

## Attitudes Toward Interprofessional Collaboration Among Students in the Health Care Professions

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**Abstract:** *This study investigated differences in attitudes expressed by medical, nursing, and social work students regarding interprofessional collaboration (a) between physician and nurse, (b) between nurse and social worker, and (c) between physician and social worker. A self-administered cross-sectional survey was presented to participants online. The Jefferson School of Attitudes Toward Physician-Nurse Collaboration (JSAPNC), a modified JSAPNC, and a demographic questionnaire were completed online by 80 students from medicine, nursing, and social work. Significant ( $p = \leq .005$ ) differences in attitudes toward interprofessional collaboration (IPC) were noted among social work, medical, and nursing students. Attitudes toward IPC in the health care setting were generally positive, with social work and nursing students showing more positive attitudes than medical students. Additional psychometric tests are required to obtain sound reliability and validity scores for the modified JSAPNC.*

**Keywords:** *Interprofessional collaboration, educational program, attitude*

Many older adults have multiple chronic diseases that require long-term treatment and social services (Tsukuda, 1990). Given the numerous needs of older patients, studies have related effectiveness of interprofessional collaboration with successful patient outcomes and enhancement of the health care system (Paul & Peterson, 2002). Specifically, interprofessional collaboration for elder care has resulted in comprehensive follow-up care (Tsukuda, 1990), reduced morbidity, and reduced health care costs (Hirth, Baskins, & Dever-Bumba, 2009; Jencks, Williams, & Coleman, 2009; Leipzig, Berkman, Ramirez-Coronado, & Pignotti, 2001; Robertson, 1992; Tsukuda, 1990).

Interdisciplinary teamwork is important to the delivery of quality care (Gaboury, Lapiere, Boon, & Moher, 2011; Leipzig et al., 2001). Interprofessional collaboration in the health care setting is a partnership among multiple professionals to improve health care services to patients (Paul & Peterson, 2002). Interdisciplinary teamwork has improved clinical outcomes and levels of patient satisfaction (Baggs et al., 1999), as well as practitioners' job satisfaction and retention rates (Rosenstein, 2002). Most significantly, patients are more likely to receive the highest quality of care as health care professionals understand each other's roles, appreciate each other's skills (D'Amour & Oandasan, 2005; Hall, 2005), and work together effectively as a team (Barnsteiner, Disch, Hall, Mayor, & Moore, 2007; Hall & Weaver, 2001).

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Success in interprofessional collaboration is influenced by attitudes toward collaboration (Hind et al., 2003; King, Lee, & Henneman, 1993). Researchers (e.g., Howe, Hyer, Mellor, Lindeman, & Luptak, 2001; Leipzig et al., 2002; Mackay, 2004; Sommers, Marton, Barbaccia, & Randolph, 2000) have reviewed components of interprofessional collaboration, including attitudes toward interprofessional practice. Mackay (2004) suggested that the attitudes of professionals from one discipline influence how they perceive and behave toward professionals from other disciplines. Collaborative practice may decrease hospitalization and readmission rates and improve health care for older adults with chronic illness (Sommers et al., 2000). In particular, hospital readmissions were most frequently decreased when nurses, social workers, and physicians were satisfied with their interprofessional relationships on the care team (Leipzig et al., 2002). However, physicians, nurses, and social workers have not been adequately trained to collaborate on health care teams for treating patients (Howe et al., 2001; Hyer, 1998). Also, despite its identified importance in the health care setting, students' attitudes toward interprofessional collaboration and the significance of education of health professionals have not been clearly explored (Skinner, 2001).

