happening again, he should change his diet, exercise, and also stick to his medications." None of the first-year students' responses were rated at the synthesis level. One first-year student's response was rated at the evaluation level because the student indicated that he would determine whether or not the patient met the planned goals; if not, he would redesign the care plan.

Third-Year Students' Level of Thinking

Eight of the 25 third-year students' responses to the scenario were rated at the knowledge level. The students identified some of the risk factors in the scenario and listed various ways of evaluating their teaching, such as "follow-up appointments, having the patient keep a daily record of strengths and challenges." Three students' responses were rated at the comprehension level. Examples of their responses at the comprehension level were as follows: "Type 2 diabetes need for diet restrictions and control," and "heavy long time smoker indicating increased risk for lung cancer and other diseases." Five students' responses were rated at the application level. These students applied previous knowledge in teaching, learning, and communication in their discharge teaching of the patient. Examples of responses at the application level were "assess his readiness to quit or decrease smoking"; "ask him to specifically describe how he can cut down smoking, increase exercise, eat healthier"; and "one must also strengthen health promoting activities that are being carried out and reward these behaviours."

Seven students' responses were rated at the analysis level. These students explained the pathophysiology of the risk factors and the relationship among the risk factors. Example of the students' responses at the analysis level included, "TIA—smoking needs to stop, maintain exercise level, control diabetes mellitus and

hypertension, medication review, diet-reduced sodium diet, lower cholesterol level and fats." Only one of the third-year students' responses was rated at the synthesis level:

> It is important to assess all aspects of the patient's life to give the nurse a holistic view of the patient. This allows the nurse and the rest of the health care team to establish a personalized plan of action for the patient.

This student was at a synthesis level because he/she was able to use the patient's information to formulate an individual plan for the patient. None of the third-year students' responses were rated at the evaluation level. Table 3 shows the first- and third-year students' levels of thinking.

Table 3

First- and Third-Year Students' Level of Thinking

	First year N = 14		Third year N = 25	
Knowledge level	f	%	F	%
Knowledge	8	57	8	32
Comprehension	1	7	3	12
Application	1	7	5	20
Analysis	2	14	7	28
Synthesis	0	0	1	4
Evaluation	1	7	0	0

Correlation Between Levels of Thinking and Students' Self-Efficacy

Each student's total self-efficacy score was calculated by adding the mean knowledge and counselling confidence scores across the three domains and dividing by 6. Each student was rated on level of cognition (1 = *knowledge*, 2 = *comprehension*, 3 = *application*, 4 = *analysis*, 5 = *synthesis*, 6 = *evaluation*). Pearson's correlation was used to examine the relationship between students' scores on total self-efficacy and level

of thinking. The results of Pearson's correlation showed no relationship between total self-efficacy and level of thinking [r (37) = .16, p = .36].

Sources of Self-Efficacy Information

First- and third-year nursing students rated different sources of self-efficacy information for each of the three domains of smoking, exercise, and diet. In order of potency, receiving factual information on risk factors and practicing counselling strategies were the two most important sources of self-efficacy information for first- and third-year nursing students in the smoking domain. In the exercise domain, first- and third-year students rated receiving factual information on risk factors and practicing counselling strategies as the most helpful source of self-efficacy information. Also, first- and third-year students receiving rated factual information on risk factors and practicing counselling strategies as the most helpful source of self-efficacy information in the diet domain. The mean scores for the different sources of self-efficacy information for first- and third-year students in the three domains are presented in Table 4.

Table 4

Sources of Self-Efficacy Information across the Three Domains by Study Year

Domain	Year 1			Year 3		
	n	Mean	SD	n	Mean	SD
Smoking	20			34		
Factual information about risk factors		1.75	1.45		2.58	1.44
Factual information about counselling strategies		1.11	1.23		1.68	1.07
Observing a role model		.85	1.18		.97	1.24
Practicing counselling strategy		.90	1.21		1.24	1.40
Receiving feedback about counselling		.95	1.23		1.53	1.56
Exercise	18			30		
Factual information about risk factors		2.32	1.11		2.30	1.06
Factual information about counselling strategies		1.50	1.20		1.50	1.36
Observing a role model		1.33	1.46		1.20	1.30
Practicing counselling strategy		2.11	1.37		1.77	1.59
Receiving feedback about counselling		2.00	1.50		1.43	1.50
Diet	18			28		
Factual information about risk factors		2.22	1.00		2.45	0.95
Factual information about counselling strategies		1.78	1.40		1.75	1.17
Observing a role model		1.67	1.32		1.24	1.21
Practicing counselling strategy		1.94	1.16		1.83	1.31
Receiving feedback about counselling		1.78	1.35		1.36	1.40

The mean scores for the sources of self-efficacy information for first- and third-year students across the three domains (smoking, exercise, and nutrition) in the order of importance are presented in Table 5.

