MEASUREMENT OF ATTITUDES TOWARDS NURSE/PHYSICIAN COLLABORATION IN THE HEALTH CARE CORPORATION OF ST. JOHN'S

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Measurement of Attitudes Towards Nurse/Physician Collaboration in the Health Care Corporation of St. John's

By

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Abstract

An assessment of acute care nurses' and physicians' attitudes toward collaboration, as well as the relationship between interprofessional education and interprofessional collaboration, is crucial for the future development of health care in Canada. Collaboration has been identified, as a way of facilitating and improving the provision of patient care. Inter-professional education has been introduced at Memorial University of Newfoundland, but to succeed this approach to education should be guided by expected outcomes and should be designed to target current problems.

The purpose of this study was to conduct an assessment of the attitudes of nurses and physicians in the St. John's region toward collaborative practice. Specific objectives of this study are: (a), To identify the prevailing attitudes towards collaborative practice among nurses and physicians in the workplace in the St. John's region , (b) To identify factors associated with more or less positive attitudes towards collaboration, and (c) To compare attitudes towards interprofessional practice of a class of graduating nursing and medical students from Memorial University, who had completed a formalized interprofessional component as part of their curriculum, with that of a cohort who had not.

A descriptive, cross sectional correlational study design was used to assess nurse and physician attitudes toward collaborative practice. A validated assessment tool, The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration, ("Jefferson Scale") was utilized to collect data related to this domain. The Statistical Package for Social Sciences (SPSS) was used to create descriptive tables to describe the demographic characteristics of the respondents, to compare nurses' and physicians' scores on the Jefferson Scale and to determine which factors

(e.g. occupation, age, education level etc.) predict a higher score on the Jefferson Scale of Attitude Toward Physician-Nurse Collaboration.

Overall, nurses (n= 526) showed a significantly greater willingness to collaborate than physicians (n = 205). The findings also showed that of the demographic and personal characteristics examined, level of education was the most positively associated with the total score on the Jefferson Scale. Finally, the data analysis also revealed a lack of association between total Jefferson Scale score and exposure to pre-licensure interprofessional education.

Study findings suggest that in the current sample of nurses and physicians, nurses had the most positive attitudes towards collaborative practice, were dissatisfied with their limited involvement in the decision making process regarding patient care and favor an increase in their involvement in decisions related to patient care and policy development. Finally, results also show that female nurses and physicians who participated in the current study have more positive attitudes towards interprofessional collaboration in the work place than their male counterparts.

Although study findings supported previous research, generalizability of the results to other acute care nurses and physicians is cautioned. There is an obvious need for further research to develop a greater understanding of the factors affecting the development and implementation of interprofessional education for the health sciences. Most importantly, the onus is on health care researchers to conduct more research studies on nurse-physician collaboration using more innovative and reliable designs such as action research. Evidence emanating from such research studies should serve as a guide for the development of Inter professional Education.

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CHAPTER I

Introduction

Background

Health care delivery has changed tremendously over the past forty years. Rapid social and economic developments have not only modified health care delivery systems but also the way health care is financed. These changes call for health care professionals adoption of new collaborative approaches to patient care, as well as for a reassessment of their interprofessional relationships (Arcangelo,, Fitzgerald, , Carroll, ., & Plumb, . 1996).

Modern health care professionals are faced with problems such as increased patient acuity and shorter lengths of hospital stay resulting in the need for frequent interactions between practitioners from different health professions and also between health care institutions. Consequently, the assessment of the need for effective interprofessional collaboration and the potential complementary relationships that may be attained among health care professionals has become the focus of many healthcare research studies (Corser, 1998,).

Furthermore, the rapid growth of scientific knowledge and technology further precludes any health care professional from being able to provide total patient care single-handedly. Each health profession possesses unique competencies and knowledge, and all share some knowledge and skills. Adding to the problem is the fact that, in an attempt to accommodate the needs of today's health care delivery systems, each health profession is undergoing changes. For example, nursing is adopting roles that once belonged to the medical profession, accentuating the need for further modification of its interprofessional relationship with medical and other health professionals (Aradine & Fridham, 1973,).

Borrill et al. (2001) argue that interprofessional collaboration has been regarded as the solution to the ever-increasing complexity of today's health care delivery. It is through working, learning and revising outcomes together, that the best and most cost effective outcomes for patients and health professionals are achieved . However interprofessional collaboration is a complex and difficult process to achieve. In order for collaboration to occur, many antecedents and defining attributes such as good communication skills and individual readiness to collaborate need to be present and many barriers such as lack of leadership or competition among team members have to be overcome (Henneman, Lee, & Cohen , 1995).

In recent years interprofessional education has emerged as one way of enhancing collaborative practice among health professionals in Canada. The 2003 First Minister's Accord on Health Care Renewal identified interprofessional education as a key component of health care system renewal and as a mechanism to address current and rising health and human resources issues (Oandasan et al., 2004). However, much controversy still exists regarding the timing of interprofessional education. This debate has generated questions such as: When should interprofessional education be introduced? How can educational theories inform the development of interprofessional teaching strategies? What kinds of settings can be used? Who should be the learners? How does interprofessional education impact those who have been exposed to it? And what methods of learning can be used? Some authors argue that interprofessional education should be introduced during the early years of undergraduate training while others present a strong argument in favor of its introduction during later years of undergraduate training, and yet others advocate for interprofessional education at the postgraduate level. In relation to how it should be provided, the majority of the research literature agrees that the same principles that

guide interprofessional collaboration in the workplace should guide interprofessional education (Oandasan et al.).

Oandasan et al. (2004) conducted an extensive review of the literature regarding collaborative practice as well as the relevance of interprofessional education. They concluded that the interest in the dynamics of the collaborative process and interprofessional education has escalated rapidly during the past half a century and much has been written about the impact of collaborative practice on patient outcomes and staff satisfaction in the workplace. However, there has been little scientifically solid research supporting the benefits of collaborative practice as well as little evidence supporting the positive impact of interprofessional education on interprofessional collaboration.

The purpose of this study is to conduct an assessment of the attitudes of nurses and physicians in the St. John's region toward collaboration with the objective of identifying current issues that would be relevant to the development and implementation of interprofessional education. Specific aims of this study are: (a) To identify the prevailing attitudes towards collaborative practice among nurses and physicians in the workplace in the St. John's region, (b) To identify factors associated with more or less positive attitudes towards collaboration, and (c) To compare attitudes towards interprofessional practice of a class of graduating nursing and medical students from Memorial University, who had completed a formalized interprofessional component as part of their curriculum, with those of others who had not.

Significance of the Study

Canadian health policy makers as well as health care practitioners realize that working collaboratively is fundamental to the success of meeting the increasingly complex needs of patients. Strategies to enhance collaborative practice in Newfoundland and Labrador have

already begun through the incorporation of interprofessional education into the undergraduate curriculum of medicine, nursing, social work and pharmacy professions. This provided the opportunity to assess the attitudes of new medical and nursing graduates (who were exposed to formal undergraduate interprofessional education) attitudes towards collaborative practice and to compare them to more senior practicing nurses and physicians (who were not exposed to undergraduate interprofessional education). The accurate identification of factors influencing the collaborative process in a negative as well as positive manner will be essential for the planning, development and implementation of future strategies that may foster collaborative practice in the region.

CHAPTER II

Review of the Literature

The manner in which care is provided to patients has changed and continues to evolve. Today's health care professionals are facing problems so complex that no single discipline can possibly respond to them effectively. AIDS and other chronic diseases, domestic violence, substance abuse, and the growing aging population are but a few examples of challenges facing society and health care providers. Other developments having an impact on the way care is provided include cost containment in health care, regionalization of health care, and new and advanced technologies, which affect medical, nursing, and administrative procedures (Mariano, 1989).

In addition to these challenges, the Canadian health care system is also currently experiencing a shortage and high turnover of nurses, which may be aggravated by a perceived lack of interprofessional collaboration between physicians and nurses. Interprofessional collaboration between physicians and nurses in the workplace has been regarded as a way of improving the quality of care. In theory, collaboration facilitates input from both professions, leading to better outcomes since the decisions are based on more complete information (Hojat et al., 2003). Research conducted by Baggs Ryan, Phelps, Richeson, and Johnson (1992) also suggests that interprofessional health care teamwork may improve patient and staff satisfaction as well as decrease the cost of health care delivery within the institution and therefore within the health care system. The objective of this review of research literature on interprofessional collaboration is to highlight the significance of conducting the current study and to better understand the issues surrounding interprofessional collaboration.

Collaboration. What is it?

The word "collaborate" is derived from the Latin collaborare, which means, "to labor together". The Webster's Third New International Dictionary (1986) notes three uses of the term: (a) "to work jointly, especially with one or a limited number of others in a project involving composition or research to be jointly accredited", (b) "to cooperate with or assist, usually willingly, an enemy of one's country", and (c) "to cooperate willingly or instrumentally with an agency with which one is not immediately connected often in some political or economic effort"(p. 443). The American Heritage Dictionary (1983) describes collaboration as a process, which stresses joint involvement in intellectual activities. Caluccio and Maguire (1983) define collaboration, in relation to health care, as the "joint communicating and decision –making process with the expressed goal of satisfying the patient's wellness and illness needs while respecting the unique qualities and abilities of each professional" (p. 63). Kraus (1980) provides yet another definition for collaboration, "a cooperative venture based on shared power and authority. It is nonhierarchical in nature. It assumes power based on knowledge or expertise as opposed to power based on role or function" (p. 7).

Ruble and Thomas (1976) described collaboration in relation to other modes of interpersonal behavior or conflict resolution such as competition, compromise, avoidance and accommodation. These modalities are further identified by two other interpersonal dimensions, cooperativeness and assertiveness. Collaboration has its place in one extreme where a person is both assertive and cooperative. At the other extreme is avoidance where the person is uncooperative and unassertive. For example, in accommodation the person is cooperative but not assertive and in compromise the person is not fully cooperative or assertive. Therefore these concepts fall between the two extremes, namely collaboration and avoidance. Distinguishing

between these related concepts and collaboration is crucial if one is to accurately understand the process of collaboration (Henneman, 1995).

Antecedents to Collaboration

Interprofessional collaboration among health care providers does not always occur. In order for collaboration to take place many antecedents and defining attributes need to be present and many barriers eliminated. Collaboration is a process that necessitates at least two individuals be involved in a joint endeavor, commonly an intellectual one.

A number of factors determine whether or not collaboration takes place. In fact, the lack of success in creating a collaborative environment in health institutions could very well be due to some of these factors. Henneman et al., (1995) separated these antecedents into two groups, one related to personnel and the second group related to environment.

Personnel factors are closely related not only to the individual but to the group as well. These factors include the participant's readiness to participate in such a collaborative process. Readiness may be the product of education and/or the astuteness and past life experiences of the individuals involved. Also, individuals must have a clear understanding and acceptance of one's role and level of expertise, have confidence in one's ability and recognize the boundaries of one's profession. This allows the participants to understand how his/her profession contributes as a whole to the completion of the task at hand (Henneman et al., 1995). Other personnel-related attributes include excellent communication skills, trust, reciprocal respect and mutual goal setting, shared values, shared responsibility, shared outcomes and shared visions (Corser, 1998; Henneman et al.).

Also, individuals must be willing participants. They must view themselves as part of a team, be willing to share their expertise, assume responsibility for the outcomes while working

towards a common goal. The others involved in the collaborative process must acknowledge the contribution of each individual. The relationships between the members of the team must not be based on their hierarchical status. Power is based on knowledge and expertise versus role or title, and consequently power may be shared among the participants (Henneman et al., 1995,). Finally the organization must support collaboration that results from power based on knowledge and expertise as opposed to role or function (Henneman et al.). Kraus (1980) also emphasizes that environmental factors are equally important, having all the individual attributes is not sufficient for collaboration to take place; environmental support must also be present. Collaboration necessitates a team oriented environment, including a flat organizational structure rather than hierarchical, and an organization that fosters values such as participation, autonomy, freedom, equality, freedom of expression and interdependence. Research in this area recognizes that a clear understanding of these key personnel and environmental factors surrounding collaborative interactions between nurses and physicians is essential to improve both clinical outcomes for patients and work environment conditions for health professionals (Corser, 1998).

Interprofessional Health Care Team Work

The movement away from the traditional-hierarchical approach to patient care and towards a patient centered collaborative relationship emerged in the past decade along with the rise of health promotion (Feeley & Gottlieb, 2004). Given the fiscal restraint and structural changes in the Canadian health care system, the need for the implementation of this collaborative approach to health care has become critical.

History

During the early 1900s, physicians viewed the team approach as the appropriate mechanism for coordinating the different medical specialties and as a vehicle for keeping an open line of communication between specialists and general practitioners (Heinemann & Zeiss, 2002). It was around the 1930s when nurses began to advocate for the team approach in hospital settings as a way of coordinating the increasing number of health care providers (Heinemann & Zeiss). Then in the mid 1900s the self managed team approach started to be utilized in areas such as mental health, home care and rehabilitation. Later, "The Great Society and War on Poverty" initiated by President Johnson in the 1960s introduced the team approach to community-based primary care settings with the objective of providing health care to the poor and underserved urban populations (Heinemann & Zeiss).

Interprofessional teamwork is an indispensable condition for effective practice in health care related institutions (Oandasan et al., 2004). In 1994 Areskog argued that in order to achieve the target "Health for all by the year 2000" the need for learning and working together not only in settings such as intensive care units and rehabilitation within a hospital but also within primary health care (PHC) is essential. Furthermore, an education that is directed at improving interprofessional collaboration and therefore health care teams' performance is likely to also improve the quality of health care delivery (Areskog).

However, if inter professional team work is to be successful, collaboration among the professionals involved most take place (Heinemann & Zeiss, 2002). In order to foster collaboration among team members, students enrolled in the health care professional schools need to be trained in environments that provide experiences that promote collaborative practice. Also, educational programs need to be developed that provide an opportunity for various health

professional students to work together as a team. This could enable students to acquire attitudes, which are positive towards collaborating with other health professionals (Areskog, 1994).

Unfortunately, the majority of settings continue to train health professionals in isolation, reinforcing autonomous and separate roles and decision-making (Hall & Weaver, 2001, as cited in Oandasan et al., 2004). Berthelot (1999) defines interdisciplinarity as an effort to integrate and translate, at least to some extent, themes and schemes shared by several disciplines. Consequently, the prefix "inter" also refers to an element of cohesion and shared ownership among team members. According to Farrell Schmitt, and Heinemann (2001) interdisciplinary health team has been defined as a structural entity with a common goal composed of a group of colleagues from two or more disciplines who coordinate their expertise in the provision of patient care. In contrast, the term interprofessional health team can be defined as individuals from different backgrounds working together to attain a common goal (Leathard, 2003).

Heinemann and Zeiss (2002) explained that when team members learn to take responsibility for their actions and to share leadership in a horizontal manner, they become self-managed. That is, decisions to do what needs to be done are made by the team members and not by the managers or supervisors. Consequently the managers or supervisors become role models, coaches and mentors and also have more time to dedicate to facilitate informal learning among team members, increasing team productivity and efficiency. Therefore, the increase productivity and efficiency resulting from self managed health care teams could improve the quality of the care provided as well as patient outcome.

The use of self-managed teams is not only applicable to health care; since the 1980s many other industries have successfully been implementing this type of team functioning. Lawler, Mohrman and Ledford (1992) assessed Fortune 1000 companies and found that almost

half of them use self-managed teamwork. In 1994 Cohen and Ledford conducted a quasi-experimental study within the telecommunication industry in which they compared self-managed teamwork to traditionally managed teams. From case studies of several companies they found that sites that used self-managed teams showed improvements in areas such as product quality and productivity, employee satisfaction and quality of work life as well as cost savings (as cited in Heinemann and Zeiss, 2002).

Heinemann and Zeiss (2002) further identify 12 components present in well performing teams starting with communication, cooperation, compromise, cohesiveness, commitment and collaboration among members, direct confrontation of problems, coordination of efforts, conflict management, consistency and care about other team members as well as the clients and a feeling among group members that they are making a contribution. There are also barriers to quality team performance and these can be present at any level of team development. For example, lack of understanding of team approach by management might result in lack of resource allocation to the team, poor role clarification might result in role overlapping and conflict within the team, competition among team members can be detrimental to the functioning and performance of teams since competing behavior often ends in conflict rather than cooperation and working together. Finally, the presence of an effective leadership style is considered to be of vital importance for adequate team performance and development. For example, in the immature group, the leader must provide a structure while helping members establish the appropriate norms. This requires the leader to clarify the tasks for the team, provide them with the proper perspective and be sensitive to their dependency needs. In contrast at the optimal or final stage of team development, the leader's role should shift to that of participant, consultant, and inspirer by

providing the team with a vision, challenging it toward excellence, and providing the support it needs to maximize its functioning.

The degree of collaboration among team members is said to affect team development and performance. Baggs and Schmitt (1997) speculate that in order for an interprofessional team to be successful, collaboration between team members must be present. Finally, Oandasan et al. (2004) hypothesize that collaboration is the basis for all interprofessional and patient-professional interactions and it is integral to the health care professional's practice.

History of Medicine and Nursing Education and Practice

Although the relationship between physicians and nurses has been described as symbiotic, their respective philosophies, history and the role each plays in the health care system are different (Blue & Fitzgerald, 2002). History shows that nursing and medicine have been crossing over their evolutionary paths for several hundred years, but it is not until reforms of hospital nursing brought about by Florence Nightingale in the late 1800s that the concept of a close working relationship emerged. Following these reforms, the medical profession went on to acquire a greater knowledge base and consequently to become the more powerful of the two professions (Blue & Fitzgerald, 2002).

Prior to Florence Nightingale's reform of hospital nursing, the nurse physician relationship was, for the most part, dominated by the physicians who gave orders and the nurses who followed them without question. Today's health care delivery system still reveals signs of this type of dictatorial relationship, though not as accentuated as in the past. Nursing has also evolved and in more recent years developed its own vast knowledge base focusing on philosophies of care rather than cure (Blue & Fitzgerald, 2002).

The opening of the Mack Training School in St. Catherine's, Ontario in 1874 marked the first step towards contemporary undergraduate nursing in Canada. Theophilis Mack, a physician, founded this school with the purpose of increasing the quality of nursing care provided to patients. He believed that by increasing the quality of nursing care more middle class patients would choose to come to modern, scientific hospitals for treatment (McIntyre & Thomlinson, 2003). Graduate education in Canada became available to nurses with the introduction of the first master's program in 1959 at the University of Western Ontario. Today a nursing master's program is available in all Canadian provinces and a doctoral program is also available in most provinces.

Founders of early nursing schools often cited Nightingale's principles; however, not all Nightingale's principles were put into practice. For example, the founders failed to give nursing schools financial autonomy from hospitals, resulting in nursing schools being governed by hospital boards. This gave priority to the service needs of hospitals over the educational needs of nursing students. The control that hospital administrations had over nursing schools contributed to nursing being subservient to the demands of the medical profession (McIntyre & Thomlinson, 2003).

The dominance of the medical profession is evidenced through their professional autonomy, through their decision-making in resource allocation and in determining the direction of aspects of health care such as high-technology treatments (McIntyre & Thomlinson, 2003). It is also evidenced through their dominance of other health professionals via their administrative influence as well as through the collective influence of medical associations (McIntyre & Thomlinson). Friedson (1984) theorizes that four dimensions can explain the dominance of the medical profession over allied health professionals. Firstly, the work and knowledge of health

professionals stems directly from medical knowledge and research. Secondly, doctors establish diagnosis and treatment. Thirdly, doctors request, and supervise the work of other health professionals. Finally, health professionals do not have equal status within the organization (as cited in Adamson, Kenny, & Wilson-Barrett. 1995).

Adamson et al. (1995) conducted a study to examine the impact of medical dominance on the nurse-physician collaborative relationship and found that nurses were not only discontent with aspects of their work environment such as salary and working conditions, but also with their professional status while perceiving the medical profession to be highly satisfied. Devine (1978) noted that "buffer groups" such as residents and clinical clerks acted as mediators between staff physicians and nurses. The nurses seemed to be less intimidated by physicians in training. The nurses were observed to more freely ask residents and clerks' questions concerning patients. On one ward, which did not have physicians in training, more overt conflict in the relationship between nurses and specialists was both observed as well as demonstrated through analysis of questionnaires. Interestingly though, no research literature was found regarding the impact that the presence of nursing students in hospital wards could have on the nurse-physician interprofessional relationship.

Devine (1978) further suggests that the amount of direct or indirect contact that nurses had with members of the medical profession regarding patient care issues, reflected on the amount of job satisfaction or the degree of conflict between the two groups. Devine studied two pediatric wards for one year using participant and non-participant observations, formal and informal interviews, daily activity diaries and questionnaires. The staff included 22 nurses and 11 physicians. She found that higher number of interactions among this group of nurses and physicians resulted in less conflict and increased job satisfaction.

Moreover, in Canada most physicians are paid using a fee-for-service funding system. This system creates financial competition between professionals reducing the odds for interprofessional collaboration to occur (Oandasan et al., 2004). It also tends to actively discourage physicians from promoting team work, as their individual remuneration depends on the number of patients they see(Oandasan et al., p. 212).

The literature suggests that despite technological advances and social changes such as the women's liberation movement, the enrollment of an increasing number of women in the medical profession and men in the nursing profession, there are many aspects of health care organization that need to be addressed in order to improve the collaborative relationship between all health professionals and other hospital staff as well.

As Gjerberg and Kjølsrød (2001) explain that traditionally the medical profession has been dominated by males and the nursing profession by females, as a result their relationship has been that of a male versus a female. Gjerberg and Kjølsrød further argue that "today …, young nurses enter a world of both female and male physicians, and this will probably lead to positive changes, especially if the young nurses disengage themselves from the attitudes of their seniors" (p. 192). For example, today's female nurses and physicians make decisions, are competitive and action oriented. These are characteristics that in the past have been associated only with male behavior (Gjerberg & Kjølsrød. 2001).

How is Care Currently Provided?

Today's health care personnel consist, for the most part, of managers and policy makers, physicians, nurses, allied health, support staff and volunteers. Good communication between these different groups is required for the effective functioning of a health care institution.

However, good communication and collaboration does not always occur among health care employees (Oandasan, et al., 2004).

Rapid changes in the economic, social and technical sectors are having a great impact on today's health care delivery systems. Care delivery today is influenced by demographic changes such as the increase in the number of people of all ages in need of care for chronic illness and the increasing tendency of consumers to take control of their own health. It is also influenced by the cutbacks on health care expenditures, which in turn influences the use of new medical technology, changes in the way health care is paid for and the increasing emphasis on care rather than cure (Fagin, 1992).

Several views regarding the appropriate role of the nurse in relation to the medical profession have evolved within the different levels of the nursing profession. Mackay (1993) considers two of these views to be predominant. The first view sees the work of the nurse as deciding upon and giving the appropriate nursing care parallel to the doctor, who diagnoses and prescribes medical care. The second view sees the role of the nurse as an evolving one, in which nursing is continuously taking over duties previously undertaken by the medical profession (as cited in Ryan, 1996).

Anvaripour, Jacobson, Schweiger, and Weissman (1991) conducted a study in which 60 second year medical students were exposed to a two hour workshop planned by the schools of medicine and nursing. The objectives of the workshop were to teach medical students to differentiate the roles of nurses from their own and to improve their communication with other health care givers. The workshop's effects were evaluated through focus group sessions. Medical students recognized nursing as an autonomous profession with the greatest patient contact, and acknowledged the benefits of collaborating with nurses during the provision of care

to patients. However, the medical students also expressed their dissatisfaction with their limited contact with patients. They believed that the reason nurses think that medical students have no clinical knowledge and skills to offer was the result of nurses' lack of understanding of the clinical training medical students receive. As a result, both medical students and nurse-mentors recommended that physician-nurse collegiality be stressed and integrated into the medical and nursing curriculum and at the postgraduate level as well. In a different study, Hojat et al. (1997) conducted a comparison between nursing and medical students regarding their attitudes towards nurse-physician collaboration and concluded that overall nursing students were more supportive of interprofessional practice than the medical students. The study included 408 medical students (208 first year and 200 second year) and 149 nursing students (64 first year and 85 second year). Students were asked to complete scannable Liker type (4-point scale) questionnaires containing appropriate instructions.