Interprofessional education (IPE) has been designed to prepare students to collaborate in order to provide safe and high-quality services to older adults (Goldberg, Koontz, Rogers, & Brickell, 2012). Previous research has demonstrated that students' exposure to IPE generally results in positive outcomes, in particular their responses to IPE and improvement in knowledge and skills (Hammick, Freeth, Koppel, Reeves, & Barr, 2007). Leipzig and colleagues (2002) reported that students from health care professions exhibited diverse attitudes toward IPE in geriatric care; among students in medicine, nursing, and social work, medical students demonstrated the least positive attitude. A majority of the students reported that the interprofessional team approach benefits patients; however, internal medicine and family practice residents consistently rated collaboration lower than did advance practice nursing and master's-level social work students. Interprofessional difference was greatest for beliefs about the physician's role; 73% of residents, 44% of nurse practitioner trainees, and 47% of master of social work students agreed that a team's purpose was to assist physicians in achieving treatment goals for patients (Leipzig et al., 2002).

In a pilot program for medical and nursing students measuring medical students' perceptions of the nurse's role, medical students were less convinced of the importance of the training program than were nursing students (Croen, Hamerman, & Goetzl, 1984). Despite increasing research on students' attitudes toward collaboration between nurse and physician (Baggs et al., 1999; Carpenter, 1995; Hojat et al., 1999; Reeves & Pryce, 1998), little is known about students' attitudes toward interprofessional collaboration in programs among physicians, nurses, and social workers or other health care providers on the health care team (Leipzig et al., 2002).

There is a need for increased emphasis on interprofessional collaboration by health care providers in their educational programs (Barnsteiner et al., 2007; Hojat et al., 2001; Leipzig et al., 2002). It has been established that students need appropriate programs of collaboration, and educators have been encouraged to develop interprofessional training sessions as a part of a curriculum to promote interprofessional collaboration (Hojat et al.,

2001). However, there have been few opportunities to bring educators and students together in programs from multiple professions for the purpose of learning about each other's roles and practicing collaborative teamwork (Barnsteiner et al., 2007).

### **Interprofessional Education**

IPE has been advocated as a way to improve communication and collaboration among professionals in health care (Institute of Medicine, 2001). IPE enhances students' understanding of other professionals' roles and responsibilities while fostering mutual respect and understanding among members of the health care team (Freeth, Hammick, Reeves, Koppel, & Barr, 2005). In order to develop interprofessional learning curricula and provide adequate experiences and skills for students before they work in the health care setting, it is important to understand students' attitudes toward interprofessional collaboration (Freeth et al., 2005; Institute of Medicine, 2001).

### **Four Competency Domains**

The influence of the interprofessional collaboration (IPC) model presented by the Interprofessional Education Collaborative Expert Panel (IECEP, 2011) on patient outcomes has been identified. Collaboration requires mutual respect for each other's professional roles. The IECEP identified four competency domains: (a) values and ethics for interprofessional practice, (b) roles and responsibilities for collaborative practice, (c) interprofessional communication practice, and (d) interprofessional teamwork and team-based practice. First, the domain of values and ethics implies respect for the patient's dignity and privacy, as well as confidentiality in the delivery of team-based care. Second, the domain of roles and responsibilities refers to understanding other health care providers' roles and responsibilities and how the team can work effectively to provide the best care. Third, the domain of interprofessional communication involves choosing effective communication tools and techniques and facilitating discussion and interactions that improve teamwork. Fourth, the domain of interprofessional teamwork and team-based practice involves leadership practices that consider professional authority and autonomy and improvement strategies for collaborative practice and team effectiveness (IECEP, 2011). To function interdependently, professionals from these diverse areas should understand the distinction between their own and their collaborating professionals' role and fulfill them appropriately (Goldberg et al., 2012).