Table 5

Total Mean Scores of Self-Efficacy Information in Potency Order Across the Three Domains

Sources of self-efficacy information	Mean	SD
Factual information about risk factors	2.30	1.03
Practicing counselling strategy	1.62	1.06
Factual information about counselling strategies	1.57	0.99
Receiving feedback about counselling	1.47	1.16
Observing a role model	1.20	0.95

Summary of Results

Four research questions guided this study: (a) Do third-year nursing students differ from first-year nursing students in self-efficacy in patient education? (b) Do third-year nursing students differ from first-year nursing students on their level of thinking? (c) Is there a relationship between first- and third-year nursing students' self-efficacy in patient education and their level of thinking? and (d) Do first- and third-year students differ in their perceived sources of self-efficacy. The key findings in relation to each of the questions are summarized briefly.

With regard to the first question, the mean scores of the students' responses to the modified version of the HPCSES in the three domains of smoking, exercise, and diet indicate that third-year students had a higher self-efficacy in all three domains than first-

year students did. However, the independent t-test calculated to compare first- and third-year students' self-efficacy found a significant difference only in the smoking domain. Third-year students had significantly higher mean scores than first-year students on knowledge confidence and counselling confidence about smoking.

For the second question, an analysis and categorization of both first- and third-year students' responses to the three open-ended questions in a scenario was performed using Bloom et al.'s (1956) taxonomy on cognition. The results indicate that most first-year students' responses (57%) were at the knowledge level; one student was at the comprehension and one at the application level. Of the first-year students' responses, 21% were at the analysis level or higher. One response from a first-year student was at the evaluation level. Fewer third-year students' (30%) responses than those of first-year students were rated at the knowledge level, and more third-year students' responses (32%) were rated at the level of analysis or higher.

The correlation results for the third research question found no significant difference between students' level of thinking and their total self-efficacy scores.

Finally, an analysis of the students' responses to the last research question on the HPCSES questionnaire revealed that the source of self-efficacy information that was most helpful to students' was different in each domain; however, both first- and third-year students rated factual information on risk factors as a very helpful source of efficacy information in the smoking, exercise, and nutrition domains. The least helpful source of self-efficacy for both first- and third-year students for each of the three domains was observation of a role model during counselling.

Across the three domains, the sources of self-efficacy information that were most helpful were ranked in order of importance as follows: factual information on risk factors, practice of counselling skills, factual information on counselling strategies, feedback on counselling, and observation of a role model during counselling.

CHAPTER 5

DISCUSSION OF FINDINGS

Four research questions guided this study: (a) Do third-year nursing students differ from first-year nursing students in self-efficacy in patient education? (b) Do third-year-nursing students differ from first-year nursing students on their levels of thinking? (c) Is there a relationship between first- and third-year nursing students' self-efficacy and levels of thinking? and (d) Do first- and third-year students differ in their perceived sources of self- efficacy? The findings are discussed in relation to each of these four research questions, and connecting to stroke patient education. The limitations, implications for nursing education and goals for future research are then presented followed by a summary of the study.

Nursing Students' Self-Efficacy

Compared to first-year students, third-year students showed significantly higher self-efficacy, but only in the smoking domain of the SPEHPQ, not in the exercise or nutrition domains. These findings are similar to those of Laschinger (1996), who found that fourth-year students had significantly higher mean self-efficacy scores in the smoking and nutrition domains of the SPEHPQ but not in the exercise domain when compared to first- and second-year students. Only third-year students reported smoking cessation as one of the three most common topics in their previous health promotion experiences. The small sample size may have contributed to the lack of significant differences found in two of the three domains. In relation to stroke risk factor education, the increase in third-year students' self-efficacy on smoking is encouraging because

smoking is one of the major risk factor for stroke, yet less than 20% American have knowledge about smoking as a risk factor (American Heart Association, 2000).