In any analysis of the doctor-nurse relationship, gender division is of pivotal importance since the major developments in nursing took place during the Victorian era, and it is difficult to extricate the role of the nurse from the role of the Victorian women (Ryan, 1996). Kendrick (1995) also recognizes that there are essential differences between the two groups with respect to the way each approaches patient care delivery. The medical profession acts according to their male objective view of the world. This method includes a causal explanation of disease and care is predominately linked to cure. Nursing on the other hand is value-laden and more concerned with the nurturing aspects of maternalism (as cited in Ryan, 1996).

Brown and Seddon (1995) argue that the existence of different approaches to care between nursing and medicine resides within their different philosophies of the human body; the social and biomechanical models of the body. The social model sees the human body in constant

interaction with the environment. This social interaction with the environment is believed to cause disease and in order to deal with disease not only the physical body needs care but also the environment of the patient must also be treated. Florence Nightingale accepted the social model and consequently nursing developed its philosophy and practice based on this model. Initiated by Descartes in the seventeenth century, the biomechanical model compares the human body to a machine. This analogy allows for the objectification of the human body and becomes an intricate part of the medical education and practice of today's doctors. The medical profession adopted this model, which became widely accepted due to the great advances in medicine and its positive effects on improving health during the nineteenth and twentieth century. The power to provide cure of illnesses and the prestige enjoyed by physicians result, even today, directly from the biomechanical model of the body.

Initially, doctors were not employed by or subordinated to the hospital administration; they however could and did give orders directly to nurses who were employed, subordinated and accountable to the hospital's administration. The combination of these two factors influenced the subordinate non-professional position, the nursing profession assumed within a male dominated health care system (Ryan, 1996).

Furthermore, the role of nursing within health care has been traditionally affected by the portrayal of nursing as a profession in which the majority of its members are female, with a lower education and socioeconomic status than its counterpart, the medical profession (Brown & Seddon, 1995). However today health care delivery is changing and nursing has developed numerous strategies to shift the balance of power in favor of its members. For example nursing has experienced, within the past decade, an increase in the number of males entering the profession. Ryan (1996) noticed that in the year 1994 the number of males on the Canadian

Nursing Association's register increased by 4000 in comparison to the year 1991, accounting for a 7.4% increase. The number of males has continued to increase during the past decade reaching 12,745 in the year 2003, accounting for a 31% increase (Canadian Institute for Health Information, 14 April, 2005).

Additionally, nurses' desire to change their role and improve their political power has led them to enter independent practice in the community, and to request equal participation in important decisions about patient care and health care policy, altering traditional role stereotyping. Furthermore, females who in the past struggled to get into the medical profession have also increased their presence in medical schools, resulting in an increase in the number of female physicians. Consequently the nurse-physician relationship is no longer that of a male versus female (Ryan, 1996).

Ryan (1996) further recognizes that even though the numbers of both male nurses and female physicians are growing, this may not eliminate gender issues concerning nurse-physician interprofessional collaboration. The author argues that despite this social change, in reality, nursing as an occupation continues to play a subordinate and paraprofessional role to that of the medical profession in the provision of patient care.

Brown and Seddon (1995) conclude that the health care system still uses the biomechanical model of the body as the guide for the provision of care. Consequently the medical profession remains in a higher position of power with respect to nursing. They further suggest that including the social model of the body will result in a change of power balance and also provide a broader knowledge base to deal with illness .

Henneman et al. (1995) examined the concept of collaboration specific to nurse-physician interactions and indicated that in order for collaboration to occur, a flat rather than hierarchical

organizational structure based on shared power and authority, must be put in place within the health care system . However a flat organizational structure, which would enhance nurse-physician collaboration, might be difficult to create unless there is a shift in the balance of power favoring not only nurses but all the allied health professionals.

Is there Evidence that Interprofessional Collaboration Improves the Quality of Patient Care?

A search for previous research conducted by other investigators on the topic of nurse-physician collaboration was thoroughly carried out via the National Library of Medicine including all available years in an effort to incorporate all relevant studies, using PubMed, MEDLINE and the Cochrane library as well as CINAHL. The Web of Science database was used to perform a citation reference search. The World Wide Web was also searched without using a specific time frame. Authors of some of the research studies were contacted by email and asked for input regarding new research and abstracts of any unpublished relevant articles concerning this area. The thesaurus system was used to explore relevant topics such as transfer, discharge, collaboration, interdisciplinary, multidisciplinary, inter-professional and patient outcome.

The literature search revealed that very few articles have been published on the effects of nurse-physician collaboration in relation to staff and patient outcomes. The majority of these articles examine the association between collaboration and patient outcome related to discharge planning only in intensive care units (ICUs). To date, only prospective correlational and before and after quasi-experimental studies have been conducted in this area, indicating the need for the use of a stronger study design such as a randomized trial. However, designing a randomized study regarding interprofessional collaboration could prove to be a difficult task since one cannot reliably generate collaboration among professionals. Therefore, new and more appropriate

methods of scientific research need to be employed. Dechario-Marino, Jordan-Marsh, Traiger, and Saulo (2001) argue that multiple action research projects may need to be carried out in order to fully understand the collaborative process between nurses and physician.

Impact of Interprofessional collaboration on Patient Outcomes

Knaus, Draper, Wagner, and Zimmerman (1986) were one of the first to publish an article evaluating patient's outcomes from ICUs. In this prospective correlational multicenter study the authors attempted to compare treatment courses and outcomes of patients in intensive care units of 13 hospitals, using the information on the risk factors of acute physiologic disorders, chronic health status and age as classified by the APACHE II system. All the hospitals had similar technological capabilities but differed in organizational structure, staffing, commitment to teaching, research and education. The authors then studied if these differences in structure and processes between the 13 hospital units had a significant influence on the effectiveness of care, as measured by hospital mortality rate.

The study took place in 13 hospital intensive care units in Washington D.C. in the United States. These were self-selected hospitals that replied to the written request for participation in this study. The criterion used for participation was that each hospital must provide the necessary resources for data collection in a minimum of 150 randomly selected patients admitted to the ICUs. The time frame for the data collection regarding these patients varied between hospitals. In one hospital the data was collected during a period of 27 months and in the rest of the hospitals during two to ten months with an average of five months (Knaus et al., 1986).

In four of these hospitals, multiple units were examined as one because they only exhibited minor differences in methods of operation. Coronary care units were later excluded from this study. Once hospitals meeting the inclusion criteria were selected, a questionnaire

concerning the nature and practice of the ICUs was sent and completed by the unit's medical or nursing director. The questions consisted of information regarding staffing, organization, policies, procedures, educational affiliation, and extent of the critical care personnel's involvement in patient care. The validity of the responses was confirmed after reviewing the questionnaires by a visit to each unit by the main investigators. To reduce the possibility of introducing biases during the data collection stage, a third party also examined the responses.

Each hospital's ICUs were then classified by their level of organization, as defined by the National Institute of Health (NIH), into three different levels. Level I units had physician directors or qualified designees present at all times with a high nurse to patient ratio and a component dedicated to research and teaching. Level II units had full or part time physician directors and qualified designees available, the nurse to patient ratio ranged between high and intermediate. Level III units had lower nurse/patient ratios and relied on coverage by other in-house physicians in the absence of a physician director. The technological capabilities were similar in all units and all units could provide one to one nursing care if needed (Knaus et al., 1986).

Two methods of data collection were employed. Data were collected either on consecutive patients admitted to the units or on every second or third patient, until the desired number of patients was reached. These two methods were used due to the high frequency of admissions in some of the hospitals, which could have made it difficult for the data collector to obtain accurate information if only the consecutive method had been used (Knaus et al, 1986). After the data on the included patients from each hospital's ICUs were collected, the patients were prospectively followed until an outcome took place, positive being discharge from the hospital or negative being death. Patients under 16 years of age, patients with acute burns and

patients who had coronary artery bypass and coronary care unit (CCUs) patients were excluded from the study. Clear descriptions of the screening procedures, inclusion as well as exclusion criteria were given by the authors in the article. There was good description and follow up of the patients that entered the study in each hospital's unit, and the total number was 5030 patients.

The data were analyzed using a multivariate logistic analysis, which controlled for the effect of the variables included in APACHE II, emergency surgery status and operative and non-operative status. The results of this test showed that hospital 1 did significantly better ($p< 0.001$) than all the other hospitals with a death rate 41% less than predicted and hospital 13 did significantly worse ($p < 0.01$) with 58% more deaths than predicted. After controlling for APACHE II scores, medical, post surgical diagnoses, and emergency surgery status, the overall influence of individual hospitals was significant (chi-square = 62.9, with 12 degrees of freedom; $p < 0.0001$). Analysis of the ratio for the non- operative admissions alone (2314 patients) showed that it was consistent with that for all patients combined (correlation coefficient = 0.91), with the exceptions of hospitals 5 and 10, which only treated a small number of non-surgical patients, indicating that the reduced incidence of mortality shown by some hospital units is not limited to a single diagnosis or to the level of severity of illness (Knaus et al., 1986).

The authors concluded from the results that these differences that occurred within specific diagnostic categories for the medical patients alone and for the surgical patients combined, were related more to the interaction and coordination between the staff in each of the units than to the amount of specialized treatment used, the organizational structure of the units or to the presence or not of a teaching component. Differences in level of interaction and coordination among the staff at the participant hospitals were exposed by contrasting individual hospitals. Hospitals with carefully designed protocols and comprehensive nursing educational

support systems and higher number of staff with postsecondary education showed better communication among nurses and physicians as well as better patient outcomes. This offers some support to the hypothesis that the degree of staff coordination and interaction significantly affects the way care is provided in intensive care units (Knaus et al., 1986).

This study does meet all the criteria of a strong prospective correlational study. Although the intent of this study was not to link the nurse-physician collaborative process to a specific task, it did provide some insight into the impact of medical and nursing staff coordination and interaction, a variable similar to collaboration, on patient outcomes. The fact that this study was conducted in 13 hospitals and included all ICUs within each hospital, with the exception of the coronary units, makes the results of this study more generalizable to other similar settings.

Also, the researchers used adequate statistical methods, which were in accord with the study design, to analyze the data. One criticism of the study is the fact that the ethnic background of the patients is not stated in the article, and therefore it is hard to generalize the results to other populations. However, it could be argued that since the majority of the population in Washington D C is African American, the results from this study could be applied to populations with similar ethnic characteristics. Finally, the authors fail to provide a clear definition of coordination and interaction, creating an opportunity for the introduction of biases during the data collection and analysis stages.

Higgins (1999) conducted a similar study and, using a prospective correlational design, examined nurses' perceptions of collaborative nurse-physician transfer decision making as a predictor of patient outcome in a medical intensive care unit (MICU). Higgins defined a positive patient outcome as being discharged from the hospital and negative being readmitted to the MICU or death. The convenience sample for this study consists of 175 patient transfer decisions,

in which 42 primary care nurses working in a MICU had participated. Information regarding patients was collected through the use of charts and a computerized database, which considerably reduces biases that may occur during the data collection stage.

To measure the severity of the illness of the patients and adjust for risk, the Acute Physiology and Chronic Health Evaluation (APACHE III) was used on a daily basis. Also a questionnaire was developed by the author in order to obtain demographic data from the forty-two medical intensive care nurses. The sample was drawn from one MICU located in a teaching hospital in a large metropolitan area of southwestern Pennsylvania containing eleven beds for the treatment of adult patients with critical medical illnesses.

Of the total number of patients included in this study, 54.9% were men and 45.1% were women and their mean age was 61.12 years with 73% of them being over 50 years of age. An average length of stay in this MICU of four days with a median of two days was used as the criterion for patient's eligibility. In the case of the nurses, the majority of them were women (85.7%) and with ages ranging from 24 to 49 years with a mean age of 33.71 years. Participation in the transferring decision-making process for an eligible patient was used as the eligibility criteria for nurses to participate in this study.

Once the eligible participants were identified, a demographic questionnaire and a modified version of the Decision About Transfer Scale (DAT), developed by Baggs (1990) were placed in the charts of eligible patients. This scale consists of a 5-item Likert-type scale which measure nurses' perceptions of nurse-physician collaboration while making transfer decisions, task complexity and overall satisfaction with the decision making process. Baggs demonstrated content and face validity of this tool through the use of a panel of 10 experts and also calculated correlations between the specific DAT items to evaluate the construct-validity of the DAT. It is

clearly stated by the author that for this three single-item construct measurement, data regarding internal validity could not be generated. Even though Baggs reported significant validity quotients, these are not strong (0.27 and 0.36 for collaboration and 0.24 for satisfaction). Forty-two nurses responsible for the primary care of patients designated to be transferred or actually transferred, completed the adapted DAT with the proper patient identification number found in each eligible patient's chart and dropped it in a confidential box.

There is good description and follow up of all the patients that entered the study. Of the 175 patients that entered the study only 13 had an unexpected outcome within 72 hours of the transfer: 10 patients were readmitted and 3 patients died. There is also a clear indication given by the author of the study, that the patients were followed until the completion of the specified follow up period of 72 hours. This follow-up period was decided upon because it was believed to be a more accurate reflection of outcomes that were specifically associated with the transfer decision-making process (Higgins, 1999).

The statistical analysis is based on the hypothesis that nurses' perception of the amount of nurse-physician collaboration contributes significantly to patient outcome. A hierarchical logistic analysis was used to study this relationship. This is an adequate test to perform for this study. The test showed that the nurses' perceptions of collaboration were not a significant predictor of patient outcome, and that the decision task complexity and the nurses' years of critical care experience did not significantly affect nurses' perception of collaboration as a predictor of patient outcome. However, this lack of significance could be attributed to a lack of power in the study since there were only 13 events.

In the case of the correlation between nurses' perceptions of collaboration and their satisfaction with the decision making process about patient transferring, the Pearson moment

correlation coefficient of 0.28 showed significant results at $p = 0.000$. From the results yielded by the analysis of the data collected in this study, the author concluded: (a) that the majority of these nurses perceived low levels of collaboration with physicians in the decision making process about patient transferring from an MICU to lower level of care, and (b) there is a modest association between satisfaction with the decision-making process and the level of perceived collaboration with physicians.

There are several limitations in this study and caution should be emphasized in reaching a conclusion based on the results of this study. For example, the author fails to indicate whether or not a clear operational definition of collaboration was provided to the subjects, in this case the nurses included in this study. This could introduce biases during the data collection phase. Also, the nurses completed the questionnaire at different times during their shift, which could lead to bias because the nurses may not accurately recall what happened earlier in the shift. Furthermore, the design used by Higgins (1999) in this study did not allow for test retest measures, hindering the reliability of this study even further. Finally, in an attempt to control for managerial and organizational variables the researcher selected the sample from only one MICU setting, but this may hamper the generalizability of the study, since the perceptions of these nurses regarding collaboration and decision-making may differ from those nurses working in other MICU settings. Moreover, the characteristics of patients' severity of illness may also differ from patients in other settings.

To improve generalizability in this study the author could have selected a greater sample including patients and staff from other MICUs. Also this study did not take into consideration the physicians' perceptions of collaboration, making the study one sided. The validity of the research tool employed in the study is also questionable, since it is a uni-dimensional tool that cannot

address the multi-faceted nature of physician–nurse collaboration (Hojat et al., 2002).

Consequently this affects the construct validity of the study, and could be corrected by simultaneously using other methods of data collection such as observational and/or chart review methods. Results could then be compared to those from the DAT to corroborate its validity. Additionally, the use of a larger sample of transfer decisions and the subsequent use of smaller size effect would enhance the statistical power of the investigation (Higgins, 1999).

Finally, it might also be possible that collaboration in an MICU in a teaching hospital may differ from that of a non-teaching hospital; hence the inclusion of a non-teaching MICU hospital for comparison purposes, would benefit the validity and generalizability of the study results. In a similar prospective descriptive study Baggs et al. (1992) assessed the relationship between interprofessional collaboration and patient outcomes in a medical intensive care unit (MICU), using nurses' and medical residents' reports of the amount of collaboration involved in making decisions about transferring patients from the MICU to a unit of lower level of care. This study took place in a northeastern United States university medical center MICU comprised of 17 beds used to treat critically ill adults with the exception of burned and surgical patients.

The sample in this study consists of staff nurses' and medical residents' perceptions about the decision to transfer 286 patients fitting the following criteria. To be included in the study patients had to be transferred to a unit of lower level of care within the same hospital and had to have no limitations on the use of life support therapy before the transfer decision was made. In an attempt to reduce biases the researcher decided that patients with limitations placed on the use of aggressive life support therapy, including those that their physicians knew were going to die soon, were excluded from the study.

Similarly, all attending physicians were also excluded from this study, because the author believed that although they might have had some influence on the transfer decision they were not present (due to busy schedules) when the decision was made and for that reason they did not have an opportunity to collaborate with the rest of the staff involved in the decision-making process.

There were 56 registered nurses and 31 residents all of whom had participated in the decision-making process for the transferring of the patients who met the above criteria. Of the total 56 nurses; 53 (95%) were women, in the case of the residents, 11 (35%) were women. The average age of the residents was approximately 27.9 years and for the nurses 31.6 years approximately. The majority of the residents were educated in the USA. Forty- three percent of the nurses held a diploma; forty-six percent held a bachelor's degree and nine percent had acquired a master's degree (Baggs et al., 1992).

The residents were assigned to the MICU for three-week periods in two teams which included first and second year residents. Each team was responsible for the care and order writing for half of the patients. To measure collaboration and level of satisfaction with the decision-making process an instrument was designed by the author, the Decision About Transfer (DAT) scale. As discussed earlier, this instrument consists of a five-item Likert-type scale. A clear operational definition of collaboration together with the DAT was provided to the participants. A negative outcome was defined as either readmission to the MICU or death during the same hospital admission, whereas positive outcome was a successful discharge of the patient from hospital.

Responses were in Likert format and the scale ranged from 1(no collaboration) to 7(complete collaboration). It was agreed by a panel of ten experts that the DAT is a valid

research tool for the assessment of collaboration, as it was defined in this study, and that the nurses working in the MICU had the necessary expertise to answer these questions. An extensive research of the literature regarding collaboration supported the content validity of the operational definition of collaboration used in this study.

In order to appraise the construct validity of responses from the DAT, the nurses and residents were asked to complete the Collaborative Practice Scale (CPS); additionally, nurses completed the Index of Work Satisfaction scale (IWS). These two instruments were designed to measure collaboration and satisfaction in general and not in association with a specific event. Both of these instruments have established reliability and validity. Finally, the APACHE II was used to control for the severity of illness in patients. An experienced nurse, who did not participate in the study, collected the APACHE II scores for all eligible patients for the first and last 24 hours they spent in the MICU. The author fails to clarify whether or not this nurse was blind to the study question. This is an important point since this could introduce biases during the data collection stage.

Once it was determined which patients met the criteria, the data were collected using these patients' charts and the APACHE II scores. Data concerning the staff was collected through the questionnaires provided to the nurses and residents involved in the decision-making process specifically in relation to the transferring of these patients. All data were collected in a prospective manner, before any undesirable outcome took place.

There was a good follow-up period established and all the subjects that entered the study were accounted for, as was clearly indicated by the researcher. The patients were followed for 30 days after the transfer took place, monitoring for patient outcomes. The unit of analysis was the patient transfer decision-making and the main endpoints in this study were the relationship

between collaboration and patient outcome, and collaboration and satisfaction with the decision making process.

These end points were all statistically analyzed using a multiple logistic regression analysis, which is a suitable test for this kind of study design. The statistical analysis showed that with the available data, the amount of interprofessional collaboration about transfer decision, as reported by the nurses in this study, is a predictor of patient outcome, either negative or positive outcome, ($b = -0.22$, $t = -2.34$, $p = 0.020$), at a two tail level of significance of 0.05 (Baggs et al., 1992).

In other words, the greater the amount of perceived collaboration, the greater the likelihood of positive outcomes and as the amount of perceived collaboration decreased the greater the likelihood of negative outcomes. The predicted risk of negative outcome (there were more readmissions than deaths after the transfer took place; 26 readmissions and 15 deaths) decreased from 16% when nurses reported no collaboration to 5% when nurses reported full collaboration. Surprisingly, the amount of interprofessional collaboration as reported by the residents was not a significant predictor of patient outcome ($B = 0.02$, $t = 0.18$, $p = 0.859$). The authors attribute this difference in medical residents' and nurses' reports of collaboration to the lack of assessment of the meaning of collaboration. According to the authors, the data analysis did not confirm whether or not collaboration had the same meaning or importance for nurses and physicians. They further explain that the existent difference in level of authority among this group of nurses and medical residents could lead to different perceptions of the amount of collaboration that took place. For example, residents have the authority to write transfer orders and therefore may not see the need to collaborate with the nurses. (Baggs. et al., 1992).

Baggs et al. (1999) conducted another study to investigate the association between physician-nurse collaboration in three intensive care units (ICUs) and patient outcome. Readmissions to the ICU or death were considered negative patient outcomes and discharge from the hospital a positive outcome. The study included 97 attending physicians, 63 resident physicians, 162 staff nurses and 1,432 patients who were transferred from the ICUs. This was a prospective descriptive correlational study, conducted in three ICUs in upstate New York. A surgical ICU in a university hospital made up of 20 beds, a MICU in a university-affiliated hospital with 16 beds and a surgical ICU in a non-teaching community hospital with seven beds (CHICU), constituted the settings for this study.

None of the three ICUs practiced nurse management and in all three, nurses had total responsibility for their assigned patients during the entire shift. The number of patients determined the nurse-patient ratio, which ranged from 1:1 to 1:2 in all ICUs involved in the study. The occupancy level on all units during the investigation period is as follows, 95% for the SICU, 93% for the MICU, and 67% for the CHICU. Staff turnover during the study period was 10% for the SICU, 15.4% for the MICU, and 11.5% for the CHICU. Staff turnover is an important aspect, as it could be used as an overview measure of how much job satisfaction there is in these three ICUs. In this case there is not much difference between the three units suggesting for good matching of the units.

Patients included in the study had to meet the following criteria: 18 yrs of age or older, in ICU care for more than four hours, and had no limitations on the use of aggressive life support therapy. These patients were included in the study only once, arriving at a total of 1,432 patients. All of the 1,432 included patients were assessed for severity of illness using the APACHE III at

admission. Experienced nurses who were trained specifically to use this test collected the APACHE III data on the patients.