### **Study Purpose and Research Question**

Although the terms *interdisciplinary* and *interprofessional* were used interchangeably in many peer-reviewed articles (Goldberg et al., 2012), this study uses the term *interprofessional collaboration* because nursing, social work, and medicine are considered to be professions as well as disciplines, with greater emphasis on profession than discipline. The purpose of the current study was to measure and compare attitudes expressed by social work, medical, and nursing students toward interprofessional collaboration. The research question was: *Is there a difference in attitude among students of medicine, nursing, and social work toward interprofessional collaboration (a) between*

*social worker and physician, (b) between physician and nurse, and (c) between social worker and nurse?*

## Methods

### Study Design and Procedure

After obtaining approval by the Institutional Review Board (IRB) of the target university, SurveyMonkey™ (SurveyMonkey, Inc., 2010), an online survey tool, was used to administer an Internet-based, self-administered questionnaire. An email was sent to 251 students (64 Medicine, 137 Nursing, and 50 Social Work) who were planning to attend the university's IPE program in order to invite their participation in the study by responding to the survey. The email included an invitation to complete the survey and a consent form that contained the title of the study and descriptions of the purpose of the study, its voluntary nature, study procedures, risks and benefits of study participation, and confidentiality of collected data. Students who agreed to participate in the study were directed to the SurveyMonkey site and asked to complete a consent form and the survey. Participants were informed that they could decline to complete the survey with no adverse consequences.

Among a total of 251 students, 80 completed the survey, which contained demographic items, the Jefferson School of Attitudes Toward Physician-Nurse Collaboration (JSAPNC), a modified version of the JSAPNC, and the Aging Semantic Differential (ASD). However, since this paper focuses on interprofessional collaboration, the data from the ASD were not included in analysis.

### Participants

Participants met two inclusion criteria: (a) full-time student in the target university's School of Social Work, College of Medicine, or College of Nursing; (b) participation in the university's IPC seminars and Senior Aging and Geriatric Educator (SAGE) Mentoring Program.

### Data Collection

The JSAPNC was originally developed to measure attitudes toward nurses and nursing services (Hojat & Herman, 1985). The original scale, with 20 items, was modified to investigate attitudes toward physician-nurse alliances (Hojat et al., 1999). Five of the original 20 items did not have a significant factor coefficient (Hojat et al., 1999). Therefore, the final version of JSAPNC, with 15 items answered on a 4-point Likert-type scale (4 = *Strongly Agree* to, 3 = *Agree*, 2 = *Disagree*, 1 = *Strongly Disagree*) was used in the current study (Table 1). Two items (Items 14 and 15) are a reflection of a negative attitude toward physician-nurse collaboration and were reverse scored (1 = *Strongly Agree*, 2 = *Agree*, 3 = *Disagree*, 4 = *Strongly Disagree*; Hojat et al., 1999).

A total score was calculated for the 15 items and attitudes toward collaboration were reflected by the total score on the JSAPNC (range 15 to 60), with higher scores indicating a more positive attitude. The 15 items addressed four constructs (subscales): (a) shared

educational and collaborative relationships, (b) caring as opposed to curing, (c) nurse's autonomy, and (d) physician's authority (Hojat et al., 1999). Reliability coefficients for this 15-item (modified) scale were .84 and .85 (Hojat et al., 1999). In the current study the modified version of the 15-item scale and the original 15-item JSAPNC were used: (a) Physician-Nurse collaboration (original scale), (b) Physician-Social Worker collaboration (modified version 1), and (c) Social Worker-Nurse collaboration (modified version 2). For example, in the modified version for Physician-Social Worker collaboration the term *nurse* in the original JSAPNC was replaced by the term *social worker*, in the modified version for Social Worker-Nurse collaboration the term *nurse* in the original JSAPNC was replaced by the term *social worker*, and the term *physician* in the original JSAPNC was replaced by the term *nurse* (Table 1). Reliability of the JSAPNC, the modified JSAPNC (Version 1, Physician/Social Worker), and the modified JSAPNC (Version 2, Social Worker/Nurse) was calculated; the Cronbach's alpha of the JSAPNC was .80 and the modified version of the JSAPNC (Social Worker/Nurse) was .90, and the modified version of the JSAPNC (Physician/Social Worker) was .91.