Both first- and third-year students were found to have significantly higher self-efficacy on total counselling knowledge than on total counselling ability. This finding is congruent with the findings from previous studies with students from traditional lecture-based programs (Laschinger, 1996; Laschinger & Tresolini, 1999). The difference between students' counselling knowledge and counselling ability could be attributed to the notion that learning content involves memorization of facts, which is a lower cognitive activity. Engaging in counselling involves comprehending and applying facts learned, which is associated with a higher level of thinking. The participants in this study found learning content easier than engaging in application (e.g., counselling activity).

When the total mean scores on sources of self-efficacy for all students were examined, factual information on risk factors was ranked as the most helpful source of self-efficacy. The highest to lowest ranking of the remaining sources of self-efficacy were as follows: the practice of counselling, information about counselling strategies, feedback on counselling performance, and observation of a role model during counselling. The two top-ranked sources of self-efficacy information of factual information on risk factors and the practice of counselling are similar to the two top-ranked choices of a sample of students in a traditional lecture-based program (Laschinger & Tresolini, 1999). Laschinger and Tresolini reported that nursing students increased their self-efficacy from learning about health-promotion strategies in class and through actual practice at the clinic. In the CBL process, students share information with each other rather than relying on their tutors. The finding of the study showed that students do

not necessarily have to receive information from tutors to develop their self-efficacy in counselling. Students could trust their classmates as well as their teachers for information on health promotion. Further, the study findings show that the CBL approach may be as effective as the traditional lecture approach in developing students' self-efficacy in patient education.

However, the findings on the sources of self-efficacy information in this study differ from Bandura's theory (Bandura, 1977) that the direct performance of an action is the most helpful source of efficacy information, followed by the observation of role models and verbal persuasion. Observation of a role model was ranked as the least helpful source of efficacy information for students in the CBL program. Because CBL students receive information from their peers, it may mean that students become confident enough with having information and practicing that they do not need a role model. Alternatively, it may mean that students in CBL had limited or no exposure to appropriate role models.

Nursing Students' Levels of Thinking

As expected, a higher percentage of students in first year (57%) than those in third year (30%) were at a knowledge level of cognition. Alternatively, a greater percentage of third-year students (32%) than first-year students (21%) were rated as at least at the cognitive level of analysis, synthesis, and evaluation. Students' level of thinking increases from simple cognitive activities such as gaining knowledge and comprehending to higher cognitive activities such as analyzing, synthesizing, and evaluating as they spend more time in the CBL program. This finding is congruent with those of other studies with third-year students from different disciplines such as family medicine,

psychology, and nursing that found that these students are able to transfer their knowledge and acquire better clinical decision-making skills (Hueston et al., 2002; Needham & Begg, 1991; Uys et al., 2004). A unique finding of this study was that one student, an 18-year-old first-year male student, responded at the highest level of cognition, evaluation. Possible explanations for this student's level of thinking may be past experience, an interest in health promotion, a higher academic ability, good adjustment to CBL, and personal attributes. However, higher academic abilities, good adjustment to CBL, and personal attributes were not measured in the study. Only one third-year student responded at the analysis level, and none responded at the evaluation level. The reason for third-year students' reaching a higher level of thinking than first-year students is likely that third-year students have spent more time in the CBL program; thus they are expected to reach the highest level of cognition. With regard to stroke patient education, the scenario was structured to assess students' level of thinking on stroke risk factor education. The finding of the third-year student's reaching a higher thinking level is encouraging because it reveals that students have acquired knowledge on stroke risk factors that they can share with the public. This suggests that graduating nursing students of the CBL program are able to assist in educating the public on stroke risk factors, which will help to reduce the incidence of stroke.