The mean raw APACHE III scores at admission, (designed specifically to assess the severity of illness in ICU patients), varied significantly among the ICUs, showing higher results for patients in the SICU than MICU and higher in the MICU than in the CHICU ($n = 1,432$; $F = 131.7$; $p < .0001$). The risk of death was greater in MICU, smaller in SICU and smallest in CHICU ($n = 1,432$; $F = 43.15$; $p < .0001$). However, after admission patients in the MICU were at higher risk, due to their diagnosis and consequently their need for higher complexity of care. The lengths of stay in ICU and post-ICU were also different for the three units, showing longer lengths of stay for patients in MICU and CHICU than the patients in SICU ($F = 11.65$ and $F = 31.99$, respectively; $p < .0001$) (Baggs et al., 1999). According to the authors these differences in patient care complexity may explain why a relationship between collaboration and patient outcome was found only in the MICU, particularly since complexity of care is known to positively influence interactions between nurses and physicians (Baggs et al., 1999, Thompson, 1967). The sample included residents, attending physicians or those acting as attending physicians in making patients' transfer decisions in these ICUs and staff nurses involved in the transfer decision-making process for the included patients. Attending physicians in the MICU were invited to participate in this study; however, they did not participate due to lack of time or lack of interest in the study (Baggs et al., 1999). Physicians and nurses included were asked to complete the Collaboration and Satisfaction about Care Decisions (CSACD) assessment tool developed by the researcher. This tool includes a seven-item questionnaire and responses are given on a seven-point scale. Six of the seven items are dedicated to the critical attributes of collaboration such as planning together and are scaled from 1 (strongly disagree) to 7 (strongly

agree). The remaining item is a global question on collaboration and it is scaled from "no collaboration" to "Complete collaboration" The unit level data was obtained via interviews, which lasted approximately one hour each. Units were scored according to the number of collaboration variables present on each unit. One point was allotted for each collaborative variable present and included the following: integrated patient records, joint practice committee, joint ICU leadership, scheduled interprofessional meetings, scheduled joint patient bedside rounds, written policies supporting collaboration, interprofessional orientation and interprofessional in-service. A half point was allocated for partial implementation of these variables. Availability of technology within each unit was determined by using a list provided by Shortall et al., 1994. Included on the list are mechanical ventilators, peritoneal dialysis and in-unit blood gas testing, etc.

These interviews were conducted by the main investigator in conjunction with one nurse and one physician administrator, except for the SICU where the interviews were conducted with the help of two physician co-directors. The scores from the APACHE III for the patients were obtained from the patients' charts. All data were collected before a patient had a negative outcome. There is clear evidence that a good follow up of the patients included was performed.

The data were analyzed using multiple linear regression and multiple logistic regression for the dichotomous data. Post hoc Scheffe's procedure was used to calculate the differences in the scores between the three ICUs. The bivariate logistic regression analysis showed that the MICU nurses reports of collaboration significantly predicted positive patient outcomes ($n = 428$; increase in chi-square of $29.9-25.6 = 4.3$; $p= .037$) (Baggs et al., 1999). The data analysis further shows that the logistic regression coefficient for collaboration was $b = -.04$, which means that by every point increase in nurses' perception of collaboration, the odds of negative patient outcome

fell by 4%. Reports of collaboration from the physicians and residents did not show any significant association with patient outcomes, which is consistent with the findings by Higgins, (1999) and Baggs et al. (1992). A possible explanation for these results is that physicians have the authority to write orders and therefore may not feel the need to collaborate with nurses during decision making. Nurses, however, may believe that the only way for them to influence decision making is through collaboration (Baggs et al., 1999).

There was no other significant association between individual unit reports and collaboration. The authors attribute the significant findings in the MICU to the higher complexity of patients in this ICU. Caring for complex patients could have an influence on nurse-physician interactions. Also complex patients are more likely to benefit from collaboration and show positive changes on outcomes. The relationship between nurses perception of collaboration and patient outcome was attributed the amount of time that nurses spend with patients. More bedside time allows nurses to collect a greater amount of important information on patient status and therefore make stronger contributions to the decision making process. Also, differences in level of power among nurses and physicians may result in nurses believing that the only way they can influence that decision making process is through collaboration (Baggs, et al., 1999).

Although this study has all the characteristics of a strong prospective, descriptive correlational study, it still has some limitations, which should be taken into consideration while interpreting and using its results. For example, the research was conducted in one geographical area, which could limit the generalizability of the study to that particular region. Also, attending physicians in the MICU did not participate in the study resulting in the data collected to be incomplete. In addition the power in some individual statistical analyses may have not been strong enough to show significance. Finally, there are doubts as to how well the researchers

examined the technological differences among the three ICUs. As Shortell et al., (1994), suggested, differences in available technology might account for a lower risk of negative patient outcome.

This study offers some support as to the importance of physician-nurse collaboration on patient outcomes in ICU care delivery, but also emphasizes the need for conducting studies in multiple units in order to allow for the discrimination between the effects of collaboration and other variables such as diagnostic diversity and technological availability. Baggs et al. (1999) also accentuates the need for intervention studies to examine causality, in relation to collaboration. However, to ensure proper implementation, any intervention directed at increasing collaboration needs to include all those involved from the beginning. The authors also argue that conducting studies in multiple units could allow discrimination between collaboration and other variables such as technological availability and diversity of diagnosis.

Impact of Interprofessional Collaboration on Job Satisfaction

A recent study conducted by Dechario-Marino et al. (2001) examined the relationship between interprofessional collaboration and job satisfaction and retention, using an action research pretest/posttest as the study design. A convenience sample of 87 nurses working on three medical-surgical units and two intensive care units at a hospital in Southern California were asked to complete a demographic questionnaire and the Collaboration and Satisfaction About Care Decisions scale (CSACD) developed by Baggs in 1994. Baggs developed the CSACD based on a definition of collaboration derived from the model for collaborative practice developed by Killman and Thomas in 1977. Interprofessional collaboration was defined as "nurses and physicians cooperatively working together, sharing responsibility for solving problems and making decisions to formulate and carry out plans for patient care" (as cited in

Dechario-Marino, 2001, p. 226). All pretest data in this study were collected one month prior to the nurses being exposed to an initiative directed at promoting interprofessional collaboration called Operating Principles for Collaboration and Quality Patient Outcomes (OPC), complemented by a four-hour, one-session class entitled "Winning Ways to Manage Differences".

Of the initial 87 nurses, 65 completed the intervention. The follow up data were collected three months after the termination of the intervention. After analyzing the data, the authors concluded that a strong correlation exists between nurses' level of job satisfaction and their perception of the amount of physician-nurse collaboration happening during their interprofessional exchanges. Although this was a longitudinal study and used a reliable and valid instrument and surveyed nurses in medical surgical units as well as Intensive Care Units (ICU), the results are one-sided. The results only reflect nurses' perceptions since the researchers chose to restrict the survey to nurses due to lack of resources and nursing administration priorities.

This review of research literature demonstrates the limited amount of evidence regarding the effect of interprofessional collaboration on the functioning of the health care system as well as its effect on quality of care delivery. Although the research literature suggests that the level of interprofessional collaboration between physicians and nurses affects outcomes, these results are limited to only one aspect of the collaborative process, namely the discharge decision-making process and the available data is not compelling. Therefore, definitive and broader research in this area is still lacking.

In addition, to date a randomized trial regarding this topic has not been conducted, perhaps because feasibility of conducting a randomized trial to examine the effects of interprofessional collaboration on clinical outcomes is questionable and could also be very

costly. In a research and findings report, Oandasan et al. (2004) argue that such a study would be very costly to conduct, since it would more likely involve a cluster randomized design with an intervention group composed of a large number of schools of health sciences or hospital sites, and a similar control group. This implies that after the random allocation process is completed, one group of these institutions would be encouraged to change or adjust their philosophy in order to propitiate an environment conducive to collaborative practice, while the other group would be prevented from so doing .

Without substantial research the proper basis for developing a scientific framework for interprofessional collaboration cannot be obtained. At this time researchers are still acquiring a body of knowledge related to interprofessional education and collaborative practice. It is only through research; from both the qualitative and quantitative domains that the current knowledge base of what works and does not work regarding interprofessional education and collaborative practice will be enhanced. Further research in this field will provide guidance with respect to which populations benefit from a collaborative approach, which health professionals should be involved, and how these health professionals should collaborate with each other. The answers to these questions will help inform the teaching environment and suggest strategies to help trainees become competent collaborative practitioners (Oandasan et al., 2004).

Is there Evidence that Collaboration can be Hard to Achieve?

In essence, collaboration focuses on trying to reach consensus among divergent opinions to accomplish mutual goals. Weiss (1983) suggests that the conflict between nurses and physicians is mostly due to the overlapping nature of their domains and the lack of clarification between their roles. Adding to the difficulty of achieving agreement, doctors and nurses use different strategies to resolve conflict; physicians tend to bargain or negotiate, while nurses avoid, accommodate or compete.

In today's fast-paced health care environment, nurses and physicians can become overwhelmed by their workloads and therefore feel that they cannot afford time to talk to each other in order to settle their differences. Furthermore, often when a nurse approaches a physician seeking information regarding a patient care decision, the nurse's action is interpreted as challenging the physician's decision. This may lead to the rise of conflict, simply because inadequate and unassertive communication has taken place between the physician and the nurse (Blickensderfer, 1996,). To complicate matters even further, the nurse has a more holistic view of the patient and usually sets goals for patient care which greatly differ from those set by the physician. For example, while the nurse may be preparing the patient for a peaceful death, the physician has yet to give up on healing. This goal discrepancy provides the perfect terrain for a climate of conflict to flourish between the nurse and the physician (Blickensderfer,).

There is also a substantial discrepancy between nurses and physicians incomes. The average nurse with a bachelor's degree receives about one fifth the lifetime income of the average physician, although it has been argued that this is justified since the average nurse only spends half the amount of time in school. However, as a result of this economic disparity, nurses and physicians do not normally socialize with the same group of people, thus limiting their

opportunities to get to know and understand each other (Blickensderfer, 1996 . Additionally, nurses are concerned about other sources of stress such as burnout, conflict, cutbacks, and adequate staffing, scheduling, caseloads, mandatory overtime, patient acuity, role ambiguity, and deviations from direct patient care. Some of these concerns do not affect physicians (Rosenstein, 2002). While some of these problems in the nurse-physician relationship may be easier to resolve than others, finding solutions will certainly help to establish an atmosphere in which nurses and physicians can work in harmony. Nevertheless, any success will be temporary unless all concerns are addressed on an ongoing basis (Rosenstein).

Efforts to achieve collaboration in hospital and primary health care settings has yet to be scientifically described or implemented, though the first steps toward its implementation have taken place (Alpert, Goldman, Kilroy, & Pike, 1992; Mitchell, Armstrong, Simpson, & Lentz, 1989). However, given that the relationship between nurses and physicians only represents one component of the overall atmosphere of the working environment, improving workplaces will likely require the implementation of a multifaceted approach (Rosenstein, 2002. Furthermore in order to establish a collaborative decision-making environment in health care settings, all allied health professions will have to become included as partners (Higgins, 1999).

Dechario-Marino et al. (2001) noted that although most health care professionals in hospitals promote collaborative practice, innovations introduced to foster collaboration are seldom applied prospectively. This could be the result of the current lack of empirical evidence regarding the effects of collaborative practice on patient outcomes and work satisfaction . Furthermore, all issues affecting the collaborative process, such as the identified antecedents and barriers to collaboration, must be addressed before, or as part of, implementing any strategy including an educational program for nurses, physicians and policy makers that might improve

the nurse-physician professional relationship. Such strategies are not likely to be successful if these underlying factors are not addressed.

Zwarenstein et al. (1997) conducted an extensive review of the literature on collaboration and concluded that none of the identified studies of collaboration in health care settings were considered to be scientifically rigorous enough to substantiate claims that collaboration improves patient care. However, the authors recognized the obstacles inherent in studying the effects of collaboration on outcomes. Given the complexity of any intervention and the intricacy of outcomes with countless variables to control, it is unlikely that such rigorous studies will be undertaken without substantial funding. Therefore, advances in this field may occur through multiple exploratory studies in a variety of settings and be carried out by different research teams.

Also, while various investigators have studied the effects of collaboration on patient outcomes, few have clearly defined or operationalized the concept of collaboration (Alpert et al., 1992; Baggs et al., 1992; Knaus et al., 1986, Zwarenstein et al., 2006). Consequently, the replication of these studies, as well as any attempt to implement a collaborative environment in health care settings based on these studies, is practically impossible. Obviously more research is needed to examine different approaches to promote nurse-physician collaboration in the workplace and to study its effects on patient outcomes. However, before these studies can be of any use the researchers must operationalize their variables (Henneman et al., 1995).

Despite the fact that randomized control trials are considered the "gold standard" for clinical research, the experimental design is expensive and time consuming. Also due to the innumerable variables to control, this study design is limited in its ability to produce the necessary information to make sense of interventions aimed at increasing collaboration. An

alternative viewpoint that is highly relevant to the improvement of both the quality of work and patient care is evolving and it is referred to as "action research" (Dechario-Marino, et al., 2001). O'Brien (2001) defines action research as "learning by doing" - a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again" (p. 1). This new method of conducting research has been proposed as a legitimate research strategy and as an alternative to randomized control trials. This new method of research is more appropriate for focusing on changes in targeted components such as knowledge, attitudes, beliefs and behaviors rather than distant outcomes. The principal characteristic of action research is that it is a collaborative and participatory process (Dechario-Marino). Also, action research is utilized primarily in real situations rather than in the experimental settings, because it's main focus is on solving real problems. Therefore, it can be employed successfully in situations that are ambiguous to formulate a precise research question, such it is the case of the collaborative process (O'Brien, 2001).

Finally, while it is true that clinical outcomes and patient satisfaction are better indicators of a successful nurse-physician collaborative relationship, perceived collaboration can also be a reliable indicator of success and can be assessed at minimal cost (Dechario-Marino, et al., 2001). For example, in a study of intensive care units conducted by Baggs et al. (1992), the researchers found a statistically significant and positive association between nurses' reports of collaboration and patient outcomes.

What are the Known Determinants of Collaborative Practice?

The determinants of collaborative practice can be characterized as the key elements in the development and establishment of collaboration among health care teams. These determinants can be classified as macro-structural factors emerging from conditions outside the organizational

structure, factors resulting from circumstances within the organizational structure and micro-factors, which arise from interpersonal relations among team members. However, despite their perceived importance, very few investigators have conducted research to examine the impact of macro-structural, organizational or interactional determinants of interprofessional collaboration (Oandasan et al., 2004).

Macro-structural determinants include the social, cultural, professional and educational systems. Included in the social system is the concept of power; differences in power among health care team members could be attributed to stereotypes such as those surrounding gender and social background. These differences are thought to constitute an important barrier to interprofessional collaboration among health care professionals (Oandasan et al., Hojat et al., 1997). However, equality among professionals within a given team is one of the necessary conditions to foster collaboration (Henneman et al., 1995). Cultural values held by health care professionals may also play an important role in the development of collaborative practice. Some cultures have strong value systems that hinder the collaborative process. For example, cultures that have strong affinity for autonomy will support individualism and specialization rather than collaborative practice (Mariano, 1989). The cultural values of a profession may also play an important role in the development and strengthening of collaborative practice. Austin and Beales (2004), argue that while there are many cultural similarities between nursing and medicine (for example, the language of medicine), there are differences in the way health professionals view themselves in relation to patients and other members of the health care team. For instance, it has been written that part of medical students' socialization process is the development of a "cloak of competence" where they feel they must learn how to be authoritative in professional situations (as cited in Oandasan et al., 2004).

According to D'Amour , Sicotte, and Levy (1999) the professionalization process may also have a strong influence on collaboration because it endorses a perspective that stands in the way of the development of collaborative practice. The professionalization process seeks to be characterized by autonomy, domination and control rather than collegiality and trust (Freidson, 1984). This contrasts sharply with the needed ingredients to foster collaboration. Collaborative practice is constructed on the basis of mutual recognition by professionals of their interdependence and through the acceptance of "grey areas" in which the contribution of each profession may overlap (Henneman, 1995).

Many authors consider the education system as the most important of all the determinants of collaboration because it is the main lever in promoting collaborative practice values among future health care professionals (Oandasan et al., 2004). The fact that health care professionals, whether nurses or physicians, are indoctrinated with strong professional identification during their training, leaves little room for acquiring knowledge of the practices, expertise, responsibilities, skills and values of each other profession. This is considered to be one of the main obstacles to collaboration in health care teams (Mariano, 1989). Hilton (1995) suggests that fragmentation within interprofessional work is a result of isolationism in educational programs for health care professionals and the preparation of students to function only within the confines of their own profession.

Hojat et al. (2003) conducted a study in which cultural differences in regards to collaboration were examined; they found that nurses and physicians in the United States have a more positive attitude toward collaborative practice than Mexican nurses and physicians. They concluded that in order to remedy this discrepancy, a type of education that fosters and teaches

collaborative practice for medical and nursing students as well as faculty is needed, especially in countries with a hierarchical model of interprofessional relationships.

Organizational determinants include the organizational structure, philosophy and administrative support within an organization, team resources and coordination and communication mechanisms within a team (Oandasan et al., 2004). The organizational structure of an organization has a strong influence on the development of collaborative practice. Traditional hierarchical structures where power is not shared do not provide the needed conditions, such as shared decision-making and open or direct communication, for collaboration to flourish. Contrary to the traditional organizational structures, decentralized and flexible structures focus on the importance of teamwork supporting shared decision-making, thus promoting collaborative practice (Henneman et al., 1995).

The philosophy of an organization is also important to the development of collaboration among team members. A philosophy that promotes employees' participation, fairness, freedom of expression and interdependence, is essential to the development of collaborative practice (Henneman et al., 1995). However, the appropriate philosophy alone is not sufficient to foster collaboration. Appropriate administrative support by a leader who knows how to convey this new vision of collaborative practice, who motivates professionals and therefore creates an organizational climate conducive to collaboration is essential (Henneman et al., 1995).

Resources and structures that influence the degree of collaboration in the work place should also be available to the team. For instance, space and time are important to foster and sustain collaborative practice since they provide the appropriate terrain for team members to interact and settle their differences or strengthen the positive aspects of their relationship (Mariano, 1989). In addition, good coordination and communication mechanisms such as

standards of care, policies, forums, meetings and interprofessional protocols, interprofessional charting and flow sheets must be available in order to facilitate interprofessional collaboration (Henneman et al.).

Finally, interactional determinants refer to characteristics inherent to the team members and these include among others, willingness to collaborate, trust in others, good communication skills and mutual respect (Henneman et al., 1995). In a climate where there is respect and appreciation for each other's professional skills, it is more likely that effective collaborative relationships will occur. Moreover, in the absence of these factors, poor quality of care and professional conflict are more likely occur. Knowledge of these determinants of collaboration is crucial to the development and implementation of interprofessional teams in the health care sector (Henneman et al.).

Current Models

Interprofessional education is currently being studied at the pre-licensure and post-licensure levels. Traditionally, basic undergraduate nursing and medical curricula for the most part have been totally separated, with students entering the nursing profession at the high school level and medical students requiring the completion of an undergraduate degree prior to entering medical school. Students from both professions have few opportunities to meet each other during the entirety of their training and faculties rarely interact (Hojat et al., 1997). This organization of education in the health sciences can be unfavorable to the promotion of collaborative practice among future health care providers. As Barr (1996) states:

> Multiprofessional learning occurs when trainees are brought together, learning in parallel. They may work on a particular project or try to solve a specific problem

but they do so working within their own profession-specific paradigm. They learn together for whatever reason (p. 342).

According to Glen (1999) there is a need for an educational system that helps students to recognize the values and responsibilities of their own profession while teaching them professional plurality . To that effect, many authors stress the need for interprofessional education curricula; but finding and coordinating the time in the curricula between disciplines constitutes a challenge in itself (Gilbert et al., 2000). Barr (2000) concludes that the scheduling of classes and courses is highly complex and tied to the curriculum of each individual professional program so that almost no space is allowed in the curriculum where students might learn from and about each other to improve collaboration and the quality of care.

Also, the time at which interprofessional education is introduced constitutes a problem. Initially it was thought that students should learn to work together in the first two years of their careers (Oandasan et al., 2004). It was thought that if students from different health related professions learn together about anatomy and physiology this would enable them to develop strong collaborative skills. However, not all health and human professions learn about Anatomy and Physiology. Furthermore, interprofessional learning, if introduced during the early years of training may be hampered by students' development of their own professional identity, which usually begins to evolve during the early years of training (Gilbert, 2005). Moreover, if changes in favor of an atmosphere conducive to interprofessional collaboration do not take place within the health care system simultaneously with interprofessional education, students once graduated will soon forget what was learned during training years about collaborative practice (Oandasan et al.).

Areskog (1994) describes a model for undergraduate interprofessional education that has been put into practice by Linköping University of Sweden since 1986. The faculty has approximately 1000 undergraduate students enrolled in six different health education programs with a ten week interprofessional component. By 1993 this program had completed 15 terms, teaching over 4,000 students. All educational programs (physicians, nurses, physiotherapists, laboratory technicians and supervisors of social services in community care) share a 10-week introductory period. Interprofessional education, based on the determinants of collaboration, is then continued throughout the curricula through the utilization of theme days, shared seminars, patient sessions and team training.

The model is evaluated on an ongoing basis, before and after the completion of each study period using a scale from 1-10, where 1 is low and 10 is extremely high or good. The scale contains an effect-related part reflecting problem based learning competency development and a curricular content part (Areskog, 1994). The scale was completed by students at the beginning and at the end of the study period. Results show that problem solving and self-learning skills increased for all students from 4.4 to 6.8 on average. The relevance of the themes and seminar employed by this model were ranked very high by the students as well as the teachers and ranged from 6.9 to 7.8 out of ten (Areskog). Since the introduction of the new curricula, the feedback received indicates that the majority of teachers and students are enthusiastic about this project. However, overall students showed more enthusiasm towards the model than the teachers. The author suggests that this difference in level of enthusiasm between students and teachers is due to the teachers' limited prior experience with multi-professional education (Areskog). The different social and educational backgrounds of students were found to be an asset rather than an

obstacle to the success of the project. However, inexperienced teachers may be an obstacle so it is important to properly prepare them prior to their involvement in the project.

Finally, Areskog (1994) recommends that the learning of behavioral sciences be placed at the beginning of the program since these may provide more opportunities for interactions among students from the participating health care professions than natural sciences. Also, problem-based learning as the educational principle of the model was found to be the most appropriate since it complements interprofessional education. Although Areskog concludes that interprofessional education is feasible and highly appreciated by students and teachers, she also recognizes that this system requires more planning and organizing than a traditional curriculum .

The University of British Colombia has also developed a model for interprofessional education in which students are exposed to this type of education during their early years and immersed in formal interprofessional problem solving activities during the last year of their training. Here medical and nursing students are taught health care ethics over the course of 12 sessions (Browne & Seddon, 1995; Kent, 1997). Lectures, panel presentations, and small group seminars were utilized for this purpose. The course, which was a mandatory part of the curriculum, required a seminar presentation as well as a term paper and a final examination. As part of the written assignment, students were required to interview at least one student from another profession and incorporate the results of the interview in their assignment (Browne & Sneddon; Kent).

Gilbert (2005) argues that it is in the later years of their training that students acquire enough knowledge to be able to recognize their limitations as well as the limitations of their professions while solving problems outside their scope of practice.

Although interprofessional education has not become a widespread phenomenon within the Canadian education system, some institutions have taken the initiative and started to work on collaborative approaches to education and practice. Examples include the collaboration between the Canadian Nurses Association, the Association of Canadian Medical Colleges, and the Canadian Association of Schools of Nursing in partnership with Health Canada (Oandasan et al., 2004).

From 2005-2008 Health Canada spent approximately twenty million dollars in funding for 20 interprofessional projects across Canada in a variety of settings, populations and programs. Each interprofessional project has a unique structure designed to meet the needs of the community. With the purpose of: (a) promoting and demonstrating the benefits of interprofessional education for collaborative patient-centered practice; (b) increasing the number of educators and health professionals prepared to teach and practice from an interprofessional collaborative patient-centered perspective; and (c) stimulating networking and sharing of best educational approaches for collaborative patient-centered practice and to facilitate interprofessional collaborative care in both the education and practice settings (Health Canada, www.hc-sc.gc.ca, June 07, 08)

Memorial University of Newfoundland is an example of an academic and research institution that participated in the implementation of Interprofessional Education for Collaborative Patient Centered Practice (IECPCP) and adopted it as part of the medical, nursing, pharmacy and social work curricula (Oandasan et al., 2004). The primary goal of this interprofessional education model is to provide health professional students with an opportunity to collaborate in the design of an interprofessional Community-Oriented Primary Care (COPC) strategy. Interprofessional COPC is an approach to health promotion and care that encompasses

collaboration and shared responsibility among different health professionals for the health of a defined population.