### Data Analysis

Descriptive statistics consisted of means (*M*) and standard deviations (*SD*) for continuous variables (e.g., age) and frequencies for other demographic categorical variables (gender, ethnicity/race, education, religion, work experience, experience with older adults). One-way between-groups analysis of variance (ANOVA) was performed to compare the students' attitude toward interprofessional collaboration, as measured by the JSAPNC and the modified JSAPNC. Participants were divided into three groups according to profession (Group 1 = Medicine, Group 2 = Nursing, Group 3 = Social Work).

## Results

### Sample Demographic Characteristics

Of the 80 participants, 45% ( $n = 36$ ) were medical students, 28% ( $n = 22$ ) were nursing students, and 28% ( $n = 22$ ) were social work students. The nursing students' response rate (16%) was significantly lower than that for medical students (56%) or social work students (44%). The participants ranged in age from 20 to 59 years, with a mean age of 29 years ( $SD = 9.95$ ). The majority of the students were women (70%,  $n = 56$ ). Among the 80 participants, over two thirds (70%,  $n = 56$ ) reported as Caucasian/White. The highest proportion of minority students was Hispanic (15%;  $n = 12$ ); 8% ( $n = 6$ ) were Asian or Pacific Islander, 4% ( $n = 3$ ) were African American, 3% ( $n = 2$ ) identified with another ethnic group, and 1% ( $n = 1$ ) did not report an ethnic group. Among 251 students who attended the IPC seminars and the SAGE Mentoring Program, 80 completed the survey (32% response rate) by providing demographic information, and responded to the survey items. Regarding the highest level of education, 84% ( $n = 67$ ) were college graduates, 12% ( $n = 10$ ) had earned a graduate degree, and 4% ( $n = 4$ ) had completed only high school. Almost two thirds (64%,  $n = 51$ ) of the students reported full-time work experience and 58% ( $n = 46$ ) reported volunteer experience with

older adults. In addition, 49% ( $n = 39$ ) reported that they had spent extensive time with older relatives. Sample characteristics of each profession are presented in Table 2.

*Table 1. Original and Two Modified Versions of the Jefferson School of Attitudes Toward Physician-Nurse Collaboration (JSAPNC) Administered in This Study*

<b>Original Version: Physician-Nurse</b>	
<i>Components</i>	<i>Items</i>
<i>(a) Shared educational and collaborative relationships</i> (7 items)	<ol style="list-style-type: none"> <li>1. During their education, medical and nursing students should be involved in teamwork in order to understand their respective roles.</li> <li>2. Interprofessional relationships between physicians and nurses should be included in their educational programs.</li> <li>3. A nurse should be viewed as a collaborator and colleague with a physician rather than his/her assistant.</li> <li>4. There are many overlapping areas of responsibility between physicians and nurses.</li> <li>5. Physicians should be educated to establish collaborative relationships with nurse.</li> <li>6. Physicians and nurses should contribute to decisions regarding the hospital discharge of patients.</li> <li>7. Nurses should also have responsibility for monitoring the effects of medical treatment.</li> </ol>
<i>(b) Caring as opposed to curing</i> (3 items)	<ol style="list-style-type: none"> <li>8. Nurses are qualified to assess and respond to psychological aspects of patient's needs.</li> <li>9. Nurses should be involved in making policy decisions affecting their working conditions.</li> <li>10. Nurses have special expertise in patient education and psychological counseling.</li> </ol>
<i>(c) Nurse's autonomy</i> (3 items)	<ol style="list-style-type: none"> <li>11. Nurses should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient.</li> <li>12. Nurses should be involved in making policy decisions concerning the hospital support services upon which their work depends.</li> <li>13. Nurses should be accountable to patients for the nursing care they provide.</li> </ol>
<i>(d) Physician's authority</i> (2 items)	<ol style="list-style-type: none"> <li>14. The primary function of the nurse is to carry out the physician's orders.<sup>a</sup></li> <li>15. Doctors should be the dominant authority in all health care matters.<sup>a</sup></li> </ol>