Relationship Between Self-Efficacy and Levels of Thinking

There was no significant positive relationship between the students' self-efficacy and levels of thinking in this study. This was an unexpected finding because self-efficacy has been found to increase students' academic performance (Bandura, 1995; Chan, 1999; Pintrich, 1988; Schunk, 1985). Furthermore, the CBL approach to health education has

been shown to increase students' development of problem-solving skills and self-efficacy (Biley & Smith, 1998; Celia & Gordon, 2001; Tresolini & Stritter, 1994; Walton & Matthews, 1989). During learning, students use self-regulation skills such as active cognitively, affectively, and using different learning strategies to form memory cues to assist in easy retrieval of information in the future. Self-efficacy is a motivation for learning and the basic skills needed for students to be self-regulatory. Maibach and Schieber (1996) reported that self-efficacy influences academic performance because self-efficacy contributes to the development and access to cognitive information and skills.

In addition, the CBL program encourages students' active participation in their learning using their past experience. As students brainstorm and construct their learning needs, they form memory aids that facilitate recall in the future. Students also develop clinical judgment from using the scenarios. Students are expected to increase their thinking levels as they spend more time in the CBL program. The lack of significant findings in this study may have been a result of the small sample size.

Nursing Students' Perceived Sources of Self-Efficacy

There were no significant differences between first- and third-year students' sources of efficacy information. This may be because of the small sample size. However, there is no reason to believe that the sources of self-efficacy would differ because the CBL approach is used throughout the students' program. Both first-year and third-year students perceived factual information on risk factors and the practice of counselling as the most helpful sources of efficacy information. As mentioned previously, this is

congruent with Laschinger and Tresolini's (1999) findings in which they studied students in a traditional lecture-based program.

Limitations

The major limitations of this study were related to the use of an online survey and the low response rate. The low response rate may have been a result of the timing. The survey was made available at the end of term when students were preoccupied with preparing for exams and final assignments. Administering the self-efficacy questionnaire to groups of students in person rather than through an online survey may have increased the response rate. Also, collecting data from students at the beginning of their second term of studies rather than at the end of the term may increase student participation in future studies. The low response and subsequent small sample size may explain why few significant differences were observed between first- and third-year students. Another limitation may be the instrument that was used to measure students' levels of thinking. The instrument was newly developed and has limited reliability and validity. Open-ended questions may not have captured the students' actual levels of thinking and problem solving.

Implications for Nursing Education

The findings from this study provide some evidence that there is an increase in students' self-efficacy in health education and level of thinking from first to third year in a CBL undergraduate program. This implies that the CBL approach is an effective method to develop students' self-efficacy and increase their thinking level. Furthermore, instructors in the CBL program can use the study's finding to promote self-efficacy using the methods that the students found most helpful. Finally, the findings from the study will

be important to nursing practice because educating nurses who are confident about engaging in health education will promote the transfer of their self-efficacy to stroke patients and reduce the high incidence of stroke as the third leading cause of death in the world.

Implications for Further Research

Replication of this study using larger sample sizes is necessary. Providing students with a scenario and open-ended questions in face-to-face interviews or focus groups may be a better method of capturing their level of thinking in future studies. Further refinement and validation of the KAQ such as pilot testing and structuring the questions to assess students at each thinking level are needed before it is used in future research. Also, future study should be conducted to compare students in a traditional program with those in a CBL program.

Summary

This is the first study to examine students' self-efficacy and levels of thinking in the CBL program. The results revealed a significant difference between first- and third-year students' self-efficacy in the area of smoking. Third-year students had higher self-efficacy than did first-year students. The overall self-efficacy of the students in this study was congruent with those in Laschinger's (1996) study in a conventional program. Students who had been taught using the two different teaching methods were moderately efficacious in their health education skills. Third-year students had higher self-efficacy in this study, whereas in Laschinger's study fourth-year students had higher self-efficacy. In addition, the students involved in the CBL approach were more efficacious in their

knowledge on counselling than in their ability to engage patients in counselling, which is similar to the findings of previous studies of traditional teaching methods.

The two groups of students in this study responded unequally in relation to knowledge. Most first-year students responded at the knowledge level of cognition. More third-year students' responses were rated at the higher levels of thinking (analysis, synthesis, and evaluation) than were those of first-year students. One important finding of this study was that one first-year student's response was rated at the highest level of cognition (evaluation). There was no significant relationship between students' self-efficacy and level of thinking in this study.

The students in this study rated factual information on risk factors and he practice of counselling as the two most helpful sources of self-efficacy information in this study, a finding that is congruent with that of Laschinger and Tresolini (1999). However, CBL students did not rate vicarious sources of efficacy information as very important.