One example is the Health Promotion module. In this module, students from first year Medicine, second year Pharmacy, third year Nursing, and fourth year Social Work are assigned to Interprofessional Learning Teams (ILTs). Each student must be registered in a 'home' course (a course already offered by each faculty) for evaluation purposes as follows: (1) Medicine - Community Health I, (2) MUN School of Nursing - Nursing 3113 Nursing Leadership and Management, (3) Centre for Nursing Studies – Nursing 3111 Nursing Concepts for Middle and Older Adults, (4) Pharmacy - Pharmacy 4003 Pharmacy Administration and (5) Social Work– Social Work 4320 Working with Groups respectively. Each team is assigned a case study that includes a community-oriented, population health problem. The team is then required to analyze the problem and design an interprofessional COPC strategy.

This interprofessional education module combined e-learning with face to face learning. Students were divided in groups and expected to access, complete and participate in a web-based interprofessional education tutorial prior to their face to face learning experience. The web-based tutorial included online instructional material and small group discussion sessions. The face to face learning experience consists of a small group discussion followed by a panel discussion. Here students meet with the same group of students as assigned during the online small group discussion activities. Each of the small groups is assigned a facilitator such as a graduate student or faculty member. Also, during the small group discussions students had the opportunity to meet with an experienced standardized patient who presented the case to the students. This standardized patient had received proper training to act as a patient living with HIV. At the end of each term a Likert type questionnaire is given to each student for completion, measuring

students' attitudes toward participating in this type of education and toward interprofessional health care collaboration and the team approach to health care (Centre for Collaborative Health Professional Education, 2007). The analysis of the results of the assessment of the "HIV/AIDS" module showed that nursing and pharmacy students had the most positive attitudes towards interprofessional education and collaboration. The assessment of the other modules ("Health and Well Being of Children and "Geriatric Care") showed analogous results (Centre for Collaborative Health Professional Education, 2007).

The Center for Collaborative Health Professional Education also carried out a comparison between scores, regarding attitudes towards interprofessional health care teams and interprofessional education, of undergraduate medical, nursing, pharmacy and social work students enrolled at Memorial University during the fall semesters of the year 2005 and 2006 (Centre for Collaborative Health Professional Education, 2007). The majority of these students were female, 22 years of age and more than half of them had been formally exposed to an interprofessional education intervention. To conduct the analysis, the Center for Collaborative Health Professional Education utilized an assessment tool composed of a demographic section and two scales, one designed to measures attitudes towards health care teams and the other measures attitudes towards interprofessional education.

The intent of the initial survey in the fall semester of 2005 was to obtain baseline information for comparison regarding the impact of interprofessional education on students' attitudes towards interprofessional education and collaborative patient centered practice prior to the implementation of an interprofessional education project. However, the objective of the overall comparison was to ascertain the impact, if any, of interprofessional education on

students' attitudes towards interprofessional health care teams and interprofessional education comparing the results from initial assessment in 2005 to those from 2006.

Results from this assessment showed that overall there was a statistically significant difference between the mean scores of those students who completed the survey in 2005 and those who completed the survey in 2006. The results from the scale measuring attitudes towards interprofessional health teams indicate that students enrolled at Memorial University during the fall semester in medicine, nursing, pharmacy and social work programs of study in the year 2006 had significantly higher mean scores for their attitudes towards interprofessional teams than from 2005. Regarding the results from the scale designed to measures students' attitudes towards interprofessional education, students in all four years of studies in 2006 had higher mean scores than those in 2005, although, only the scores of students in first and second year of studies were significantly higher.

Finally, the Center for Collaborative Health Professional Education also compared each year's (2005 and 2006) individual results from the two scales, (one measuring attitudes towards interprofessional health care teams and the other measuring attitudes towards interprofessional education), for all undergraduate medical, nursing, pharmacy and social work students enrolled at Memorial University during the fall semester in 2005 and 2006. This comparison showed that even though there was an increase in the score for students in the four professions, only nurses had a significant increase in the scores from the year 2005 to the year 2006. Additionally, specific results regarding gender revealed that female scores from both years were significantly higher than male counterparts; however this difference is modest in magnitude (Centre for Collaborative Health Professional Education, 2007) .

Currently most health and education accreditation bodies in Canada are in the process of incorporating interprofessional education and collaborative practice in the standards for academic curricula and clinical practice. However, education that fosters a collaborative environment has not yet become a high priority in all levels of government and health institutions' agenda (Oandasan et al., 2004). This may be due to the lack of empirical evidence supporting the effectiveness of interprofessional education. This lack of empirical evidence emphasizes the need for the development of new and more effective models for interprofessional education as well as the testing of their feasibility (Oandasan et al.). According to Oandasan et al. to date, most IPE interventions have used changes on learners' attitudes as the outcome measurement method. These authors further recommends the use of other outcome measurement methods such as acquisition of knowledge, behavioural change, change in organizational practice and benefits to patients.

In the case of post licensure interprofessional education, the research literature suggests that some of the interventions have been found to be promising for the enhancement of interprofessional collaboration in the work place. This difference in evidence between post-licensure and pre-licensure interprofessional education may be caused by the fact that collaboration takes place for the most part in the work place, therefore attracting the interest, not only of the professionals involved but of the stakeholders as well (Oandasan et al., 2004).

Although some high quality research has been successfully conducted in the primary and ambulatory settings, the majority of the carefully evaluated, effective post-licensure education interventions have been tested in hospital environments (Oandasan et al.). These two other settings should be equally included especially since their inclusion will provide more opportunities to test these post–licensure education interventions. Also, conducting a randomized

control trial to test the effectiveness of interventions that foster collaboration in these three settings may prove easier than testing the effects of interprofessional education at the undergraduate level. The effectiveness of a post-licensure collaborative education intervention can be evaluated based on outcomes for patients, providers and the health care systems, allowing for a less complex and therefore more feasible study design (Oandasan et al.). Also, post-licensure interventions to improve collaboration have not actually focus on all of the determinants of collaboration, making their success difficult to attribute to the collaboration intervention or to the collaborative process. Therefore, a post-licensure intervention that considers every determinant of collaboration should be developed and then tested in primary and ambulatory settings as well as in hospital settings (Oandasan et al.).

Extrapolations from known models could be used to create new models and these should be piloted and trialed. Oandasan et al. (2004) further concluded that the effects of a widespread implementation of interprofessional education at the undergraduate level could be more challenging than at the postgraduate level since for the latter there is an already existing body of knowledge.

Summary

There is agreement in the literature that an interprofessional approach to health care delivery is needed in order to meet today's health care challenges. Increasingly, patients and health care consumers are seen as partners and are being informed and consulted about their health status. This accentuates the importance of developing and implementing a collaborative environment in health care settings. In Canada, the stage has already been set for the implementation of such an interprofessional collaborative approach to patient care. This is evidenced by the present readiness at the federal level of government and by the contributions from national and provincial health professional organizations that have supported and implemented health initiatives aimed at fostering interprofessional education and collaboration between health care professionals. The literature further shows that interprofessional education is not only a government goal but also has become part of academic and health care institutions' agendas. However, it is not clear what level of priority is has been given to the development and implementation of interprofessional initiatives within these jurisdictions or if it is going to be sustained for the long term.

There is little doubt, among experts, that there is a relationship between interprofessional collaboration and the effectiveness and efficiency of health care delivery. However, most of the research conducted in this area has not produced definite results and has been limited to one specific collaborative opportunity, namely the discharge decision-making process (restricted to ICU settings only) and its effects on mortality rates. Furthermore, little effort has been placed on identifying target populations as well as illnesses, which could respond most positively and therefore be more likely to benefit from a collaborative approach to patient care.

In conclusion, this literature review has exposed the paucity of research regarding the effects of collaboration on the outcome of patient care. To date, all the evidence in this area comes from studies that used a descriptive correlational design, which accentuates the need for conducting more research of a more experimental nature. The use of more reliable study designs as well as the appropriate consideration and evaluation of the determinants of the collaborative process is imperative for the future development and implementation of interprofessional initiatives in the Canadian health care system.

CHAPTER III

Design and Methods

Introduction

An assessment of nurse and physician attitudes toward collaboration, as well as the relationship between interprofessional education and interprofessional collaboration, is crucial for the future development of health care in Canada. Key points arising from the literature review centered on antecedents identified by Henneman (1995) in her conceptual analysis of collaboration (i.e. excellent communication skills, confidence in one's ability, individual readiness, recognition of the boundaries of one's discipline and environment with team orientation). In addition, the assessment of issues related to the individual demographics (i.e. gender, culture, education, professional experience and age) and their association with interprofessional collaboration is essential to fully understand the process of collaborative practice. Finally, understanding the importance of the factors which affect the successful development and implementation of an educational program aimed at promoting interprofessional collaboration also becomes relevant. This is particularly true since there is little evidence regarding the impact of interprofessional education on interprofessional collaboration.

Study Objectives and Rationale

Collaboration has been identified in the literature as a way of improving the quality and efficacy of care provided to patients. Today, health care professionals are faced with an increasing number of patients requiring chronic care and the involvement of many health care related professions. Yet the review of available literature suggests that the current organization of the health care system is not optimal for collaboration to take place and that proposed solutions involve many health care related professions, and government and educational institutions as

well. While interprofessional education is now being introduced in nursing and medical programs as well as other health related professions, this approach should be guided by the known determinants of collaboration and address identified barriers to the successful implementation of pre and post-licensure interprofessional education interventions.

The government of Newfoundland and Labrador as well as academic and health care institutions realize that they need to focus increasing attention on meeting the health and other service needs of Newfoundlanders and Labradorians. Steps have already been taken by Memorial University to facilitate interprofessional collaboration among health care professionals with the introduction of a formalized interprofessional component into the medical, nursing, pharmacy and social work curricula.

Based on this review of the available literature and its conclusions the following objectives were drawn for this study. (1) To identify the prevailing attitudes towards collaborative practice among nurses and physicians in the workplace in the St. John's region; (2) To identify factors associated with more or less positive attitudes towards collaboration; and (3) to compare attitudes towards interprofessional practice of a class of graduating nursing and medical students from Memorial University, who had completed a formalized interprofessional component as part of their curriculum, with others who had not.

Research Design

A descriptive correlational study design was used to assess nurse and physician attitudes toward collaborative practice. A validated assessment tool (The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration) was utilized to collect data related to this domain (See Appendix: A).

Each participant (n=731) was asked to complete the Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration as well as a demographic questionnaire, which was developed by the main investigator based on demographic factors identified through the review of the available literature as having an effect on the interprofessional collaboration process (See Appendix: B).

Method

Eligibility Criteria

Sample selection:

All subjects meeting the following inclusion/exclusion criteria were invited to participate in the study. Subjects were selected from the St. John's region only, because of easy and affordable access. In the case of practicing nurses and physicians, it was decided to target only those who work in an inpatient care area because the dynamics of their workplace would generate more opportunities for interprofessional interactions between the two during the provision of patient care. The new physician and nurse graduates were also selected based on accessibility, hence the new nurse graduates from the Western Memorial Regional School of Nursing were excluded as were the new physician graduates who left Newfoundland and Labrador upon graduation.

Inclusion criteria:

To be included, a subject was required to have met the following parameters:

For Nurses:

1. Must be a registered nurse employed by the Health Care Corporation of St. John's (HCCSJ) during the period between September to December 2003.
2. Must have been employed by the HCCSJ for at least 6 months
3. Must be designated to one of the following roles:

a. Staff Nurse

b. Patient Care Coordinator

c. Clinical Care Coordinator

d. Discharge Planning Coordinator

e. Community Health Referral Nurse

4. Must be working currently in an in-patient care area
5. Must be working at one or more of the following sites:

a. General Hospital

b. St. Clare's Hospital

c. Waterford Hospital

d. Janeway Hospital

e. Cancer Centre

f. Miller Centre

For Physicians:

1. Must be a licensed physician (intern, resident or physician) working at the Health Care Corporation of St. John's during the period of September to December 2003.
2. Must have been working at the HCCSJ for at least 6 months
3. Must be working currently in an in-patient care area
4. Must be working at one or more of the following sites:

a. General Hospital

b. St. Clare's Hospital

c. Waterford Hospital

d. Janeway Hospital

e. Cancer Centre

f. Miller Centre

For New Graduates:

1. Medical graduates from the 2004 graduation class from Memorial University of Newfoundland.
2. Bachelor of Nursing graduates from the 2004 class from Memorial University of Newfoundland.
3. Must have participated in the required formal interprofessional education program (modules) offered at Memorial University of Newfoundland Schools of Medicine and Nursing.

Exclusion criteria:

Subjects were excluded from this group if:

For Nurses

1. They worked exclusively in an out-patient area
2. They worked exclusively in the operating room
3. They worked exclusively in diagnostic imaging/interventional radiology
4. They worked in specialized roles that would not include responsibility for input to decisions about patient care, or would not involve any opportunity for interaction with physicians.

For Physicians

1. They worked exclusively in an out-patient area
2. They worked exclusively in the operating room
3. They worked exclusively in diagnostic imaging/interventional radiology

4. They worked in specialized areas that would not provide opportunities for sharing responsibility with nurses for patient care or would not involve any opportunity for interaction with nurses.

For New Graduates

1. Those medical and nursing new graduates who moved away upon graduation
2. They did not graduate from Memorial University of Newfoundland's Medical or Nursing School.
3. They did not participate in the required formal interprofessional education program offered at Memorial University of Newfoundland Schools of Medicine and Nursing.

Ethics

This study was approved in two parts. The Memorial University of Newfoundland Human Investigation Committee approved Part A: Assessment of attitudes toward collaborative practice among nurses and physicians on September 19, 2003. Part B: Assessment of attitudes toward collaborative practice among new medical and nursing graduates received full approval on June 3, 2004. In addition the Health Care Corporation of St. John's approved the research study. A written informed consent document was not required because the information was obtained completely anonymously and the return of completed questionnaires by the participants was understood to represent implied consent.

Confidentiality was maintained since no personal identifiers were used and the information collected was not seen by anyone other than the principal investigator and the thesis supervisor. Furthermore, all information collected has been kept in a locked cabinet and computer files, to which only the principal investigator has access.

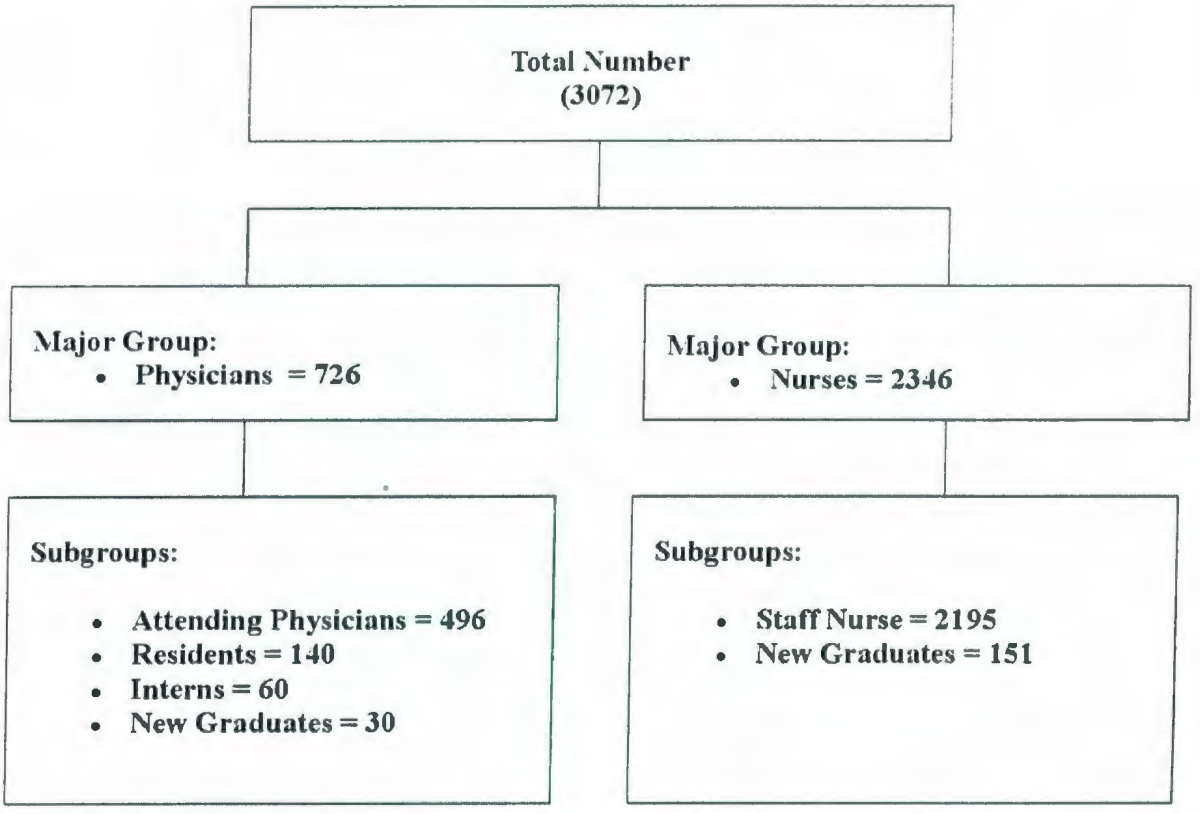
Description of the Subjects

Target Population

The target population includes 726 medical doctors (MDs.) and 2195 nurses. Out of these 726 MDs, 496 are staff physicians, 140 are residents, 60 are interns and 30 are new graduate MDs from the graduating class of 2004. The 496 physicians are distributed among different disciplines, such as Critical Care Units, Child/Women's Health, Diagnostic Imaging, Emergency Departments, Medicine, Mental Health, Perioperative Care, Continuing Care (outpatient) and Surgery. The greater number of physicians was recruited from the Medicine, Surgery, Emergency and Child/Women's Health disciplines, in descending order.

The nurses' group includes 2195 nurses and 151 new graduates from the 2004 graduating class. The 2195 nurses are divided into the following roles: Staff Nurse, Patient Care Coordinator, Clinical Care Coordinator, Discharge Planning Coordinator and Community Health Referral Nurse. In 2004 the Association of Registered Nurses of Newfoundland and Labrador (ARNNL) records show that the majority of nurses are listed as performing the role of staff nurse. Of the 2195 nurses, 2109 are females and 86 are males, 1527 are employed full time, 504 are employed part time and 164 are employed as casual. The new graduates are divided according to the sites from which they graduated, 45 from the MUN School of Nursing site, and 106 from the Centre for Nursing Studies (both located in St. John's).

Figure 3.1 Target Population



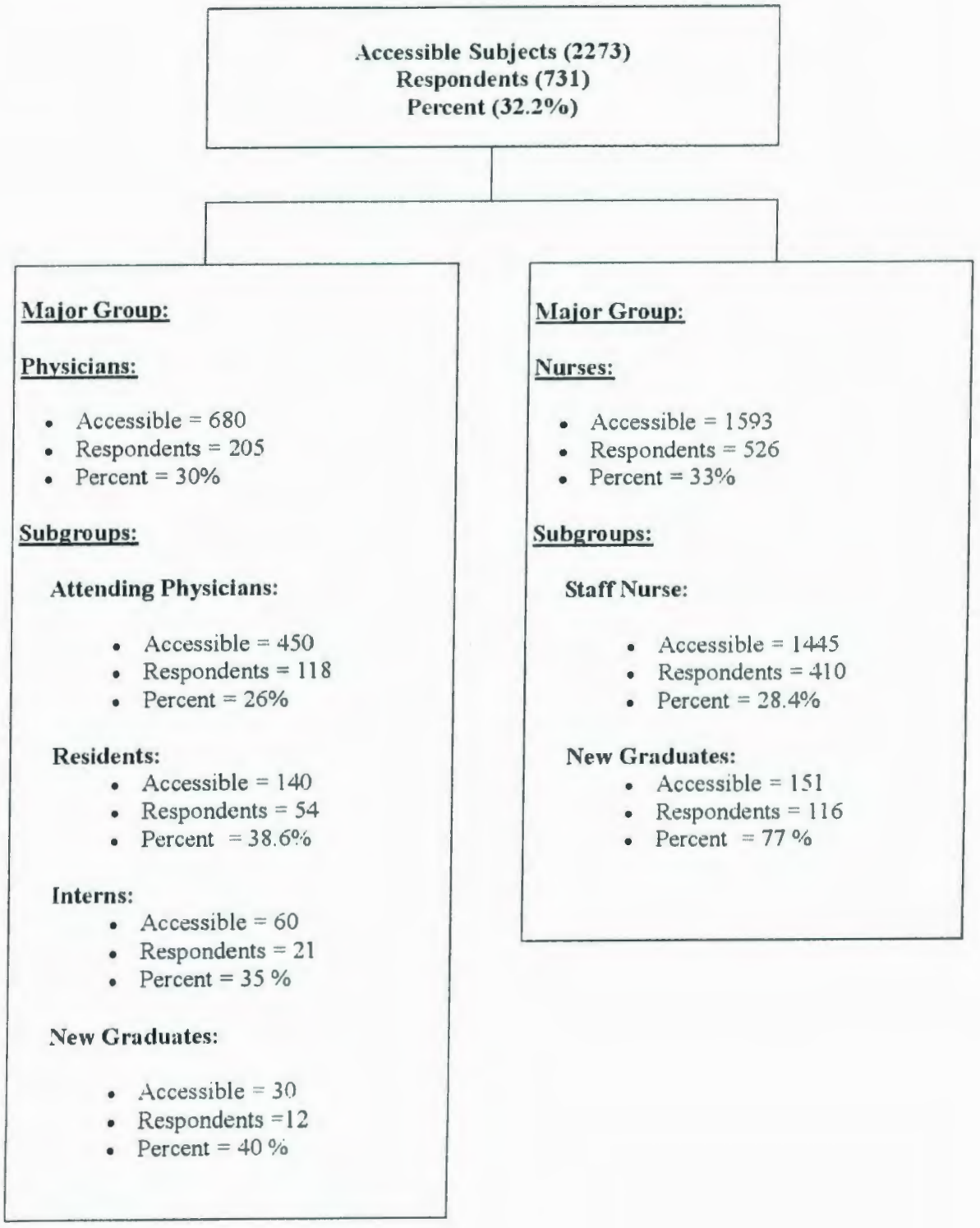
Sampling Frame

The accessible population was selected from the target population once they met the eligibility criteria and included a total of 680 physicians and 1593 nurses (2273). The physician group is composed of 60 interns, 140 residents, 450 staff physicians and 30 new graduates. The nursing group is composed of 1442 nurses and 151 new graduates. This group is further divided into Staff Nurse and Clinical Care Coordinator; however it was not possible to obtain the exact number on each one of these two subgroups because the Human Resources Department of the Health Care Corporation of St. John's lists all nurses as staff nurses and the questionnaires were sent and returned anonymously (See Figure 3.2).

Respondents

Of the total 2273 possible participants, 731 subjects agreed to participate in this study by completing and returning the anonymous questionnaires. The total number of subjects is divided into two major groups, physicians and nurses. The physicians' group totals 205 (30% response rate) participants and is composed of 118 attending physicians (26% response rate), 54 residents (38.6% response rate), 21 interns (35% response rate) and 12 new graduates (40% response rate) who had been exposed to an interprofessional education component (IPE). The nurses' group totals 526 (33% response rate) of which 410 (28.4% response rate) are staff nurses, 116 (77% response rate) are new graduate nurses who had been exposed to an IPE component and 38 of the staff nurses who responded are clinical care coordinators. Out of the total 731 respondents 5 did not return the demographic questionnaire, returning only the Jefferson Scale (completed), therefore there is no demographic data matching these five participants. These five participants were later identified as being staff nurses based on the format used to print copies of the survey as well as a slight modification of the introductory section of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration which matched that of the nurse's group, (Figure 3.2). However, no personal identifiers were included, only their professional group was identified.