Table 1. (continued)

<b>Modified Version 1: Physician-Social Worker</b>	
<i>Components</i>	<i>Items</i>
<i>(a) Shared educational and collaborative relationships</i> (7 items)	<ol style="list-style-type: none"> <li>1. During their education, medical and social work students should be involved in teamwork in order to understand their respective roles.</li> <li>2. Interprofessional relationships between physicians and social workers should be included in their educational programs.</li> <li>3. A social worker should be viewed as a collaborator and colleague with a physician rather than his/her assistant.</li> <li>4. There are many overlapping areas of responsibility between social workers and nurses.</li> <li>5. Physicians should be educated to establish collaborative relationships with social workers.</li> <li>6. Physicians and social workers should contribute to decisions regarding the hospital discharge of patients.</li> <li>7. Social workers should also have responsibility for monitoring the effects of medical treatment.</li> </ol>
<i>(b) Caring as opposed to curing</i> (3 items)	<ol style="list-style-type: none"> <li>8. Social workers are qualified to assess and respond to psychological aspects of patient's needs.</li> <li>9. Social workers should be involved in making policy decisions affecting their working conditions.</li> <li>10. Social workers have special expertise in patient education and psychological counseling.</li> </ol>
<i>(c) Social worker's autonomy</i> (3 items)	<ol style="list-style-type: none"> <li>11. Social workers should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient.</li> <li>12. Social workers should be involved in making policy decisions concerning the hospital support services upon which their work depends.</li> <li>13. Social workers should be accountable to patients for the nursing care they provide.</li> </ol>
<i>(d) Physician's authority</i> (2 items)	<ol style="list-style-type: none"> <li>14. The primary function of the social worker is to carry out the physician's orders.<sup>a</sup></li> <li>15. Doctors should be the dominant authority in all health care matters.<sup>a</sup></li> </ol>

Table 1. (continued)

<b>Modified Version 2: Social Worker-Nurse</b>	
<i>Components</i>	<i>Items</i>
<i>(a) Shared educational and collaborative relationships</i> (7 items)	<ol style="list-style-type: none"> <li>1. During their education, nursing and social work students should be involved in teamwork in order to understand their respective roles.</li> <li>2. Interprofessional relationships between nurses and social workers should be included in their educational programs.</li> <li>3. Social workers should be viewed as a collaborator and colleague with a nurse rather than his/her assistant.</li> <li>4. There are many overlapping areas of responsibility between social workers and nurses.</li> <li>5. Nurses should be educated to establish collaborative relationships with social workers.</li> <li>6. Nurses and social workers should contribute to decisions regarding the hospital discharge of patients.</li> <li>7. Social workers should also have responsibility for monitoring the effects of medical treatment.</li> </ol>
<i>(b) Caring as opposed to curing</i> (3 items)	<ol style="list-style-type: none"> <li>8. Social workers are qualified to assess and respond to psychological aspects of patient's needs.</li> <li>9. Social workers should be involved in making policy decisions affecting their working conditions.</li> <li>10. Social workers have special expertise in patient education and psychological counseling.</li> </ol>
<i>(c) Social worker's autonomy</i> (3 items)	<ol style="list-style-type: none"> <li>11. Social workers should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient.</li> <li>12. Social workers should be involved in making policy decisions concerning the hospital support services upon which their work depends.</li> <li>13. Social workers should be accountable to patients for the nursing care they provide.</li> </ol>
<i>(d) Nurse's authority</i> (2 items)	<ol style="list-style-type: none"> <li>14. The primary function of the social work is to carry out the nurse's orders.<sup>a</sup></li> <li>15. Nurses should be the dominant authority in all health care matters.<sup>a</sup></li> </ol>

<sup>a</sup>Responses were reversed scored.