Finally, the results of this study provide useful information for nursing education, clinical practice, and implications for further research in this area. This study revealed that the CBL program is effective in building students' self-efficacy in patient education. Also, as students spend more time in the CBL program, they develop higher thinking skills, which is essential to be able to engage in patient education and problem solving in the clinical setting.

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APPENDIX A: BACKGROUND

In 1997, the Faculty of Nursing, University of Alberta implemented the CBL which was adapted from the PBL as instructional method in the undergraduate program (Profetto-McGrath, Smith, Day, & Yonge, 2004; Worrell, 2004). Context based learning was chosen as the preferred concept to illustrate the holistic nature of nurses work during professional practice (Williams, 2002). The Faculty of Nursing uses a hybrid form of CBL in preparing baccalaureate students.

Undergraduate nursing students include first-year baccalaureate generic students (those who began their study at the University of Alberta) who will complete a four-year nursing program. The third-year students are a mixture of generic students and those who completed their initial years at a college. In addition, students who enter with a degree from a different discipline will spend less than four years completing their nursing degree (Williams, 2002). Students receive nursing instructions using the CBL approach while other courses (psychology, sociology, anatomy and physiology) are taught using traditional lecture/discussion approaches. Students in the baccalaureate nursing program study in tutorial groups/seminars of 10-12 students and a faculty tutor guides students through the exploration of a clinical scenario similar to those that they will meet during practice. Each course lasts for six weeks with students covering four to five scenarios. Tutorial groups meet for two hours three days a week. Students purchase the course syllabus which contains the objectives for the CBL nursing courses, expected student and faculty roles during tutorials, and criteria for students' participation. The course package also contains the learning outcomes, a description of a valid nursing situation and essential literature needed to learn the course content. During the seminar session

students learn to use clinical reasoning, decision making and problem solving skills to identify learning issues, knowledge gaps and search for information.

APPENDIX B: STUDENT RECRUITMENT NOTICE

Undergraduate Nursing Students' Knowledge Application and Self-Efficacy in Patient Education in a Context-Based Learning Program

A graduate student (Vivian Darkwah) enrolled in the Master of Nursing Program in the Faculty of Nursing , University of Alberta is interested in determining how the CBL approach you have been using in your undergraduate program influences your approach to patient teaching. The Dean of Faculty of Nursing has agreed to make you aware of this study. As a student in the CBL undergraduate nursing program, you can provide the graduate student with important information about how your program prepares you for nursing practice. Greater awareness in this area may inform further development and revisions of the undergraduate program.

Participation in this study is through a WebCT vista site. If you are interested in participating, we invite you to go to the website (https://vista.srv.ualberta.ca) where you will find information about the study and how to participate anonymously.

Thank you for considering this opportunity.

If you have any question about the survey, please contact the graduate student by email (vdarkwah@alberta.ca).

APPENDIX C: INFORMATION SHEET AND SURVEY

PART A

Information Sheet

Title of Project: Undergraduate Nursing Students' Knowledge Application and Self-efficacy in Patient Education in a Context-Based Learning Program.

Researcher: Vivian Darkwah (MN Candidate)
Faculty of Nursing
University of Alberta. Email: vdarkwah@ualberta.ca
Supervisory Committee

Dr. Carolyn Ross (Chair) Associate Professor Faculty of Nursing University of Alberta Telephone: (780) 492-4894 carolyn.ross@ualberta.ca	Dr. Bev Williams (Co-Chair) Associate Professor Faculty of Nursing University of Alberta Telephone: (780) 492-8054 beverly.williams@ualberta.ca	Dr. Helen Madill Professor & Graduate Programs Coordinator Centre for Health Promotion studies University of Alberta Telephone: (780) 492-8661 helen.madill@ualberta.ca

The Faculty of Nursing uses a context-based learning (CBL) approach to teaching undergraduate nursing students. In this study, we are interested in determining how CBL influences students' approach to patient teaching. The Dean of Faculty of Nursing has agreed to allow me to contact students. Base on random selection, you are invited to complete a survey which is attached below. Completion of the electronic survey will be considered consent to participate in the study. The survey will take you about 15-20 minutes to complete. Participation in the survey is voluntary. Your progress in the program will not be negatively affected if you decide not to complete the survey. You may decide not to answer some of the questions in the survey. You are free to withdraw from completing the survey at any time by logging off the website. Your name will not

appear on the survey and cannot be linked with your personal information. The data will be stored in a locked cabinet at the Faculty of Nursing for five years. Only the researcher and her supervisory committee will have access to the information. There is no anticipated risk or benefit in completing the survey. Findings from the study will be reported as group information in publications or presentations. In case of future research using data from the study, permission will have to be sought from University of Alberta research ethics board.