Figure 3.2 Total Number of Accessible Subjects and Respondents with Corresponding Response Rate (%)



Data Collection Instrument

The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration (Jefferson Scale) was used as the data collection instrument for this study (See Appendix: A). The rationale to use this data collection instrument is based on the fact that Hojat and Herman (1985) initially developed this instrument in response to the absence of a psychometrically sound instrument that could measure health professionals' attitudes towards nurses' roles. The instrument was developed based on a review of the literature on physician-nurse interactions, decision making, role expectations, authority, autonomy and responsibilities for patient care and monitoring.

Psychometric Testing of the Jefferson Scale

Through intensive psychometric testing some items were refined while others were deleted until only 20 items considered to be significant were kept as part of the scale. This psychometric testing was conducted through the use of pilot studies, in which the 25-item questionnaire was mailed to 84 freshman and sophomore medical students during the academic year of 1982 to 1983 (Hojat & Herman, 1985).

A covering letter indicated that the purpose of the study was used to generate a scale of attitudes towards nurses' role and to investigate the differences in medical students' attitudes towards nurses' role at different levels of training. Confidentiality was assured. However, students could be identified through a two-digit code in the questionnaire, allowing for the disclosure of respondents and non-respondents. A copy of the summary of the study was offered only to those that participated in the study and indicated that they wish one. Three groups of students were used during the psychometric testing. The first group consisted of 15 freshman and sophomore medical

students who had participated in a special summer program in which they worked with nurses in the general hospital and an educational summer program on nursing issues. However, the author does not specify which nursing issues were discussed in this summer program (Hojat & Herman, 1985). The 15 medical students were selected from a group of 46 students who applied for the program. The second group included 31 medical students who had applied for the program but had not been selected. The third group comprised 38 medical students randomly selected from members of the same classes who did not apply for the program.

A single group of 15 freshman students who participated in the summer program in the following year were given the scale both before and after participating in the program. It was expected that the students' scores would be higher on the posttest. This expectation was based on the overall goal of the summer program, which was to improve medical students' attitudes toward nurses as well as to improve their working relationships. The overall response rate was 87% of those who participated in the summer program, 94% for those who applied but were not selected and 66% for the other group who did not apply to the program (Hojat & Herman, 1985).

An initial examination of the correlations between each of the items and the total score of the scale showed statistically significant values for all but five items. Consequently these five items were removed from the scale. After deleting the five items, the highest correlation between item and total score was obtained for item number one (a nurse should be seen as a collaborator with the physician rather than his/her assistant), $r=0.62$ and the lowest correlation was obtained for item five (nurses should be accountable to patients for the nursing care they provide) $r=0.32$. The highest inter-item

correlation was obtained between items one and eight, both of which relate to physician's dominance (r=0.51) and between item 3 and 14 both of which deal with education to improve nurse-physician working relations. This higher correlation between conceptually related items can be interpreted as evidence of construct validity of these items. The highest mean was obtained for item number four (M = 3.67, SD =0.47) indicating that most participants strongly disagree with physicians' dominance over other health care professionals. The lowest mean was found for item eight (M = 1.92, SD =0.87) which suggests that most participants rejected the notion that licensed practical nurses can handle most nursing care tasks as well as registered nurses (Hojat & Herman, 1985).

The descriptive statistics for the original version of the Scale of Attitudes Towards Nurse-Physician Collaboration (included 20 items) obtained from this pilot study, which included 67 freshman and sophomore medical students are as follows: M = 60.91, Mdn = 62, Mode = 62, SD = 6.81, Possible Range = 20-80, Actual Range = 43-79, α reliability =0.84). Thorndike (1982) concludes that the alpha coefficient expresses the average of correlations resulting from all the possible ways of splitting a given test into two halves (as cited in Hojat & Herman, 1985). In this case the alpha coefficient was 0.84, which is considered to be an acceptable result (Hojat & Herman).

The authors hypothesized that those students who participated in the special summer program with nurses would show higher average scores on the scale than their classmates who did not apply for the program. It was further hypothesized that those classmates who apply but were not selected would also score higher on the scale than those who did not apply for the summer program. A one-way analysis of variance was

applied to the total scores in order to test these hypotheses. The results of the test from the first pilot study yield a statistically significant F (F2, 64 = 3.73, P <0.05). The average score for the medical students who participated in the program was 64.00, for those who applied to the program but were not accepted was 61.79 and finally for those who did not apply, 58.28 (Hojat & Herman, 1985).

The Duncan's multiple-range test indicated that the average score for those who participated in the summer program was higher than for those that did not participate in the program. Those that applied for the program but were not accepted scored lower than those that participated in the program and higher than those who did not apply. However, the Duncan's multiple-range test yielded a non-statistically significant result, in terms of differences, between those that applied to the summer program but were not selected and those that participated in the program (Hojat & Herman, 1985).

A second pilot study, in which fifteen medical students (freshmen from the same medical school where the first pilot study was conducted) who participated in the special summer program, completed the scale before and after their participation in the program, revealed the following results: M pretest = 61.87, posttest = 65.9; SD pretest = 5.94, posttest = 5.46; Range pretest = 53-71, posttest = 57-75; α reliability pretest =0.82, posttest =0.80 and the t-test for dependent groups (t14 = 2.61, p> .05) that revealed a statistically significant increase in the post-test scores (Hojat & herman, 1985).

The preliminary data collected and reported in this study corroborates the psychometric soundness of this scale, which was developed to objectively measure the attitudes of physicians towards nurses' role. Evidence for face validity, construct validity and internal consistency were demonstrated for the scale. Despite the limitations of this

study such as small sample size and a relatively low ratio of number of subjects to number of items, the data indicate that the scale is a substantially valid tool for the assessment of attitudes toward nurses' role. Finally, its brevity and simplicity makes the scale easy to use (Hojat & herman, 1985).

Later, Hojat et al. (1997) further modified this instrument to measure attitudes toward nurse-physician collaboration and only 15 out of 20 original items were retained. In order to better reflect its purpose, the name of the scale was also changed from "Measuring Attitudes Toward Nurses" to "The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration". The items in the final version of the Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration are answered on a 4-point Likert-type scale from "strongly agree" to "strongly disagree". An overall higher score reflects a more positive attitude towards collaborative relationship between nurses and physicians. There are four underlying factors identified on this instrument and they are as follows: (1) "Shared education and team work" (including items 1, 3, 4, 5, 6, 14, and 15), (2) "Caring as opposed to curing" (including items 2, 7 and 9), (3) "Nurse's autonomy" (including items 11, 12 and 13), and (4) "Physician's dominance" which includes the remaining two items of the scale (8 and 10) (Hojat et al., 1999). A higher score on the shared education and teamwork dimension shows a greater inclination toward interprofessional education and interprofessional collaboration. A higher score on caring as opposed to curing indicates a more positive view of nurses' contributions to the psychosocial and educational aspects of patient care. A higher score on the nurses' autonomy dimension points toward a higher level of agreement with nurses' involvement in decisions related to patient care and policies. Finally, a higher score on the physician's dominance

dimension indicates rejection of the totally dominant role of physicians in aspects of patient care; the items in this last factor are added as reverse scores (Hojat et al., 1997).

The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration is a self-administered 15-item questionnaire. Subjects are asked to indicate the level of agreement/disagreement with each of the fifteen statements by circling the appropriate number, from 1 to 4. Four corresponds to "Strongly Agree", three corresponds to "Tend to Agree", two corresponds to "Tend to Disagree" and one corresponds to "Strongly Disagree". Therefore a total score for a particular participant is obtained by adding all the scores from each of the 15 items. Total scores range from a minimum of 15 to a maximum of 60. The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration also provides an operational definition of a nurse along with clear instructions on how to complete the scale. This instrument takes approximately five minutes to complete (Hojat et al., 1997).

Other Data Collected

In addition, the respondents were asked to voluntarily provide some demographic information to help identify possible associates of attitudes towards interprofessional collaboration. Four demographic questionnaires (one for physicians, one for nurses, one for the new nursing graduates and one for the new physician graduates) were developed in order to collect this demographic information. The demographic questionnaires were developed based on a review of the research literature regarding nurse physician collaboration. Hojat et al. (2003) recognizes that the degree of shared collaboration taking place between physicians and nurses in the work place is not only influenced by educational factors, but also by pre-set social roles and cultural norms. The

questionnaires contain questions regarding gender, age, level of education and education history, place of origin, work site, occupation, and employment history. It also contains, in the case of practicing nurses and physicians, one 5-point Likert-type item in which the respondents are asked to indicate the level of agreement with the following statement: "there is a high morale among my colleagues". The medical and nursing new graduates, were asked to complete two more 5-point Likert-type items in addition to the one concerning colleagues' morale. These two additional items were added in order to address the evaluation of the interprofessional education in the medical and nursing programs offered at Memorial University of Newfoundland (See Appendix: B).

Procedure

The Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration accompanied by the appropriate demographics questionnaire and a cover letter was distributed to practicing nurses and physicians who met the inclusion/exclusion criteria specific to this study. The surveys were mailed out to physicians and nurses by the Human Resources Department of the Health Care Corporation of St. John's, assuring that the investigators would not have access to any information that would allow them to identify any of the respondents.

The same version of this instrument was also distributed to new physician graduates by the Undergraduate Medical School's Office through internal hospital mail and e-mail. The same instrument was delivered, in-person, to the new graduate nurses. Both, medical and nursing groups are from the 2004 graduation class. Finally, the new graduate nurses were given the surveys after completing their registration exam. Those new graduate nurses who completed the surveys soon after receiving them, were given

the option to place the completed surveys in a box to be collected by the principal investigator. However, all participants were given a period of fifteen to twenty days to return the completed questionnaires. After this period the response rate for each particular group was assessed.

As low response rates were identified for practicing nurses' and the new graduate physicians, an attempt to increase the response rate of these two groups was made by sending them emails clarifying the importance of their contribution to this study. The emails were sent to these two groups through the Undergraduate Studies office and the Health Care Corporation of St. John's. The respondents were also given the choice of acquiring an extra copy of the survey, (in case they had lost the first copy), from the corresponding distributors (the Undergraduate Studies office and the Health Care Corporation of St. John's). As a result of these strategies, the response rate increased for the physician's group (seven more physicians returned the completed questionnaires). However these strategies did not seem to have an effect on the nurses' group, in which the response rate did not change after the implementation of these strategies.

Data Analysis

A database was created using the Statistical Package for Social Sciences (SPSS-version 11.5) to organize the data collected through the returned surveys. Descriptive tables were created using the "Custom Table" menu from SPSS to describe the demographic characteristics of the respondents. Furthermore, a two-way, between groups analysis of variance was used in order to determine which factors (e.g. gender, age, education level, occupation, work experience, work site and employment status)

predicted a higher score on the Jefferson Scale of Attitude Toward Physician-Nurse Collaboration as well as their interaction effect.

In order to determine mean differences between the nurses and physicians group scores in relation to the four underlying factors of the Jefferson Scale (Shared education and team work, Caring as opposed to curing, Nurse's autonomy, and Physician's dominance), a multivariate analysis of variance was used. Finally, once a statistically significant result was obtained (for the overall comparison, before pair-wise comparisons) an adjustment to the significance level for pair-wise comparisons (Bonferroni) was conducted to determine which specific groups differ from each other.

CHAPTER IV

Results

This chapter is divided into five major sections. The first section provides demographic information on the study population. The second section is related to specific demographic information pertaining to the respondents. Section three provides a descriptive analysis of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration results for the two major combined groups, MDs (includes, MDs and new graduate physicians) and RNs (includes, RNs and new graduate nurses). Section three also reports a comparison of the prevailing attitudes toward collaborative practice between MDs, RNs, and new graduate nurses and physician groups individually. The fourth section addresses the second study aim, describing the association between subjects' demographic characteristics and overall and individual items of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration (e.g. gender, age, level of education, work site etc.). Finally, section five is a summary of the major points of the study results.

Description of the Sampling Frame

The sampling frame includes a total of 680 physicians and a total of 1593 nurses who met the eligibility criteria. The physician group is composed 60 interns, 140 residents, 450 attending physicians and 30 new graduates. The physician group is further organized by the different medical programs as follows: 1) The medicine program includes dermatologists, endocrinologists, gastroenterologists, hematologists, oncologists, internal medicine specialists, rheumatologists, nephrologists, neurologists and respirologists (n = 77); 2) The surgery program includes general surgeons, thoracic

surgeons, vascular surgeons, neurosurgeons, plastic surgeons, ophthalmologists, orthopedic surgeons, oral surgeons and urologists (n = 80); 3) The cardiac/critical care program consists of cardiologists, cardiac surgeons, intensivists and critical care specialists (n = 17). 4) The Perioperative Program includes only anesthesiologists, many of whom work in the operating room, but were eligible for the study as they also work in clinics (n = 25). 5) The Emergency/Ambulatory Care Program is comprised of emergency physicians, and general practitioners from the community who do some shift work in the emergency department at the Health Science Complex in St. John's as well as St. Clare's Mercy Hospital (n = 104). 6) The Women's Health Program (n = 19). 7) The Child Health Program includes emergency room physicians, child development and learning rehabilitation specialists, pediatric specialists, neonatologists, neuromotor rehabilitation specialists, pediatric intensive care specialists, anesthesiologists, psychiatrists, and surgeons (n = 85). 8) The Mental Health Program (n = 34). 9) Included in the Rehabilitation/Continuing Care Program are geriatricians, general practitioners and rehabilitation specialists (n = 9). Finally, there were 30 new graduate physicians.

The nursing group is composed of 1442 registered nurses and 151 new graduates. This group is further divided into Staff Nurses and Clinical Care Coordinators (Nurse Managers were excluded from the study as this group did not meet the inclusion/exclusion criteria). Staff Nurses and Clinical Care Coordinators are also divided into the different medical programs, however it was not possible to obtain the exact number in each of these subgroups or how many there are in each program, because the Health Care Corporation of St. John's lists all nurses as "staff nurse" and the study

surveys were sent and returned anonymously. Finally, there were 151 new nursing graduates included in the nursing group.

In order to keep the identity of the respondents confidential, the level of information used here to describe the sampling frame was acquired through the department of human resources at the Health Care Corporation of St. John's as well as through the undergraduate medical and nursing schools located in St. John's. Neither the principal investigator nor any of the thesis supervisors have access to the above information or any personal identifiers that could break the confidentiality code and identify any of the respondents.

Respondent Characteristics

Of the total 2273 possible participants, 731 (32%) subjects agreed to participate in this study by completing and returning the anonymous questionnaires. The total number of subjects is divided into two major groups, physicians and nurses. The physicians' group totals 205 participants and is composed of 118 (57.6%) attending physicians, 54 (26.3%) residents, 21(10.2%) interns and 12 (5.8%) new graduates. The nurses' group totals 526 of which 372 (70%) are staff nurses, 116 (22%) are new graduate nurses and 38 (7.2%) are clinical care coordinators.

The demographic characteristics for both the nursing and the physician groups are shown in Tables 4.1 to 4.9. More than 90% percent of the respondents (two groups combined) are of Canadian origin and over 75% are females (see Table 4.1 and 4.2). Respondents from both groups between the ages 18 to 44 account for approximately 75% of the total (see Table 4.3).

Table 4.4 and 4.5 show the number and percentage of respondents according to level of education. In the nursing group, 47.3% graduated from a diploma program followed by those who acquired a Bachelor of Nursing degree (45.8%). Of the physician group, 16.2% were interns, 26.3% were residents and the remaining practicing physicians. In the case of professional group, 10.2% were interns, 26.3% were residents, 5.8 were new graduate physicians and the remaining 57.5% were attending physicians. In the nurses group 69.7% of the nurses were staff nurses, 22.1% new graduate nurses and 7.2% clinical care coordinators (see Table 4.6).

Tables 4.7 and 4.8 describe the respondents according to the worksite where they practice and the current position they hold. The majority of respondents (42.3%), for both groups, are working at the General Hospital and 67% are employed fulltime.

Finally, Tables 4.9 and 4.10 show the work experience of the respondents within and outside Canada. The majority of the respondents (45.6%) have more than ten years of experience within Canada and 67.7% have no experience outside Canada.

Table 4.1 Demographic Information for the Respondents According to Gender

Gender	**Female**	**Male**	**Missing**	**Total**
Nurses (%)	500 (95)	21 (3.4)	5 (0.95)*	526
Physicians (%)	83 (41.0)	122 (59.0)	0	205
Total %	583 (79.7)	143 (19.6)	5 (0.7)	731

*Note that there are five respondents who did not complete the demographics questionnaire and that they have been added to the nurses' group. Their professional identity was determined because a different color return envelope was used for the nurses and physicians. Also the returned incomplete demographic questionnaires were different for nurses and physicians. However no other personal identifiers that could reveal the identity of the respondents were used.

Table 4.2 Demographic Information for the Respondents According to Origin

Origin	**Canadian**	**Non-Canadian**	**Missing**	**Total**
Nurses (%)	514 (97.7)	7 (1.33)	5 (0.95)*	526
Physicians (%)	158 (77.0)	47 (23.0)	0	205
Total %	671 (92.0)	55 (7.3)	5 (0.7)	731

*Note that there are five respondents who did not complete the demographics questionnaire and that they have been added to the nurses' group. Their professional identity was determined because a different color return envelope was used for the nurses and physicians. Also the returned incomplete demographic questionnaires were different for nurses and physicians. However no other personal identifiers that could reveal the identity of the respondents were used.

Table 4.3 Demographic Information for the Respondents According to Age Groups

Age Categories	**(18-44)***	**(41-60)***	**(60+)**	**(Missing)**	**Total**
Professional Groups					
Nurses (%)	431 (81)	88 (16.7)	2 (0.38)	5 (0.95)	526
Physicians (%)	114 (55.6)	77 (37.6)	14 (6.8)	0	205
Total %	545 (74.6)	165 (22.6)	16 (2.2)	5 (0.7)	731

*Data was collected from four different groups (attending physicians, interns and residents; new graduate physicians; nurses and new graduate nurses) at different times. The age categories were designed to fit each group's characteristics, this explains overlapping and repeating categories.

Table 4.4 Demographic Information for the Respondents According to Level of Education (Nurses' Group)

	D	BN	Masters	PhD	Missing	Total
Respondents (%)	249 (47.3)	241 (45.8)	31 (5.8)	0	5 (0.95)	526

*Note that since respondents were asked for their highest degree, all respondents in this study that reported a Masters degree (30) as their highest degree are also nurses. This could be determined by checking the demographic questionnaires, which were custom made for each group. However no other personal identifiers that could reveal the identity of the respondents were used.
D=Diploma
BN=Bachelor of Nursing

Table 4.5 Demographic Information for the Respondents According to Level of Education

(Physicians' Group)

Level of Education	Intern	Resident	Staff Physician	Total
Respondents (%)	33 (16.2)	54 (26.3)	118 (57.5)	205

Table 4.6 Demographic Information for the Respondents According to the Professional Group

Groups	**Physicians (N=205)**	**Nurses (N=526)**	**Total (N=731)**
Professional Group (%)			
Intern	21 (10.2)*	0	21 (2.8)
Resident	54 (26.3)	0	54 (7.4)
Attending Physician	118 (57.5)	0	118 (16.1)
Staff Nurse	0	367 (69.7)	367 (50.2)
Clinical Care Coordinator	0	38 (7.2)	38 (5.2)
New Graduate Nurse	0	116 (22.1)	116 (15.8)
New Graduate Physician	12 (5.8)*	0	12 (1.6)
Missing	0	5 (0.95)	5 (0.7)
Total	205	526	731

* The number of interns here differs from the number of interns in Table 4.3 because the interns group here is separated into interns and new graduate physicians.

Table 4.7 Demographic Information for the Respondents According to Worksite

Groups	**Physicians (N=205)**	**Nurses (N=526)**	**Total (N=731)**
Worksite (%)			
General Hospital	95 (46.3)	214 (40.6)	309 (42.3)
St. Clare's Hospital	24 (11.7)	96 (18.2)	120 (16.4)
Janeway Hospital	29 (14.1)	67 (12.7)	96 (13.1)
Waterford Hospital	3 (1.4)	27 (5.13)	30 (4.1)
Multiple Sites	42 (20.5)	1 (0.19)	43 (5.9)
N/A	12 (5.8)	116 (22.1)	128 (17.5)
Missing	0	5 (0.95)	5 (0.7)
Total	205	526	731

Table 4.8 Demographic Information for the Respondents According to Employment Status

Groups	**Physicians (N=205)**	**Nurses (N=526)**	**Total (N=731)**
Employment (%)			
Full Time	186 (91.0)	301 (57.0)	487 (67.0)
Part Time	7 (3.4)	92 (17.3)	99 (13.4)
Casual	0	12 (2.3)	12 (1.6)
N/A	12 (5.6)	116 (22.1)	128 (17.3)
Missing	0	5 (0.95)	5 (0.7)
Total	205	526	731

* Note that those respondents that selected Not Applicable (N/A) are the new graduate physicians (12) and the new graduate nurses (116). These two groups were not practicing at the time the surveys were distributed.

Table 4.9 Demographic Information for the Respondents According to Years of Working Experience within Canada

Groups	Physicians (N=205)	Nurses (N=526)	Total (N=731)
Experience (%)			
<3 years*	58 (28.3)	0	58
3-10 years*	47 (23)	0	47
>10 years	88 (43)	246 (47)	334
1-5years*	0	89 (16.9)	89
6-10years	0	70 (13.3)	70
N/A	12 (5.8)	116 (22.1)	128
Missing	0	5 (0.95)	5
Total	205	526	731

*Data was collected from four different groups (attending physicians, interns and residents; new graduate physicians; nurses and new graduate nurses) at different times. Each work experience category was designed to fit each group's characteristics, which explains the overlapping and repeating categories. Also those respondents that selected Not Applicable (N/A) are the new graduate physicians (12) and the new graduate nurses (116).

Table 4.10 Demographic Information for the Respondents According to Years of Working Experience Outside Canada

Groups	Physicians (N=205)	Nurses (N=526)	Total (N=731)
Experience (%)			
None	137 (66.8)	358 (68)	495
<3 years*	24 (11.7)	2 (o.38)	26
3-10 years*	22 (10.7)	0	22
>10 years	10 (4.8)	4 (0.76)	14
<1 year	0	14 (2.7)	14
1-5years*	0	25 (4.8)	25
6-10years	0	2 (0.38)	2
N/A	12 (5.8)	116 (22.1)	128
Missing	0	5 (0.95)	5
Total	205	526	731

*Data was collected from four different groups (attending physicians, interns and residents; new graduate physicians; nurses and new graduate nurses) at different times. Each work experience category was designed to fit each group's characteristics, which explains the overlapping and repeating categories. Also those respondents that selected Not Applicable (N/A) are the new graduate physicians (12) and the new graduate nurses (116).

a. EOC = Experience Outside Canada

Results of the Jefferson Scale for Major Groups and Individual Subgroups

This section represents an overview of study findings on physicians and nurses' attitudes towards collaborative practice as reflected by their overall scores on the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration (Jefferson Scale) as well as the scores for the four underlying factors.

Total Score for the Jefferson Scale Major Groups and Subgroups

Table 4.11 presents the means and standard deviations of total scores for all subgroups combined (major groups) as well as the individual scores for each subgroup. The physicians' group includes the interns, residents, attending physicians and new graduate physicians. The nurses' group includes staff nurses, clinical care coordinators and new graduate nurses. The reader is reminded that higher scores on the Jefferson Scale represent more positive attitudes toward collaborative practice.

On the total score for the Jefferson Scale, nurses in general reported more positive attitudes toward nurse-physician collaboration than did the physicians. The nurses as a group obtained a mean score (M = 54.76) that was significantly greater than that obtained by the physician's group (M = 51.36).The study findings also indicate that most Clinical Care Coordinators have a more positive attitude toward collaborative practice (M = 56.34) followed by the staff nurses (M = 54.87), the new graduate nurses (M = 53.88), the new graduate physicians (M = 53.00), the attending physicians (M = 52.27) and the residents (M = 50.04). Finally, the interns' group has the most negative attitudes toward collaborative practice as indicated by their lower scores (M = 48.71). In order to avoid misleading results and to provide an overall comparison between the two major groups, respondents were grouped into two major groups, physicians and nurses (see Table 4.11).

Table 4.11 Mean and Standard Deviation Scores of the Jefferson Scale According to Occupation for (n=731)

Group/Subgroup	**M**	**SD**	***t***	**Significant $p < 0.05$**	**Total N= 731**
Physicians	51.36	5.61	-9.55	0.000	205
Nurses	54.76	3.70			526
Physicians/subgroups					
Interns	48.71	6.33			21
Residents	50.04	5.63			54
Attending Physicians	52.27	5.33			118
New Graduate Physicians	53.00	4.72			12
Nurses/subgroups					
Staff Nurses	54.87	3.45			294
Clinical Care Coordinator	56.34	2.81			38
New Graduate Nurses	53.88	4.46			116

a. $F_{6, 724} = 20.70$, $\eta^2 = 0.146$

Underlying Factors of the Jefferson Scale for Major Groups

The representation of findings in Table 4.12 and Tables 4.13 to 4.16 is organized according to each underlying factor of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration. However, a difference exists between the two sets of Tables, Table 4.12 describes the results for the major groups (physicians versus nurses) and Tables 4.13 to 4.16 describe the results for the subgroups within professions. Also the results on table 4.12 were obtained using a series of t-tests and the results for tables 4.13

to 4.16 were obtained using a one-way between groups analysis of variance (one-way ANOVA). In analyzing the pattern of responses to individual items on the Jefferson scale, the percentage of positive and negative responses for each individual item of the Jefferson Scale was computed by collapsing all levels of agreement (positive) and disagreement (negative), respectively (i.e. scores 1 or 2 versus 3 or 4).

Share education and team work.

Regarding each of the four underlying factors present on the Jefferson Scale, nurses reported more positive attitudes on all four than the physicians' group. For example: The underlying factor "Shared Education and Team Work" which includes items 1,3,4,5,6,14 and 15 of the Jefferson Scale. The data analysis (t = -10.437, p= 0.000) indicates that nurses (M = 26.70) showed more support for the implementation of interdisciplinary education and interprofessional collaboration than did the physicians' group (M = 24.93).

Caring as opposed to curing.

The underlying factor "Caring as Opposed to Curing" includes items 2, 7, and 9 and a higher score on this factor indicates a more positive view of nurses' contributions to psychosocial and educational aspects of patient care. Although a small difference, the study results (t=-5.294, p= 0.000) indicate that nurses (m =10.70) felt more positive toward this underlying factor than physicians (m = 10.12).

Nurses' autonomy.

Similarly, the underlying factor "Nurses' Autonomy" that includes items 11, 12 and 13 of the Jefferson Scale. A higher score on this factor indicates a higher level of agreement with the involvement of nurses in decisions related to patient care and polices.

The study findings (t = - 2.594, p = 0.010) indicate that nurses (M = 10.85) showed a slightly more positive attitude toward this underlying factor than the physicians' group (M = 10.59).

Physician's dominance.

Finally, the underlying factor "Physician's Dominance" that includes the remaining two items (8 and 10) of the Jefferson Scale and a higher score on this item suggests a rejection of the dominant role of physicians in aspects of patient care; the items in this factor were added as reverse scores. The study results (t = - 6.357, p = 0.000) indicate that nurses had more positive attitudes (M = 6.47) toward this underlying factor than physicians (M = 5.72) Indicating that nurses who participated in this study showed a greater degree of rejection toward the dominant role of physicians (see Table 4.12).

Table 4.12 Mean and Standard Deviation Scores of the Jefferson Scale According to Occupation for Major Groups (N=731)

Underlying Factor	Group	M	SD	*t*	Significant p < 0.05	Total N= 731
Shared Education and Team Work	Physicians	24.93	02.95	-10.437	0.000	205
	Nurses	26.70	01.57			526
Caring as Opposed to Curing	Physicians	10.12	01.64	-5.294	0.000	205
	Nurses	10.70	01.26			526
Nurses' Autonomy	Physicians	10.59	01.32	-2.594	0.010	205
	Nurses	10.85	01.21			526
Physician's Dominance	Physicians	05.72	01.46	-6.357	0.000	205
	Nurses	06.47	01.37			526

Note: Included in the Underlying Factor "Shared Education and Team Work" are items 1, 3, 4, 5, 6, 14 and 15. In the Underlying Factor "Caring as Opposed to Curing" are items 2, 7 and 9. Nurses' Autonomy includes items11, 12 and 13 and Physician's Dominance includes items 8 and 10.

Underlying Factors of the Jefferson Scale for Subgroups

Shared education and team work. (see Table 4.13)

The data analysis indicates ($F_{3, 726} = 38.190$, p= 0.000) that practicing nurses (M=26.80) showed a greater inclination toward interdisciplinary education and interprofessional collaboration than new graduate nurses (M =26.36), new graduate physicians (M=25.50) and attending physicians (M = 24.90). Post-hoc comparisons using the Bonferroni procedure further indicate that the mean score for the physicians' group is significantly different from the nurses' group and new graduate nurses' group. However, there is no significant difference between the physicians and the new graduate physicians.

Finally, the difference between practicing nurses, new graduate nurses and new graduate physicians did not reach significance.

Caring as opposed to curing. (see Table 4.14)

A higher score on this factor indicates a more positive view of nurses' contributions to the psychosocial and educational aspects of patient care. The study results indicate ($F_{3, 727} = 9.648$, p= 0.000) that new graduate nurses (M = 10.73), practicing nurses (M = 10.72) and new graduate physicians (M = 10.50) have more positive views than practicing physicians (M = 10.09), in relation to this underlying factor. Post-hoc comparisons using the Bonferroni procedure further indicate that the mean score for the physicians' group is significantly different from the nurses' group and new graduate nurses' group. However, post hoc tests using Bonferroni procedure indicate that there is no significant difference between the physicians and the new graduate physicians. Moreover, there is no significant difference between nurses, new graduate nurses or new graduate physicians.

Nurses' autonomy. (see Table 4.15)

A higher score on this factor indicates a higher level of agreement with nurses' involvement in decisions related to patient care and polices. The study findings show ($F_{3, 726} = 4.400$, p= 0.004) that for the most part practicing nurses (M = 10.92) have more positive attitudes towards autonomy in the work place than the new graduate physicians (M = 10.66), new graduate nurses (M = 10.59) and attending physicians (M = 10.58). Post-hoc comparisons using the Bonferroni procedure further indicate that there is a significant difference only between the mean score for the physicians' and the nurses' groups.

Physician's dominance. (see Table 4.16)

A higher score on this item indicates rejection of the dominant role of physicians in aspects of patient care; the items in this factor were summed as reverse scores. The study results indicate ($F_{3, 726} = 17.229$, p= 0.000) that practicing nurses (M = 6.55) and new graduate physicians (M = 6.33) show a more positive view than new graduate nurses (M = 6.19) and attending physicians (M= 5.68). Post-hoc comparisons using the Bonferroni procedure further indicate that the mean score for the physicians' group is significantly different from the nurses' group and new graduate nurses' group. However, there is no significant difference between the physicians and the new graduate physicians. Finally, there is no significant difference between nurses, new graduate nurses or new graduate physicians.

Table 4.13 Mean and Standard Deviation Scores of the Jefferson Scale's underlying factor "Shared Education and Team Work" according to Occupation (major subgroups) for (N=731)

Underlying Factors	**Subgroup**	**M**	**SD**	**Total N=(731)**
Shared Education and Team Work	Physician	24.90	2.96	193
	Nurse	26.80	1.41	410
	New Graduate Nurses	26.36	2.00	116
	New Graduate Physicians	25.50	2.90	12

a. $F_{3, 726} = 38.190$, $\eta^2 = 0.136$, p= 0.000

Table 4.14 Mean and Standard Deviation Scores of the Jefferson Scale's underlying factor "Caring as Opposed to Curing" according to Occupation (major subgroups) for (N=731)

Underlying Factors	Subgroup	M	SD	Total N= (731)
Caring as Opposed to Curing	Physician	10.09	1.65	193
	Nurse	10.72	1.28	410
	New Graduate Nurses	10.73	1.22	116
	New Graduate Physicians	10.50	1.44	12

a. $F_{3, 727} = 9.648$, $\eta^2 = 0.038$, p= 0.000

Table 4.15 Mean and Standard Deviation Scores of the Jefferson Scale's underlying factor "Nurses' Autonomy" according to Occupation (major subgroups) for (N=731)

Underlying Factors	Subgroup	M	SD	Total N=731
Nurses' Autonomy	Physician	10.58	1.34	193
	Nurse	10.92	1.14	410
	New Graduate Nurses	10.59	1.41	116
	New Graduate Physicians	10.66	0.77	12

a. ($F_{3, 726} = 4{,}400$, $\eta^2 = 0.018$, p= 0.004)

Table 4.16 Mean and Standard Deviation Scores of the Jefferson Scale's underlying factor "Physician's Dominance" according to Occupation (major subgroups) for (N=731)

Underlying Factors	Subgroup	M	SD	Total N=(731)
Physician's Dominance	Physician	5.68	1.48	193
	Nurse	6.55	1.28	410
	New Graduate Nurses	6.19	1.61	116
	New Graduate Physicians	6.33	0.77	12

a. $F_{3, 726} = 17{,}229$, $\eta^2 = 0.066$, $p = 0.000$

Individual Items of the Jefferson Scale (See appendix: C)

Individual items making up the Jefferson Scale provide a greater insight into respondents' perceptions. Specifically, the majority of nurses (92.4%) agreed that a nurse should be viewed as a collaborator and a colleague rather than an assistant as compared to 59.5% of the physicians. Over seventy three percent (73.6%) of nurses agreed that nurses are qualified to assess and respond to patient's psychological needs as compared to 54.6% of physicians, 79.7% of nurses agreed that medical and nursing students should be involved in team work during their education in order to understand their respective roles as compared to 60% of physicians, 91.4% of nurses agreed that nurses should be involved in making policy decisions as compared to 72.2% of physicians and 92.6% of nurses agreed that nurses should be accountable for the care they provide to patients as compared to 91.2% of physicians.

Furthermore, 56.3% of the nurses agree that there are many overlapping areas of responsibility between physicians and nurses as compared to 49.3% of physicians, 45.2% of nurses agreed that nurses have special expertise in patient education and psychological counseling as compared to 36.1% of physicians, 71.1% of nurses agreed that both physicians and nurses should contribute to decisions regarding the hospital discharge of patients as compared to 61.5% of physicians and 94.9% of nurses as compared to 86.3% of physicians agreed that nurses should clarify a physician's order when they felt that it might have the potential for detrimental effects on the patient.

Most nurses (78%) disagree with doctors being the dominant authority in all health care matters (tend to disagree = 37.1% and strongly disagree = 39.7) as compared to 56.6% of physicians (tend to disagree = 39.5% and strongly disagree = 17.1%). Similarly, 86.5% of nurses disagree with the statement that the primary function of the nurse is to carry out the physician's orders (tend to disagree = 32.9% and strongly disagree = 53.6%) as compared to 83.9% of physicians (tend to disagree = 51.7% and strongly disagree = 32.2%), 93.1% of nurses agreed that nurses should be responsible for monitoring the effect of medical treatment (tend to agree = 43.7% and strongly agree = 49.4%) as compared to 90.7% of the physicians (tend to agree = 47. 3% and strongly agree = 43.4%), 99.6% of nurses agreed that physicians should be educated to establish collaborative relationships with nurses (tend to agree = 88.2% and strongly agree = 11.4%) as compared to 92.7% of physicians (tend to agree = 33.2% and strongly agree = 59.5%) and 99.3% of nurses agreed that learning about the interprofessional relationship between physicians and nurses should be included in their educational programs (tend to agree = 18.3% and strongly agree = 81.0%) as compared to 91.2% of physicians (tend to

agree = 37.1% and strongly agree = 54.1%). Finally, both nurses and physicians agreed with the statement (94.6%) that nurses should be involved in making policy decisions concerning the hospital support services upon which their work depends (See Appendix: C).

Interrelationship among Study Variables

This section examines the association of personal and professional characteristics (i.e., gender, place of origin, age, level of education, professional group, worksite, employment status, years of experience within and outside Canada and morale among colleagues) with the Jefferson Scale of Attitude Toward Nurse-Physician Collaboration scores. One-way between-groups multivariate analysis of variance (MANOVA) and the t-test for independent groups were used to identify group differences. The Bonferroni procedure was used to identify pairwise differences in group means for ANOVA. The variable called eta-squared and written η^2 was used to determine the strength of the relationship among variables. Eta-squared always yields a number between zero and one and can be interpreted as the proportion of variance in the dependent variable that can be attributed to the independent variable (Norman & Streiner, 2000).

Impact of Personal Characteristics on Total Score for the Jefferson Scale

The findings revealed several factors significantly associated with the total score for the Jefferson Scale including gender, level of education, professional group, worksite, experience within Canada and perception of colleagues' morale. The findings also show that the professional group and level of education have the closest relationship with the total score for the Jefferson Scale; it also suggests that these may be highly correlated. There were no significant differences observed for place of origin, age, employment status, experience outside Canada and exposure to pre-licensure interprofessional education. Table 4.17 summarizes these study findings.

Gender

Female respondents had significantly more positive attitudes towards nurse-physician collaboration than the male respondents ($F_{2, 728'} = 14.58$, and $p < .05$). However, female nurses (M= 54.7, n=501) had significantly more positive attitudes towards interprofessional collaboration than their counterparts the female physicians (M= 51.3, n=82). Furthermore, Post Hoc comparisons showed that there was no significant differences between female and male (M=51.39, n=123) physicians' scores. Finally, these post hoc comparisons showed no significant differences between female and male (M=55.65, n=20) nurses. However, the small number of male nurses (n=20) could account for this lack of significance.

Level of education

Regarding the level of education, respondents with more than one degree had the most positive attitudes towards nurse-physician collaboration including PhDs followed by Diploma graduates, Masters, Bachelor of Nursing, physicians, interns and residents ($F_{6, 724} = 17.84$, $p < .05$). However, since level of education is not monotonically associated with the total score for the Jefferson Scale, these results are more indicative of an association between professional groups (nurses vs. physicians) and the total score for the Jefferson Scale than an association between the level of education and the total score for the Jefferson Scale. Post-hoc comparisons using Bonferroni indicate that the mean score for the interns' (M=50.27, SD = 6.09) and residents' (M = 50.05, SD = 5.63) groups were significantly different from the diploma (M=55.0, SD = 3.43), bachelor of nursing (M=54.51, SD = 3.86) and masters (M= 55.04, SD = 4.14). The physician's group (M= 52.27, SD = 5.33) was significantly different from the diploma (M=55.0, SD = 3.43), and bachelor of nursing (M=54.51, SD = 3.86) groups. However the physician group was not significantly different from the masters group (M= 55.04, SD = 4.14). Furthermore, no differences were found between Intern (M=50.27, SD = 6.09), residents' (M = 50.05, SD = 5.63) and physicians (M= 52.27, SD = 5.33). Finally, there were no differences between the diploma (M=54.92, SD = 3.52), bachelor of nursing (M=54.46, SD = 3.88), and masters (M= 55.04, SD = 4.14).

Worksite

Respondents working at The Waterford Hospital had the most positive attitudes toward nurse-physician collaboration, followed by The Janeway hospital, St. Clare's Mercy Hospital, The General Hospital and those that have just graduated represented by

not applicable (N/A). Respondents who work at more than one site had the most negative attitudes toward nurse-physician collaboration ($F_{6,724'} = 5.873$, $p < .05$). Post-hoc comparisons using the Bonferroni procedure shows that the mean score for the group working at more than one site (>one M = 50.09) was significantly different from all the other groups, the General Hospital (M=53.89), the St. Clare's Mercy Hospital (M= 54.02), the Janeway Hospital (M=54.56), the Waterford Hospital (M= 55.16), and those who have just graduated represented by N/A (M=53.80). No other statistically significant differences were found among these groups.

Experience within Canada

With respect to years of experience within Canada, the initial six categories were collapsed into three categories in order to eliminate the confounding factor "professional group". Test results show that respondents with the most experience within Canada, which includes categories 3-10 years, 6-10 years and >10 years of experience, had the most positive attitudes toward nurse-physician collaboration followed by those with the least amount of experience (includes category N/A or no work experience). Those with an intermediate amount of experience (includes categories, <3 years, <1 year and 1-5 years) reported the most negative attitudes toward collaborative practice ($F_{3, 727} = 3.437$, $p < .05$). Post-hoc comparisons using Bonferroni further indicate that the mean score for those with an intermediate amount of experience within Canada (M = 52.67, SD =4.89) is significantly different from all the other two groups (Most experience, M= 54.15, SD= 4.45 and least experience, M= 53.80, SD= 4.47). No other differences were found among these groups.

Workplace morale

Finally, those respondents that reported higher level of morale among their colleagues also had the most positive attitudes toward nurse-physician collaboration and those that were neutral (neither agree nor disagree) reported the most negative attitudes toward collaborative practice ($F_{5,725} = 6.35$, $p < .0042$). Post-hoc comparisons using Bonferroni indicate that the mean score for the neither agree nor disagree group (M= 51.19, SD= 6.35) was significantly different from all the other groups (strongly agree M= 54.66, SD= 3.90; mildly agree M= 53.96, SD= 3.97; mildly disagree M= 53.96, SD= 4.34 and strongly disagree M= 54.17, SD= 4.80). No other significant differences were found among these groups.

Interaction effects among the demographic characteristics

Tests for interaction effects were performed for all factors, however, Table 4.17 only shows interaction tests involving those factors that were found to be significantly associated with the total score for the Jefferson Scale (i.e., gender, level of education, professional group, worksite, experience within Canada and colleagues' morale) and the interaction test for pre-licensure interprofessional education. The results from these tests showed only two statistically significant interactions, namely between worksite and gender ($F_{12, 718} = 3.766$, p= 0.002), between work experience outside Canada and gender ($F_{14, 716} = 3.424$, p= 0.002) and between exposure to interprofessional education and gender ($F_{4, 726} = 5.563$, p= 0.019). No significant interaction effects were found between gender and occupation, gender and education, occupation and worksite, workplace morale and occupation, experience within Canada and gender, origin and occupation, age

and occupation, employment status and occupation, and finally between level of education and professional group.

Table 4.17 Personal Characteristics (demographics) Impact on Total Scores for the Jefferson Scale

Demographics	**F**	**η^2**	**Significant P = 0.05**	**Interaction Effects Significant P = 0.05**
Gender	14.58	0.039	0.000	gender*ProfessionalG22 = 0.615
Level of Education	17.85	0.129	0.000	education* gender = 0.542
				education*ProfessionalG2= 0.455
Professional Group	33.32	0.121	0.000	ProfessionalG2*worksite1 = 0.067
Worksite1	5.87	0.046	0.000	worksite1*gender = 0.002
Workplace Morale	6.35	0.042	0.000	workplaceM*ProfessionalG2= 0.456
Experience Within Canada	3.437	0.014	0.017	experin2* gender = 0.067
Origin	1.133	0.003	0.323	origin*ProfessionalG2 = 0.806
Age	0.122	0.000	0.885	age3*ProfessionalG2 = 0.093
Employment Status	0.829	0.005	0.507	employS*ProfessionalG2 = 0.434
Experience Outside Canada	1.113	0.011	0.352	experiout1* gender = 0.002
Interprofessional Education	0.021	0.000	0.980	interproEdu2* gender = 0.01

a. Jefferson Scale = Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration
b. workplaceM = Workplace Morale
c. experin2 = Experience Within Canada
d. employs = Employment Status
e. experiout1= Experience Outside Canada
f. interproEdu2 = Exposure to Interprofessional Education

Summary

In general, nurses had more positive attitudes towards nurse-physician collaboration than their counterparts, physicians. With regard to each of the four underlying factors present on the Jefferson Scale, nurses also scored higher than the physicians' group.

Nurses had significantly more positive views towards interdisciplinary education and interprofessional collaboration, towards nurses' contributions to the psychosocial and educational aspects of patient care, and towards nurses' involvement in decisions related to patient care and policies, but rejected the dominant role of physicians in aspects of patient care. Similarly, nurses (for major subgroups) had more positive views concerning all the underlying factors of the Jefferson Scale. The findings also indicate that level of education and professional group had the strongest effect on the total score for the Jefferson Scale (suggesting that these may be highly correlated) followed by gender differences, worksite morale and experience within Canada.

Finally, the data analysis revealed a lack of association between the total score for the Jefferson Scale and exposure to pre-licensure interprofessional education. However, there was not a good control group to test the effects of interprofessional education at the pre- licensure level. The comparison (not exposed to pre-licensure interprofessional education n= 603) group differs from this group (exposed to pre-licensure interprofessional education n=128) in terms of age, work experience and level of education. For instance 96% of those that were exposed to pre-licensure interprofessional education were between the ages of 18 and 34 years of age differing from the control group in which 69% were between the ages of 30 to 60 years. Also, those exposed to pre-licensure interprofessional education were either a new graduate bachelor of nursing or a

new graduate physician with no prior or minimal work experience in these fields. This contrasts with the control group in which 75% of the respondents reported work experience between 3 and more than 10 years.

CHAPTER V

Discussion

The purpose of this study was to conduct an assessment in the St. John's region of acute care nurses' and physicians' attitudes toward collaboration with the goal of identifying issues that might affect the development and implementation of interprofessional education. Specific objectives of this study were: (a) To identify the prevailing attitudes towards collaborative practice among nurses and physicians in the workplace in the St. John's region, (b) To identify factors associated with more or less positive attitudes towards collaboration, and (c) To compare attitudes towards interprofessional practice of a class of graduating nursing and medical students from Memorial University, who had completed a formalized interprofessional component as part of their curriculum, with those of others who had not.

Summary of Conclusions from Results

In general, the nurses who participated in the current study had more positive views towards interdisciplinary education and interprofessional collaboration (scored higher in the Jefferson Scale) than their counterparts the physicians. Nurses in the present study also scored higher in all of the four underlying sub-scales of the Jefferson scale, namely Shared Education and Team Work, Caring as Opposed to Curing, Nurses' Autonomy and Physician's Dominance. The findings in the current study also showed that among the demographic variables measured in the current study, level of education had the strongest effect on the total score for the Jefferson Scale accounting for approximately 12.9% of the explained variance, followed by the professional group that

accounted for 12.1%, worksite (4.6%), workplace morale (4.2%), gender (3.9%), and experience within Canada accounted for 1.4% (see table 4.16).

The current study's data analysis also revealed a lack of association between the total score for the Jefferson Scale and exposure to pre-licensure interprofessional education. However, there was not a good control group to test the effects of interprofessional education at the undergraduate level. The comparison group differed from this group in terms of age, work experience and level of education.

Discussion of Findings

The findings in the current study represent the views of practicing nurses and physicians as well as new nursing and medical graduates concerning interprofessional collaboration in the St. John's region. The findings also identify those factors, which showed a significant association with the attitudes towards interprofessional collaboration in the workplace among the nurses and physicians who participated in the current study.

These findings are comparable to those reported in similar studies conducted by Hojat et al. (2003) in which American and Israeli nurses, working within a health care system which, like that of Canada encourages the use of a complementary model of care delivery instead of a hierarchical model which places more emphasis on factors such as gender, division of labor, role stereotypes and professional elitism (Sweet &Norman, 1995). The results from the study by Hojat showed that Israeli and American nurses who participated had more positive attitudes towards nurse-physician collaborative practice than the physicians. As well, Rosenstein (2002) reported analogous study findings where the physicians viewed the collaborative nurse-physician relationship as less important than did the nurses who participated in their study.