Thank you for participating in the study. If you have any issue or concern about the study, you may contact Dr. Kathy Kovacs Burns, Director of Research, Faculty of Nursing (492-3769).

PART B

I. D # _____

Please check the best answer that applies to you.

1. Gender

□Male

□ Female

2. Age: _____

3. Year of Nursing

□ First year

□Third year

4. Did you start your program at the University of Alberta?

□Yes

□No if no, please indicate where you began your program.

5. What health teaching have you been involved in with your program? Please list below.

Audience Topic

6. If no to the above question, please explain.

PART C

HEALTH PROMOTION/DISEASE PREVENTION INVENTORY

For each item, indicate how confident you are in your knowledge of the topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = Somewhat confident; and 4 = Very confident.

	Smoking	Confidence in knowledge about			
1	The health risk related to smoking (Cigarettes, pipes and cigars).	1	2	3	4
2	The health risks related to smokeless tobacco use.	1	2	3	4
3	Strategies for smoking cessation (e.g., quit dates, prompts).	1	2	3	4
4	Self-help materials and group support programs for smoking cessation.	1	2	3	4
5	Drug therapy for smoking cessation(e.g., nicotine gum, patch).	1	2	3	4

For each item, indicate how confident you are in your ability to counsel patients with regard to that topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = Somewhat confident; and 4 = Very confident.

	Smoking	Confidence in ability to counsel about			
6	The health risk related to smoking (Cigarettes, pipes and cigars).	1	2	3	4
7	The health risks related to smokeless tobacco use.	1	2	3	4
8	Strategies for smoking cessation (e.g., quit dates, prompts).	1	2	3	4
9	Self-help materials and group support programs for smoking cessation.	1	2	3	4
10	Drug therapy for smoking cessation (e.g., nicotine gum, patch).	1	2	3	4

For the 5 items below, indicate how much each type of learning experience contributed to your counselling skills related to smoking cessation where: 0 = Not experienced; 1 = Not at all helpful; 2 = Somewhat helpful; 3 = Very helpful; and 4 = Extremely helpful

	Smoking	Learning experience				
11	Received factual information about risk of smoking (or health benefits of smoking cessation) from classmates/tutor.	0	1	2	3	4
12	Received from classmates explicit information about patient counselling strategies for smoking cessation	0	1	2	3	4
13	Observed nursing role models implementing smoking cessation counselling strategies with patients.	0	1	2	3	4
14	Practiced smoking cessation counselling skills with patients	0	1	2	3	4
15	Received feedback on performance after practice with patients	0	1	2	3	4

For each item, indicate how confident you are in your knowledge of the topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = Somewhat confident; and 4 = very confident.

	Exercise	Confidence in knowledge about			
16	The role of exercise in health promotion/disease prevention.	1	2	3	4
17	The benefits of cardiovascular fitness/aerobic exercise.	1	2	3	4
18	Selecting an appropriate exercise/physical activity	1	2	3	4
19	Setting exercise program goals (i.e., length of activity, frequency)	1	2	3	4
20	Performing exercise safely and reducing the risk of injury.	1	2	3	4

For each item, indicate how confident you are in your ability to counsel patients with regard to that topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = Somewhat confident; and 4 = Very confident.

	Exercise	Confidence in ability to counsel about			
21	The role of exercise in health promotion/disease prevention.	1	2	3	4
22	The benefits of cardiovascular fitness/aerobic exercise.	1	2	3	4
23	Selecting an appropriate exercise/physical activity	1	2	3	4
24	Setting exercise program goals (i.e., length of activity, frequency)	1	2	3	4
25	Performing exercise safely and reducing the risk of injury	1	2	3	4

For the 5 items below, indicate how much each type of learning experience contributed to your counselling skills related to exercise where 0 = Not experienced; 1 = Not at all helpful; 2 = Somewhat helpful; 3 = Very helpful; and 4 = Extremely helpful.