The findings in the current study are also in accord with the principle of "least interest" first described by Waller and Hill (1951), which hypothesized that those in a position of higher power are less interested or less likely to express the need for a collaborative relationship. Based on this principle one can expect physicians to appear to be less positive than nurses regarding the sharing of power and therefore to express less interest in the collaborative process. As previously described, Baggs et al. (1999) reported absence of participation among a group of MICU physicians invited to take part in a study designed to investigate the association between physician-nurse collaboration in three intensive care units (ICUs) and patient outcome. This absence of participation on the physicians' part was attributed, by the researchers, to time restrictions and a lack of interest in the study.

In contrast, the accessible physician population in the current study showed a high degree of interest in this topic, as demonstrated by their reasonable percentage of response. Furthermore, these differences in scores between the nurses and physicians in the current study are smaller than those reported in similar studies conducted by Hojat et al. (2001; 2003). It could be that the implementation of the interprofessional education project by the Center for Collaborative Health Professional Education at Memorial University of Newfoundland has increased awareness of this issue among medical and nursing students as well as among faculty members and practicing physicians, some of whom served as facilitators. This may also explain why new graduate physicians showed slightly more positive attitudes towards interprofessional education and interprofessional collaboration than the practicing physicians. As well, the lack of significant difference between new graduate nurses and physicians in relation to the Jefferson's scale

underlying factors of nurses' autonomy and physician's dominance could be the result of IPE. Additionally, this contrast between the current study findings and previous research regarding nurse-physician collaboration could be explained by the fact that St. John's is a small city with small population. Places with small populations may provide more opportunity for social interactions among their inhabitants, including students and practicing nurses and physicians. It is through social interaction that people learn about and understand each other. During the implementation of an interprofessional health promotion course involving nursing, pharmacy and nutrition, Drinka and Clark (2000) noticed that students early in the course sat in groups according to their profession. Later this sitting pattern was broken and students began to sit according to other factors such as wanting to talk to each other and similarities in personalities. The authors attributed this positive change in sitting patterns to increased number of interactions between the students in this interprofessional group.

The current study findings also indicated that overall female nurses and physicians showed more positive attitudes towards collaborative practice. However, it also showed no significant difference between female and male physicians which is consistent with findings by Hojat et al. (2001). Furthermore, the current study findings identified that other demographic variables such as level of education, workplace morale and work experience within Canada had a significant effect on the total score of the Jefferson Scale for practicing nurses and physicians. Henneman et al. (1995) also identified level of education and prior work experiences among the essential antecedents to effective collaborative practice. The Center for Collaborative Health Professional Education at Memorial University of Newfoundland (2007) also reported similar results

to those found in the current study after comparing scores of medical, nursing, social-work and pharmacy female and male students regarding their attitudes toward interprofessional education and collaboration.

Finally, the study results showed a lack of association between the total score for the Jefferson Scale and exposure to undergraduate interprofessional education (IPE). However, this lack of association could be attributed to the fact that in the current study there was not a good control group for comparison. The control group differs from the study group in terms of age, work experience and level of education and also had no prior exposure to pre-licensure interprofessional education. No comparable study that compares attitudes between nurses and physicians in relation to exposure to IPE was identified.

It should be noted however, that even though not statistically significant, the new graduate physicians (exposed to IPE) showed slightly better attitudes regarding the underlying factors of "Nurse's Autonomy" and "Physician's Dominance" than the new graduate nurses (exposed to IPE). These results contrast with those from Hojat et al. (1997), which reported significant differences, in the opposite direction, between nursing and medical student regarding these areas. However, the new graduate physicians' group (exposed to IPE) was small (n= 12) which could account for the lack of statistically significant difference. It is also possible that the amount of exposure to IPE provided by the IPE modules at Memorial University of Newfoundland was not sufficient to make a difference. Finally, the timing of the testing could have also been a factor, since at the time the questionnaires were distributed; the new graduates nurses had just graduated and

could have been more concerned with finding employment and doing job interviews than with their collegial relationships.

Identified Barriers and Targets to Guide an Interprofessional Education Intervention

One of the research aims of this study was to identify factors that may assist in the development of the most appropriate pedagogical approach to interprofessional education, particularly those factors that may impede the development and implementation of such education. Several issues that constitute barriers to the development and successful implementation of interprofessional education (IPE) were identified from the study data as well as from the available literature on the subject of IPE implementation. These identified barriers can be grouped as students, faculty, health educational institutions related and IPE evaluation issues. There were also positive findings which derived primarily as a result of reading the available literature on IPE. These findings include the development of IPE projects across Canada and the financial support provided by the federal and provincial governments.

Identified Barriers to IPE Development

Student related issues.

Although the current study findings are not conclusive, they suggest that new graduate nurses who were exposed to IPE reported slightly better overall attitudes towards interprofessional practice and education than the new graduate physicians who were also exposed to IPE. Studies by Barr (2000), Gilbert et al. (2004), Hojat et al. (1997), and Oandasan et al. (2004) conclude that, despite the fact that experts on the subject of interprofessional collaboration stress the need for an interprofessional education curricula at the undergraduate level, there are barriers that need to be addressed

prior to its development and implementation. For example, the difference in entry level background preparation for medical and nursing schools was identified by these studies as an obstacle facing interprofessional educators and policy developers. This difference in age and post High School experience could limit students' opportunities for input during interprofessional interactions, particularly for the nursing students.

Also, lack of agreement regarding whether IPE should be introduced during the early years of training or during senior years is an issue that needs resolution. Some experts recommend IPE exposure because it could eliminate negative stereotypes and perceptions about their own health profession as well as others that trainees bring into their programs of study (Leaviss, 2000). Others argue that it is more appropriate to introduce IPE later in the programs so that trainees have an opportunity to develop their own professional identity and have better understanding of their professional roles (Barr, 2000; Hojat et al., 1997). Finally, the available evidence also suggests that finding and coordinating a common schedule that fits the curriculum across the health professions constitutes a difficult task. Particularly, since interprofessional education is more suitable for small group type of interactions which are said to provide the participants with more opportunities to share tasks and information (Tiberius, 1990). However organizing small groups sessions can further complicate the scheduling and increase the cost for interprofessional courses. Educators and IPE developers in Newfoundland are also faced with all these challenges. Therefore, efforts should be directed at eliminating these barriers to ensure the success of IPE in Newfoundland and Labrador. This is particularly true since the observed differences, in the current study, between new graduate nurses and physicians mirror that seen between more experienced doctors and physicians.

Faculty related issues.

The new environment of increasing patient acuity and the resulting increased complexity of care delivery in hospitals has created the momentum for the introduction and development of IPE in health care education. It has been recognized that in order for IPE to materialize there needs to be educators who are available and committed to interprofessional coursework. Also, faculty's behavior needs to complement their commitment to collaborative practice to be positive role models to the students (Oandasan et al., 2004). They also need to have a knowledge base and be experienced in facilitating small group functions (Gilbert, 2005). Hojat et al. (1997) identified lack of faculty commitment to IPE as one of the factors that has presented a barrier to the survival of many IPE programs. This lack of commitment by faculty can be explain in part by the fact that historically health professionals have been trained in isolation and for the most part have no formal training in interprofessional collaboration (Hojat et al., 1997). Despite this evidence, to date a formal training program for facilitators to address issues such as differences in power and hierarchy has not been developed (Areskog, 1994; Hojat et al., 2003; Oandasan et al., 2004). The current study results also suggest potential problems for IPE to achieve its goals. For example, the lack of agreement regarding readiness to collaborate among the nurses and physicians who participated in the current study could negatively impact IPE development in Newfoundland and Labrador. If physicians are less interested than nurses in collaborative practice, as the results show, then it is unlikely that IPE interventions would be completely successful. However, it should be noted that the data did not fully assess whether early attempts at IPE in Newfoundland and Labrador were effective at correcting this apparent difference

between nurses' and physicians' attitudes towards collaborative practice. This lack of definite results could be due to the fact that the number of new graduate physicians (n=12) who participated in this study is small and to lack of an adequate control group. Therefore further research to provide definite clarification to this issue is needed.

Institutional related issues.

At the level of health science faculties, several challenges for the development of IPE were also identified from the literature on nurse physician collaboration. For the most part academic institutions develop their curricula in isolation, which usually results in crowded curriculums with very little teaching space for IPE activities (Barr, 2003; Hojat et al., 1997; Oandasan et al., 2004). Furthermore, different health science faculties schedule clinical practice at different times and at different locations within a given city with little input from other health science faculties. Therefore, scheduling an IPE intervention during clinical time can be very difficult to orchestrate. The health science faculties in Newfoundland and Labrador are no exception. Therefore, IPE developers in Newfoundland and Labrador are also presented with all the challenges previously mentioned.

Issues related to IPE evaluation.

Regarding the evaluation of IPE interventions, the present paucity in empirical evidence demonstrating the impact of IPE on patient outcomes was identified as one of the barriers affecting the development of IPE (Zwarenstein et al., 1997; Oandasan et al., 2004). This lack of empirical evidence regarding the effectiveness of IPE may explain why IPE has not become a high priority for all levels of government. Currently most of

the interventions that have been evaluated have assessed changes in trainees' attitudes as the only method of outcome measurement (Oandasan et al.).

Positive Evidence and Level of Commitment to IPE Development

Several findings considered to be positive regarding IPE development were identified through reading the available literature. For example, the development of IPE projects across Canada shows a growing interest and commitment by the health sciences faculties as well as government on this type of education. Additionally, the lessons learned through the development and implementation of these projects can serve as a guide for the refinement of current projects and for the development of future IPE projects. After evaluating an IPE project developed by Linköping University of Sweden, Areskog (1994) concluded that IPE is feasible and greatly appreciated by students. An evaluation of the IPE modules developed and implemented by the Center for Collaborative Health Professional Education at Memorial University of Newfoundland also reported similar results regarding students' satisfaction with the modules (Centre for Collaborative Health Professional Education, 2007). Finally, a growing interest and commitment to IPE development by the government was identified. Although the level of priority given by the government to IPE development is not clear, the government provided substantial funding that enabled the development of IPE projects across Canada (Oandasan, et al., 2004).

Implications of Findings and Recommendations

Professional Practice

The current study's findings on practicing nurses and physicians as well as new nursing and medical graduates' attitudes towards collaborative practice, for the most part,

support those from prior studies conducted on the subject of nurse-physician collaboration. Study findings suggest that in the current sample, nurses had the most positive attitudes towards collaborative practice, however it also showed that these nurses were dissatisfied with their limited involvement in the decision making process regarding patient care and policy development. Through their rejection of the dominant role of physicians in all aspects of patient care nurses showed that they are increasingly realizing that they can contribute relevant information and participate in decision-making concerning patient care issues.

These results are significant for the development of IPE. Particularly in Newfoundland and Labrador, since this sustained difference of attitudes among nurses and physicians observed in the current study could potentially prevent IPE efforts from reaching their goals of improving collaborative practice among health professionals and possibly improving health outcomes for patients while reducing healthcare cost. Consequently, IPE efforts should be directed at improving communication skills among health care professionals in order to facilitate the sharing of information regarding patient care issues. Managers can help by ensuring that the most updated and appropriate technology for conveying information between health professions is available. In order to increase awareness among health professionals, managers could schedule workshops and seminars highlighting the collaborative process as well as its advantages for practice and health care in general.

The data analyses also suggest that having more work experience, a higher level of education or working in workplaces with a high level of morale is associated with the most positive attitudes towards collaborative practice. Therefore, in order for

collaboration among health professionals to materialize, health organizations should continue to provide their employees with opportunities for advancing their education. Information sharing among employees (health professionals) should be facilitated and promoted by the organization. Organizations should also endorse the inclusion in the decision-making process regarding patient care, of all the parties involved, during interprofessional rounds and care processes. Health care managers should dedicate time and effort to interprofessional team building and when the conditions are favorable (e.g., no conflict among team members), be able to separate themselves from the traditional hierarchical structures where power and decision making are not shared among team members. Instead managers should adopt a decentralized and flexible managerial structure that supports shared decision-making (Henneman et al., 1995). However, the traditional hierarchical managerial structure should not be made redundant, and it should be employed by team members in situations such as when relationships among team members become hostile or when decisions that affect those outside the team need to be made.

Education sessions and discussion groups facilitated by experts in the field would help managers and staff to create a team environment within the organization. In order to increase and maintain a high level of morale in the work place, increasing recognition should be given to health care workers for their contributions to the delivery of patient care in order to create the needed conditions for collaboration to occur (Henneman et al., 1995). This can be accomplished by simply including all of those involved in patient care in the decision making process. Henneman et al. (1995) also indentified a lack of acknowledgement of each profession's contribution to the team's dynamics and the

relationships and power differences among the professions involved as one of the barriers to the success of an interprofessional health team.

The study results also suggest that females (nurses and physicians combined) who participated in this study have more positive attitudes towards interprofessional collaboration than their male counterparts. This association is also encouraging for health organizations since the presence of females among medical graduates has increased considerably in recent years. These more positive attitudes towards collaborative practice among females combined with the increase in the number of female physicians may help organizations eliminate the differences in attitudes between nurses and physicians. Finally, it is important to note that although the study findings show a difference between the mean scores of the physicians' and nurses' group regarding total and the four sub-scales scores of the Jefferson Scale, these discrepancies are modest in magnitude. These results are also encouraging for the development of interprofessional team work in Newfoundland and Labrador since they indicate that the physicians who participated in the current study are more ready to partake in a collaborative approach to patient care delivery than previous studies have suggested.

Education

The findings show that when questioned about issues regarding shared education and team work, the nurses in the current study scored higher than their physician counterparts. These findings suggest that nurses' in the current study might be more likely to support the development of interprofessional education and its incorporation into the health sciences curricula. These results are significant for further development and successful implementation of an interprofessional education intervention at Memorial

University of Newfoundland, as they provide base line data which can serve as comparison in the future. Specifically, the data provide insight into the issues that need to be addressed in order to correct these differences in attitudes between the medical and nursing professions and ensure IPE success in the region. Consequently, IPE efforts should be directed at improving communication among the different health sciences faculties to eliminate barriers such as scheduling conflicts (e.g. through coordination of class schedules). It should include formal training for faculty involved regarding interprofessional teamwork. As well, it should increase the number and quality of interprofessional interactions among students from the health professions throughout their programs of study. This will increase their opportunities to get to know and understand each other's point of view (Blickensderfer, 1996).

Nurses in the current study also showed discontent with the dominant role of physicians in all aspects of patient care. Therefore, emphasis should be placed on adopting an approach to education that creates a culture in which nurses and physicians share power based on knowledge and not hierarchy, which promotes an interprofessional team approach to health care delivery while clarifying the role of each profession within the health care team (Hojat et al., 2003).

Additionally, these differences in attitudes towards collaborative practice among the nurses and physicians in the current study could be simply the result of lack of interest on the part of physicians in the subject. It has been suggested that those that enjoy a position of greater power are less likely to be interested in collaborative relationships. This notion was first introduced by Waller and Hill in 1951as the "principle of least interest". Based on this principle of least interest active student participation in

IPE interventions may seem important only to those with less power (Hojat et al., 2003). This is an issue that deserves attention, particularly since the collaborative process requires input from all parties involved (Henneman et al., 1995). Educators from all health professions should aid students in developing an understanding of the importance of collaborative practice. It is also important that students develop an awareness of the obstacles facing IPE development as well as the solutions to those obstacles. Furthermore, educators must ensure that students are well informed regarding strategies that promote collaborative practice. The current study findings also highlighted the significance of years of experience in fostering interprofessional relationships among health care providers. Specifically, the data show that those nurses and physicians with more experience are more likely to support IPE development. These more experienced educators and practitioners could serve as role models to students and educators.

Regarding gender comparisons, the current study findings showed that the female nurses and physicians who participated in the study have more positive attitudes towards interprofessional collaboration in the work place than their male counterparts. These results are encouraging for the development and success of an interprofessional education intervention in Newfoundland, given females' reported attitudes towards collaboration and the fact that today more females than males enroll in medical schools.

Finally, the available literature on IPE supports the need for universities across Canada to include interprofessional education in their health related professions' curricula in order to promote shared experiences and to promote a clearer understanding of not only nurses' and physicians' roles but all other health professions involved in the provision of patient care (Hojat et al., 2003). This is particularly important considering

the current and forecasted shortage of nurses in the Province of Newfoundland and Labrador.

Research

The current study findings generally showed that the nurses who participated in this study are more willing to engage in interprofessional collaborative relationships than their physicians counterparts. Although, the literature search identified a number of studies evaluating the attitudes of nurses and physicians towards collaborative practice, no comparable study conducted in Newfoundland and Labrador existed. The study findings also provided support for the predictive effects of determinants (i.e. level of education, professional group, gender, worksite, level of morale at the workplace, and work experience). While these findings provided insightful data on the predictive power of these determinants for readiness to collaborate among nurses and physicians in the current study, the contributions of individual variables to the explained variance were limited in most cases. For example the proportion of the explained variance accounted for by these study variables ranged from a high of 12.9% to a low of 1.4% respectively. It is also highly possible that other unmeasured variables such as level of job satisfaction are influencing nurses and physicians attitudes towards collaborative practice. Therefore, further research investigating a broader set of personal and job related variables would allow for a more thorough understanding of this complex and multifactorial process. These studies should also employ more innovative and reliable designs such as action research, particularly since to date only prospective correlational and before and after quasi-experimental studies have been conducted in this area. Also, more studies that assess the association between collaboration and patient outcome in relation to all aspects

of patient care should be conducted. Although, carrying out such rigorous study on collaboration would require major funding, multiple exploratory studies using action research design conducted by different research teams in different settings could considerably reduce the cost while providing insight into the nurse-physician relationship and into the design of more powerful interventions to enhance collaborative practice (Dechario-Marino et al., 2001; Zwarenstein et al., 1997). Finally, the data analysis showed no significant differences between those that were exposed to IPE and those that were not. Although, there was not an adequate control group to effectively test the effects of IPE on attitudes towards interprofessional practice, indicating that more research needs to be conducted on this area.

Limitations of this Study

Despite the use of a data collection instrument with a proven reliability, the low response rate of 32.2 % could potentially decrease the generalizability of the current study findings. The use of self-report measures could have also reduced the validity of the data by introducing response bias. For example, the attitudes towards collaborative practice of those who chose to participate in the current study could be systematically different from those who did not. Furthermore, the use of a convenience sample and the inclusion of only acute care nurses and physicians also limit the generalizability of the study findings to all acute care nurses and physicians practicing in the St. John's region. Finally, there was no adequate control group to assess the effects of interprofessional education at the undergraduate level. The control group differed from the experimental group in terms of age, work experience and level of education and the number of new graduate physicians who participated in the study is small.

Summary

A major focus of the current study was to investigate the readiness to collaborate among physicians and nurses currently practicing at the Health Care Corporation of St. John's. A second focus of this study was to examine the relationship between collaborative practice and selected factors that may assist in the development and targeting of the most appropriate pedagogical approach to interdisciplinary education. The third focus of this study was to compare attitudes towards interprofessional practice among a class of graduating nursing and medical students from Memorial University, who had completed a formalized interprofessional component as part of their curriculum, with that of others who had not.

In general the results of the current study were consistent with the available research literature. The current study findings indicate that the acute care nurses who participated in this study have more positive attitudes towards interprofessional collaboration than their physician counterparts. The findings also suggest that these nurses are more negative than physicians towards the dominant role of the latter in all aspects of patient care. As well, nurses showed strong support for their increasing involvement in the decision-making process regarding patient care and policy development.

As demonstrated by the findings, the level of education variable had the strongest association with the total score for the Jefferson Scale, followed by the professional group, worksite, workplace morale, gender, and experience within Canada. Finally, the results also suggested a lack of association between the total score for the Jefferson Scale

and exposure to pre-licensure interprofessional education, although adequate controls were lacking for this assessment.

Although the generalizability of the current study findings has been impacted by the method of data collection and the use of a convenience sample, they do provide useful comparison data for future research. As well the study offers some direction for medical and nursing practice, education and research, particularly in the St. John's region.

References

Adamson, B. J., Kenny, D. T., & Wilson-Barrett, J. (1995). The impact of perceived medical dominance on the workplace satisfaction of Australian and British nurses. *Journal of Advanced Nursing. 21*, 172-183.

Alpert, H. B., Goldman, L. D., Kilroy, C. M., & Pike, A. W. (1992). 7 Gryzmish: Toward an understanding of collaboration. *Nursing Clinics of North America, 27*, 47-59.

Anvaripour P., Jacobson, L., Schweiger, J., & Weissman, G.K. (1991). Physician-nurse collegiality in the Medical School Curriculum: Exploratory workshop and Student Questionnaire. *The Mount Sinai Journal of Medicine, 58* (1), 91-94.

Arcangelo, V., Fitzgerald, M., Carroll, D., & Plumb, J. D. (1996). Collaborative care between nurse practitioners and primary care physicians. *Primary Care, 23*, 103-113.

Aradine, C.R., & Pridham, K.F. (1973). Model for collaboration. *Nursing Outlook*, 21, 655-657.

Areskog, N. H. (1994). Multiprofessional education at the undergraduate level: The Linköping model. *Journal of Interprofessional Care, 8*, 279-282.

Austin, Z., & Beales, J. (2004). Vocational migration, psychological adaptation, and reformation of professional identity: The culture stress experience of pharmacists who become physicians. Centre for Research in Medical Education Grand Rounds, University of Toronto, Toronto, Ontario.

Baggs, J.G. (1994). Development of an instrument to measure collaboration and satisfaction about care decisions. *Journal of Advanced Nursing, 20*, 176-182.

Baggs, J.G., Ryan A.S., Phelps, E. C., Richeson F. J., & Johnson, E. J. (1992). The association between interdisciplinary collaboration and patient outcomes in a medical intensive care unit. *Heart and Lung, 21* (1), 18-24.

Baggs, J. G., & Schmitt, M. H. (1997). Nurses' and resident physicians' perceptions of the process of collaboration in an MICU. *Research in Nursing and in Health, 20*, 71-80.

Baggs, J.G., Schmitt, M.H., Mushlin, A.I., Mitchell, P.H., Eldredge, D.H., Oakes, D., & Huston, A.D. (1999). Association between nurse-physician collaboration and patient outcomes in three intensive care units. *Critical Care Medicine, 27*, 1991-1997.

Barr, H. (1996). Ends and means in interprofessional education: Towards a typology. *Education for Health*, *9*, 341-352.

Barr, H. (2000). New NHS, new collaboration, new agenda for education. *Journal of Interprofessional Care*, *14* (1), 81-86.

Berthelot, J. M. (1999). Présentation. *Sociologie et sociétés*, *XXXI* (1), 3-10.

Blickensderfer, L. (1996). Nurses and Physicians: Creating a collaborative environment. *Journal of Intravenous Nursing*, *19* (3), 127-131.

Blue, I., & Fitzgerald, M. (2002). Interprofessional relations: Case studies of working relationships between registered nurses and general practitioners in rural Australia. *Journal of Critical Nursing*, *11*, 314-321.

Borill, C. S., Carletta, J., Carter, A. J., Dawson, J. F., Garrod, S., Rees, A., et al. (2001). The effectiveness of health care teams in the national health service (Report). Ashton University: Centre for Health Services and Organizational Research Ashton Business School; Universities of Glasgow and Edinburgh: Human Communication Research Centre; University of Leeds: Leeds Psychological Therapies Research Centre.

Brown, C., & Seddon, J. (1995). Nurses, doctors and the body of the patient: medical dominance revisited. *Nursing Inquiry*, *3*, 30-35.

Caluccio, M., & Maguire, P. (1983). Collaborative practice: Becoming a reality through primary care. *Nursing Administration Quarterly*, *7*, 59-63.

Center for Collaborative Health Professional Education. (2007). *Collaboration for Education and Practice: An Interprofessional Education Strategy for Newfoundland and Labrador Project.* An Interprofessional Education Attitudes Survey of Students in Medicine, Nursing, Pharmacy and Social Work - 2005 and 2006 Baseline Survey Results Compared.

Cohen, S.G., & Ledford, G.E. (1994), The effectiveness of self-managing teams: a quasi-experiment, *Human Relations*, *47* (1), 13-43.

Corser, W. D. (1998). A conceptual model of collaborative nurse-physician interactions: The management of traditional influences and personal tendencies. *Scholarly Inquiry for Nursing Practice*, *12*, 325-341.

D'Amour, D., Sicotte, C., & Levy, R. (1999). L'action collective au sein d'équipes interprofessionnelles dans les services de santé (Collective Action within Interprofessional Teams in Health Services). *Sciences Sociales et Santé*, *17* (3), 68-94.

Dechario-Marino, E. A., Jordan-Marsh, M., Traiger, G., & Saulo, M. (2001). Nurse/Physician collaboration: Action research and the lessons learned. *The Journal of Nursing Administration, 31*, 223-232.

Devine, B. A. (1978). Nurse-physician interaction: Status and social structure within two hospital wards. *Journal of Advanced Nursing, 3*, 287-295.

Drinka, T. J. K., & Clark, P. G. (2000). *Health care teamwork: Interdisciplinary practice and teaching*. Westport, CT: Auburn House.

Fagin, C. (1992). Collaboration between nurses and physicians: No longer a choice. *Academic Medicine, 67*, 295-303.

Farrell, M. P., Schmitt, M. H., & Heinemann, G. D (2001). Informal roles and the stages of interdisciplinary team development. *Journal of Interprofessional Care, 15*, 281-295.

Feeley, N., & Gottlieb, L. (2004). *Collaborative-partnership: A delicate balance*. Toronto: C.V. Mosby.

Friedson E. (1984). The changing nature of professional control. *Annual Review of Sociology, 10*, 1-20.

Gilbert, J. H. V.., Camp, R. D., Cole, C. D., Bruce, C., Fielding, D. W., & Stanton, S. J. (2004). Preparing students for interprofessional teamwork in health care. *Journal of Interprofessional Care, 14*, 223-235.

Gilbert, J. H. (2005). Interprofessional education for collaborative, patient-centred practice. *Canadian Journal of Nursing Leadership, 18*, 32-36, 38.

Gjerberg, E., & Kjølsrød, L. (2001). The Doctor-nurse relationship: How easy is it to be a female doctor co-operating with a female nurse? *Social Science and Medicine, 52*, 189-202.

Glen, S. (1999). Educating for interprofessional collaboration: Teaching about values. *Nursing Ethics, 6*, 202-213.

Hall P., & Weaver, L. (2001). Interdisciplinary education and teamwork: A long and winding road. *Medical Education, 35*, 867-875.

Heinemann, G. D., & Zeiss, A. M. (2002). *Team performance in health care: Assessment and development*. New York: Kluwer Academic/Plenum Publishers.

Henneman, E., Lee, J., & Cohen, J. (1995). Collaboration: A concept analysis. *Journal of Advanced Nursing, 21*, 103-109.

Higgins W. L. (1999). Nurses' perceptions of collaborative nurse-physician transfer decision making as a predictor of patient outcomes in a medical intensive care unit. *Journal of Advance Nursing, 29*, 1434-1443.

Higgins R., Oldman, C., & Hunter, D. (1996). Working together: Lessons for collaboration between health and social services. *Health and Social Care in the Community, 2*, 269-277.

Hilton, R W. (1995). Fragmentation within interprofessional work. A result of isolationism in health care professional education programmes and the preparation of students to function only in the confines of their own disciplines. *Journal of Interprofessional Care, 9*, 33-40.

Hojat, M., & Herman, W. M. (1985). Developing an instrument to measure attitudes toward nurses: Preliminary psychometric findings. *Psychological Reports, 56*, 571-579.

Hojat, M., Gonnella, J. S., Nasca, T. J., Fields, S. K., Cicchetti, A., et al. (2003). Comparisons of American, Israeli, Italian and Mexican physicians and nurses on the total factor scores of the Jefferson scale of attitudes toward physician-nurse collaborative relationships. *International Journal of Nursing Studies, 40*, 427-435.

Hojat, M., Fields, S. K., Rattner, S. L., Griffiths, M., Cohen, M. J. M., & Plumb, J. D. (1997). Attitudes toward physician-nurse alliance: Comparisons of medical and nursing students. *Academic Medicine, 72*, SI -S3.

Hojat, M., Nasca, T. J., Cohen, M., Fields, S. K., Rattner, S. L., Griffiths, M., et al. (2001). Attitudes toward physician-nurse collaboration: A cross-cultural study of male and female physicians and nurses in the United States and Mexico. *Nursing Research, 50* (2), 123-128.

Kendrick K. (1995). *Nurses and doctors: A problem of partnership. Interprofessional relations in health care*. London: Edward Arnold

Kilmann, R. H., & Thomas, K. W. (1977). Developing a forced-choice method of conflict-handling behavior: The "MODE" instrument. *Educational Psychological Measurement, 37*, 309-325.

Kraus, W. A. (1980). *Collaboration in organizations: Alternatives to hierarchy*. New York: Human Sciences Press.

Knaus, W. A., Draper, E. A., Wagner, D. P., & Zimmennan, J. E. (1986). An evaluation of outcorne from intensive care in major medical centers. *Annals of Internal Medicine*, *104*, 410-418.

Lawler, E. E., III, Mohrman, S. A., & Ledford, G. E., Jr. (1992). Total Quality Management Practices in the Fortune 1000. Journal of Quality and Participation,15, 6-10.

Leathard, A. (2003). Setting up an innovative masters course in interprofessional health and welfare studies. *Education for Health*, *16*, 366-373.

Leaviss, J. (2000). Exploring the perceived effect of an undergraduate multiprofessional educational intervention. *Medical Education*, *34*, 483-486.

Mackay, L. (1993). *Conflicts in health care: Medicine and nursing*. London: Chapman and Hall.

Mariano, C. (1998). The case for interdisciplinary collaboration. *Nursing Outlook, 37*, 285-288.

McIntyre, M., & Thomlinson, E. (2003). *Realities of Canadian nursing: Professional, practice, and power issues*. Philadelphia: Lippincott Williams and Wilkins.

Mitchell, P. H., Armstrong, S., Simpson, T. F., & Lentz, M. (1989). American Association of Critical-Care Nurses. Demonstration project: Profile of excellence in critical care nursing. *Heart and Lung 'the Journal of Critical Care'*, *18*, 219-236.

Norman, G. R., & Streiner, D. L. (2000). *Biostatistics: The bare essentials* (2^{nd}. ed.). Hamilton, ON: B.C. Decker Inc.

O'Brien, R. (2001). Um exame da abordagem metodológica da pesquisa ação [An Overview of the Methodological Approach of Action Research]. In Roberto Richardson (Ed.), Teoria e Prática da Pesquisa Ação [Theory and Practice of Action Research]. João Pessoa, Brazil: Universidade Federal da Paraíba. (English version) Available: http://www.web.ca/~robrien/papers/arfinal.html (Accessed 28/1/2009)

Oandasan, I., D'Amour, D., Zwarenstein, M., Barker, K., Purden, M., Bealieu, M., et al. (2004). *Interdisciplinary education for collaborative, patient-centred practice* (1-304). Research and findings report. Ottawa: Health Canada.

Rosenstein, A. H. (2002). Nurse-physician relationship: Impact on nursing satisfaction and retention. *American Journal of Nursing*, *102* (6), 26-34.

Ruble, T., & Thomas, K. (1976). Support for a two-dimensional model of conflict behavior. *Organizational Behavior and Human Performance, 16,* 143-155.

Ryan, A. A. (1996). Doctor-nurse relations: A review of the literature. *Social Sciences in Health: International Journal of Research & Practice, 2,* 93-106.

Shortell, S. M., Zimmerman, J. E., Rousseau, D. M., Gillies, R. R., Wagner, D. P., Draper, E. A., Knaus, W. A., & Duffy, J. (1994). The performance of intensive care units: Does good management makes a difference? *Medical Care, 32,* 508-525.

Sweet, S. J., & Norman, I. (1995). The nurse physician relationship: A selective literature review. *Journal of Advanced Nursing, 22,* 165-170.

The American Heritage Dictionary (1983). New York: Dell Pub. Co.

Thompson, J. D. (1967). *Organizations in action.* New York: McGraw-Hill.

Tiberius, R. (1990). *Small group teaching: A trouble shooting guide.* Toronto: OISE Press.

Weiss, S. J. (1983). Role differentiation between nurse and physician: Implications for nursing. *Nursing Research, 32,* 133-139.

Waller, W., & Hill, R. (1951). *The family: A dynamic interpretation.* New York: Dryden.

Webster's Third New International Dictionary (1986). Springfield, Mass: Merriam-Webster.

Zwarenstein, M., Atkins, J., Hammick, M., Barr, H., Koppel, I., & Reeves, S. (1997). Interprofessional education and systematic review: A new initiative in evaluation. *Journal of Interprofessional Care, 13,* 417-424.

Zwarenstein, M., Bryant, W. (2000) Interventions to promote collaboration between nurses and doctors. *Cochrane Database of Systematic Reviews,* Issue 2. Art. No.: CD000072. DOI: 10.1002/14651858.CD000072.

Appendix A

Jefferson Scale of Attitudes toward Nurse-Physician Collaboration

JEFFERSON SCALE OF ATTITUDES TOWARD NURSE-PHYSICIAN COLLABORATION

INSTRUCTIONS: Please indicate the extent of your ***agreement*** or ***disagreement*** with each of the following statements by circling the appropriate number. For the purposes of this survey, a nurse is defined as "a registered nurse (RN) who is engaged in providing or directly supervising the care of hospitalized patients."

		Strongly Agree	Tend to Agree	Tend to Disagree	Strongly Disagree
1.	A nurse should be viewed as a collaborator and colleague with a physician rather than his/her assistant....	4	3	2	1
2.	Nurses are qualified to assess and respond to psychological aspects of patients' needs.....	4	3	2	1
3.	During their education, medical and nursing students should be involved in teamwork in order to understand their respective roles.....	4	3	2	1
4.	Nurses should be involved in making policy decisions affecting their working conditions.....	4	3	2	1
5.	Nurses should be accountable to patients for the nursing care they provide.....	4	3	2	1
6.	There are many overlapping areas of responsibility between physicians and nurses.....	4	3	2	1
7.	Nurses have special expertise in patient education and psychological counseling.....	4	3	2	1
8.	Doctors should be the dominant authority in all health care matters.....	4	3	2	1
9.	Physicians and nurses should contribute to decisions regarding the hospital discharge of patients...	4	3	2	1
10.	The primary function of the nurse is to carry out the physician's orders.....	4	3	2	1
11.	Nurses should be involved in making policy decisions concerning the hospital support services upon which their work depends.....	4	3	2	1
12.	Nurses should also have responsibility for monitoring the effects of medical treatment.....	4	3	2	1
13.	Nurses should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient.....	4	3	2	1
14.	Physicians should be educated to establish collaborative relationships with nurses.....	4	3	2	1
15.	Interprofessional relationships between physicians and nurses should be included in their educational programs.....	4	3	2	1

Appendix B

Demographic Questionnaires

Professional Background Information (nurses)

Please circle the one letter that best describes your circumstances.

1. Gender

a. Female b. Male

2. Please specify your age group

a. 23-29 b. 30-44

c. 45-59 d. 60 +

3. Please select the appropriate title: (Please check all that apply).

a. R.N. b. B.N.

c. Master d. PhD

4. Please indicate the position that you presently hold within the Health Care Corporation of St. John's.

a. Staff Nurse

b. Patient Care coordinator

c. Clinical Care Coordinator

d. Discharge Planning Coordinator

e. Community Health Referral Nurse

5. Program from which you graduated.

a. General Hospital School of Nursing

b. St. Clare's Hospital School of Nursing

c. Grace Hospital School of Nursing

d. Center for Nursing Studies

e. MUN School of Nursing

f. Other: ----------
(Specify)

6. Please indicate the number of years of experience as a nurse within Canada

a. < 1year b. 1 - 5 years

c. > 5 – 10 years d. > 10 years

7. Please indicate the number of years experience as a nurse outside Canada.

a. None b. < 1year

c. 1 – 5 years d. > 5 – 10 years

e. > 10 years

8. Are you presently employed as:

a. Full time position b. Part time position

c. Casual position

9. Specify the site you are presently practicing.

a. General Hospital b. St. Clare's Hospital

c. Waterford Hospital d. Janeway Hospital

10. Please indicate your level of agreement with the following statement. "There is a high morale among my nursing colleagues in my workplace."

a. Strongly agree

b. Mildly agree

c. Neither agree nor disagree

d. Mildly disagree

e. Strongly disagree

Professional Background Information (Physicians)

Please circle the one letter that best describes your circumstances.

1. Gender:

. a. Female b. Male

2. Please specify your age group.

a. 23-40 b. 40-60

c. 60+

3. Please select the appropriate title.

a. Intern

b. Resident

c. Attending Physician

4. Country of origin:

a. Canadian

b. Non-Canadian ----------(Specify)

5. Please indicate the location of the university from which you received your medical degree.

a. University within Canada

b. University outside Canada

6. Please indicate the number of years of experience as a physician within Canada.

a. < 1year b. 1 – 10 years

c. >10 years

7. Please indicate the number of years experience as a physician outside Canada.

a. None b. < 1 year
c. 1 – 10 years d. > 10 years

8. Are you presently working as:

a. Full time physician

b. Part time physician

9. Please identify the primary hospital site at which you presently practice.

a. General Hospital

b. St. Clare's Hospital

c. Janeway hospital

d. Waterford hospital

e. Cancer Centre

10. Please indicate your level of agreement with the following statement. "There is a high morale among my physician colleagues in my workplace."

a. Strongly agree

b. Mildly agree

c. Neither agree nor disagree

d. Mildly disagree

e. Strongly disagree

Demographic Information (newgradnurse)

Please circle the one letter that best describes your circumstances

1. Gender:

a. Female b. Male

2. Specify your age group:

a. 18-24 b. 25-34

c. 35 +

3. Specify your country of origin.

a. Canadian

b. Non-Canadian_____ (Specify)

4. Select your educational level previous to entering nursing school: (Please check all that apply).

a. High school Diploma

b. Attended University (general studies)

c. Undergraduate Degree (other than nursing)

d. Other _____(Please specify)

5. Indicate the location of the University or High School from which received your education previous to entering Nursing School.

a. Within Canada

b. Outside Canada _____(specify)

6. Specify the program from which you are graduating:

a. Centre for Nursing Studies

b. MUN School of Nursing

c. Western Regional School of Nursing

7. During your nursing program you attended university as a:

a. Full time Student

b. Part time student
_____(specify)

8. Did you complete an interprofessional component course during your nursing program?

a. Yes

b. No

9. Indicate the level of agreement with the following statement. "Enough emphasis is put on interprofessional education in the current nursing program."

a. Strongly agree

b. Mildly agree

c. Neither agree nor disagree

d. Mildly disagree

e. Strongly disagree

10. Indicate your level of agreement with the following statement. "There is a high morale among my nursing classmates."

a. Strongly agree

b. Mildly agree

c. Neither agree nor disagree

d. Mildly disagree

e. Strongly disagree assuming

Demographic Information (NewgradPhysician)

Please place an asterisk in front of the letter or number that best describes your circumstances:

1. **Gender:**

   __a. Female __b. Male

2. **Specify your age group:**

   __a. 20-24 __b. 25-34 __c. 35 +

3. **Specify the cities that you have lived in and for how long:**

   _____
   _____
   _____

4. **Select your educational level prior to entering medical school: (Please check all that apply):**

   __a. Undergraduate Degree

   __b. Other: (Please specify: _____)

5. **What university did you attend prior to entering Medical School?**

   _____

6. **Did you complete a formalized interprofessional (interdisciplinary) component in any course during your medical program?**

   __a. Yes

   __b. No

7. **Indicate your level of agreement with the following statements:**

	Strongly Agree				Strongly Disagree
Enough emphasis is put on interprofessional education in the current medical program.	__1	__2	__3	__4	__5
The current medical program at MUN provides enough opportunities for educational interaction between medical and nursing students.	__1	__2	__3	__4	__5
There is a high morale among my classmates.	__1	__2	__3	__4	__5

Appendix C

Individual Items of the Jefferson Scale

Table 4.1 **Results for Item 1 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration**

Item: #1	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	3 (1.5)	0	3 (0.4)
Tend to Disagree	7 (3.4)	1(0.2)	8 (1.1)
Tend to Agree	71(34.6)	39(7.4)	110(15.0)
Strongly Agree	122(59.5)	486(92.4)	608(83.2)
Missing	2(1.0)	0	2 (0.3)
Total	205	526	731

Table 4.2 Results for Item 2 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #2	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	1 (0.5)	0	1(0.1)
Tend to Disagree	11(5.4)	9 (1.7)	20 (2.7)
Tend to Agree	79 (38.5)	130 (7.4)	209 (15.0)
Strongly Agree	122(59.5)	486 (92.4)	608 (83.2)
Missing	2(1.0)	0	2 (0.3)
Total	205	526	731

Table 4.3 Results for Item 3 of the Jefferson Scale of Attitudes Toward Nurse- Physician Collaboration

Item: #3	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	13 (6.3)	2(0.4)	15 (2.1)
Tend to Disagree	67(32.7)	105(20)	172 (23.5)
Tend to Agree	123 (60)	419(79.7)	542 (74.1)
Strongly Agree	122(59.5)	486(92.4)	608 (83.2)
Missing	2(1.0)	0	2 (0.3)
Total	205	526	731

Table 4.4 Results for Item 4 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #4	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	2(1.0)	0	2 (0.3)
Tend to Disagree	3 (1.5)	1(0.2)	4 (0.5)
Tend to Agree	52(25.4)	44(8.4)	96 (13.1)
Strongly Agree	148 (72.2)	481(91.4)	629 (86)
Total	205	526	731

Table 4.5 Results for Item 5 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #5	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	0	0	0
Tend to Disagree	0	0	0
Tend to Agree	18 (8.8)	38(7.2)	56 (7.7)
Strongly Agree	187(91.2)	487(92.6)	674(92.2)
Missing	0	1(0.2)	1(0.1)
Total	205	526	731

Table 4.6 Results for Item 6 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #6	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	3 (1.5)	3(0.6)	296(56.3)
Tend to Disagree	20(9.8)	31(5.9)	51 (7.0)
Tend to Agree	80 (39)	195(37.1)	275 (37.6)
Strongly Agree	101(49.3)	296(56.3)	397(54.3)
Missing	1(0.5)	1(0.2)	2(0.3)
Total	205	526	731

Table 4.7 Results for Item 7 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #7	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	3 (1.5)	6(1.1)	9 (1.2)
Tend to Disagree	35(17.1)	36(6.8)	71 (9.7)
2.50	0	1(0.2)	1(0.1)
Tend to Agree	90 (43.9)	240(45.6)	330 (45.1)
Strongly Agree	90 (43.9)	238(54.2)	312(42.7)
Missing	3(1.5)	5(1.0)	8(1.1)
Total	205	526	731

a. The value of 2.50 was given to those respondents who selected a midpoint between 2 (tend to disagree) and 3 (tend to agree) as their score.

Table 4.8 Results for Item 8 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #8	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	22 (10.7)	19 (3.6)	41 (5.6)
Tend to Disagree	62 (30.2)	97 (18.4)	159 (21.8)
2.50	1 (0.5)	0	1(0.1)
Tend to Agree	81(39.5)	195 (37.1)	276 (37.8)
Strongly Agree	35 (17.1)	209 (39.7)	244 (33.4)
Missing	4 (2.0)	6 (1.1)	10 (1.4)
Total	205	526	731

a. This item is added as a reverse score.
b. The value of 2.50 was given to those respondents who selected a midpoint between 2 (tend to disagree) and 3 (tend to agree) as their score.

Table 4.9 **Results for Item 9 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration**

Item: #9	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	1 (0.5)	6(1.1)	7 (1.0)
Tend to Disagree	8(3.9)	4(0.8)	12 (1.6)
Tend to Agree	69 (38.5)	141(7.4)	210 (15.0)
Strongly Agree	126(61.5)	374(71.1)	500(68.4)
Missing	1(0.5)	1(0.2)	2(0.3)
Total	205	526	731

Table 4.10 Results for Item 10 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #10	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	4 (2.0)	11 (2.1)	15 (2.1)
Tend to Disagree	28 (13.7)	56 (10.6)	84 (11.5)
2.50	0	1 (0.2)	1(0.1)
Tend to Agree	106(51.7)	173 (32.9)	279 (38.2)
Strongly Agree	66 (32.2)	282 (53.6)	348 (47.6)
Missing	1 (0.5)	3 (0.6)	4 (0.5)
Total	205	526	731

a. This item is added as a reverse score.
b. The value of 2.50 was given to those respondents who selected a midpoint between 2 (tend to disagree) and 3 (tend to agree) as their score.

Table 4.11 Results for Item 11 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #11	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	3 (1.5)	2(0.4)	5 (0.7)
Tend to Disagree	7(3.4)	20(3.8)	27 (3.7)
2.50	0	2(0.4)	2(0.3)
Tend to Agree	95 (46.3)	189(35.9)	284 (38.9)
Strongly Agree	99(48.3)	309(58.7)	408(55.8)
Missing	1 (0.5)	4(0.8)	5(0.7)
Total	205	526	731

a. The value of 2.50 was given to those respondents who selected a midpoint between 2 (tend to disagree) and 3 (tend to agree) as their score.

Table 4.12 Results for Item 12 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #12	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	0	4 (0.8)	4 (0.5)
Tend to Disagree	18 (8.8)	29 (5.5)	47 (6. 4)
2.50	0	1 (0.2)	1 (0.1)
Tend to Agree	97 (47.3)	230 (43.7)	327 (44.7)
Strongly Agree	89(43.4)	260(49.4)	349(47.7)
Missing	1 (0.5)	2 (0.4)	3 (0.4)
Total	205	526	731

a. The value of 2.50 was given to those respondents who selected a midpoint between 2 (tend to disagree) and 3 (tend to agree) as their score.

Table 4.13 Results for Item 13 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #13	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	0	2(0.4)	2 (0.3)
Tend to Disagree	2(0.1)	1(0.2)	3 (0.4)
Tend to Agree	26 (12.7)	22(4.2)	48 (6.6)
Strongly Agree	177(86.3)	499(94.9)	676(92.5)
Missing	0	2(0.4)	2(0.3)
Total	205	526	731

Table 4.14 Results for Item 14 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #14	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	2(1.0)	0	2 (0.3)
Tend to Disagree	13(6.3)	2(0.4)	15 (2.1)
Tend to Agree	68 (33.2)	60(11.4)	128 (17.5)
Strongly Agree	122(59.5)	464(88.2)	586 (80.2)
Total	205	526	731

Table 4.15 Results for Item 15 of the Jefferson Scale of Attitudes Toward Nurse-Physician Collaboration

Item: #15	Physicians (%)	Nurses (%)	Total (%)
Strongly Disagree	2 (1.0)	0	2 (0.3)
Tend to Disagree	16(7.8)	2(0.4)	18 (2.5)
Tend to Agree	76 (37.1)	96(18.3)	172 (23.5)
Strongly Agree	111(54.1)	426(80.9)	537(73. 5)
Missing	0	2(0.4)	2(0.3)
Total	205	526	731