	Exercise	Learning experience				
26	Received factual information about the benefits of (or the risks of lack of exercise) exercise from classmates/tutor.	0	1	2	3	4
27	Received from classmates/tutor explicit information on patient counselling strategies to promote exercise.	0	1	2	3	4
28	Observed nursing role models implementing exercise-related counselling strategies with patients	0	1	2	3	4
29	Practiced exercise counselling skills with patients	0	1	2	3	4
30	Received feedback on performance after practice with patients	0	1	2	3	4

For each item, indicate how confident you are in your knowledge of the topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = somewhat confident; and 4 = very confident.

	Nutrition	Confidence in Knowledge about			
31	Optimal dietary intake of calories, fat, cholesterol, complex carbohydrates, fibre and sodium	1	2	3	4
32	Diet changes to achieve and maintain desirable weight	1	2	3	4
33	Diet changes to decrease fat intake	1	2	3	4
34	Diet changes to decrease cholesterol intake	1	2	3	4
35	Food selection and preparation advice	1	2	3	4

For each item, indicate how confident you are in your ability to counsel patients with regard to that topic. Please circle the appropriate response for each item using the following scale where 1 = Completely lacking in confidence; 2 = Somewhat lacking in confidence; 3 = Somewhat confident; and 4 = Very confident.

	Nutrition	Confidence in ability to counsel about			
36	Optimal dietary intake of calories, fat, cholesterol, complex carbohydrates, fibre and sodium	1	2	3	4
37	Diet changes to achieve and maintain desirable weight	1	2	3	4
38	Diet changes to decrease fat intake	1	2	3	4
39	Diet changes to decrease cholesterol intake	1	2	3	4
40	Food selection and preparation advice	1	2	3	4

For the 5 items below, indicate how much each type of learning experience contributed to your counselling skills related to nutrition where 0 = Not experienced; 1 = Not at all helpful; 2 = Somewhat helpful; 3 = Very helpful; and 4 = Extremely helpful.

	Nutrition	Learning experience				
41	Received factual information about the benefits of good(or risks of poor nutrition) nutrition from classmates/tutor	0	1	2	3	4
42	Received from classmates/tutor explicit information on patient counselling strategies to promote good nutrition	0	1	2	3	4
43	Observed nursing role models implementing nutrition-related counselling strategies with patients	0	1	2	3	4
44	Practiced nutrition counselling skills with patients	0	1	2	3	4
45	Received feedback on performance after practice with patients	0	1	2	3	4

PART D

Mr. Singh is a 65 year old Asian who immigrated to Canada 10 years ago. He lives with his wife in the North East area of Edmonton. He is being discharged home from hospital following a transient ischemic attack (TIA). He has a history of high blood pressure 140/90 mm/hg, body mass index (BMI) of 32 with type 2 diabetes and smokes one package of cigarettes a day for 40 years. He walks his dog for 30 minutes, three times a week. He was on ramipril 5mg tablet daily for the past 5 years. Additional medications following his admission to hospital include: acetyl salicylic acid (ASA) 81mg orally four times daily; acetyl salicylic acid dipyridamole (Aggrenox) 1 capsule, twice daily, atorvastatin calcium (Lipitor) 20mg tablet daily; folic acid 5mg tablet daily; Vitamin B12 500 mcg tablet daily.

(1) What specific patient related factors would inform your decisions about what to include in your discharge teaching?

(2) Give your rational for your responses to the first question.

(3) How would you determine the effectiveness of your teaching?

APPENDIX D: STUDENT RECRUITMENT REMINDER NOTICE

Undergraduate Nursing Students' Knowledge Application and Self-Efficacy in Patient Education in a Context-Based Learning Program

Thank you for your participation in the study. If you have not yet had the opportunity to complete the questionnaire I warmly welcome you to do so at your earliest convenience.

Participation in this study is through a WebCT vista site. If you are interested in participating, we invite you to go to the website (https://vista.srv.ualberta.ca) where you will find information about the study and how to participate anonymously.

Thank you again for considering this opportunity.

If you have any question about the survey, please contact the graduate student by email (vdarkwah@alberta.ca).