Table 2. Demographic Characteristics by Profession (N = 80)

Characteristic	Medical students (n = 36)	Nursing students (n = 22)	Social work students (n = 22)
	n (%)	n (%)	n (%)
Gender			
Male	20 (55.6)	1 (04.5)	3 (13.6)
Female	16 (44.4)	21 (95.5)	19 (86.4)
Race/ethnicity			
African American	1 (02.8)	1 (04.5)	1 (04.5)
Caucasian/White	25 (69.4)	13 (59.1)	18 (81.8)
Hispanic/Latino	3 (08.3)	6 (27.3)	3 (13.6)
Asian/Pacific Islander	5 (13.9)	1 (04.5)	0 (00.0)
Other	1 (02.8)	1 (04.5)	0 (00.0)
Missing	1 (02.8)	0 (00.0)	0 (00.0)
Highest education			
High school graduate only	31 (86.1)	3 (13.6)	0 (00.0)
College graduate	5 (13.9)	17 (77.3)	19 (86.4)
Graduate degree	0 (00.0)	2 (09.1)	3 (13.6)

### Item and Subscale Analyses

In the item *Physicians should be educated to establish collaborative relationships with nurse*, in the subscale of shared educational and collaborative relationship, 78% ( $n = 62$ ) of the 80 respondents *strongly agreed*. In particular, 64% ( $n = 23$ ) of the medical students *strongly agreed*, indicating that more education is needed among physicians to establish collaboration relationships with nurses. In the modified version of the JSAPNC (physician-social worker), 36% ( $n = 13$ ) of the medical students *strongly agreed* with the item *Physicians should be educated to establish collaborative relationships with social worker*. In contrast, 91% ( $n = 20$ ) of the social work students *strongly agreed* with the item. In terms of an educational program, 58% ( $n = 21$ ) of the medical students *strongly agreed* with the item *Interprofessional relationships between nurses and social workers should be included in their educational programs* and more nursing students (73%,  $n = 16$ ) *strongly agreed* with the item. In the modified version of the JSAPNC (physician-social worker), only 33% ( $n = 12$ ) of the medical students *strongly agreed* with the item *Interprofessional relationships between physicians and social workers should be included in their educational programs* and 68% ( $n = 15$ ) of the social work students *agreed* with this item. Regarding the item *Social workers should be involved in making policy decisions concerning the hospital support services upon which their work depends* in the subscale of caring as opposed to curing, only 17% ( $n = 6$ ) of the medical students *strongly agreed* with the item, whereas 73% ( $n = 16$ ) of the social work students *strongly agreed* with it.

For the JSAPNC item *Doctors should be the dominant authority in all health care matters*, 55% ( $n = 44$ ) *strongly agreed* or *agreed* and 36% ( $n = 29$ ) *strongly disagreed* or *disagreed*. In particular, 75% ( $n = 27$ ) of the medical students *strongly agreed* or *agreed* while 6% ( $n = 2$ ) *disagreed* regarding the doctor's dominant authority. On the other hand, 86% ( $n = 19$ ) of the nursing students *strongly disagreed* or *disagreed* with the item regarding the doctor's dominant authority. In addition, 64% ( $n = 14$ ) of the social work students *agreed* regarding the doctor's authority in all health care matters.

On the subscale of physician's authority in physician/nurse collaboration, 36% ( $n = 13$ ) of the medical students *agreed* that *the primary function of the nurse is to carry out the physician's orders*, but 86% ( $n = 19$ ) of the nursing students *disagreed* or *strongly disagreed* with the item. In the subscale of physician's authority in the physician-social worker collaboration, 17% ( $n = 6$ ) of the medical students *agreed* that *the social worker's primary function is to carry out the physician's orders*, while 91% ( $n = 20$ ) of the social work students *disagreed* or *strongly disagreed* with the item.

### One-Way Between-Groups ANOVA

In order to examine which professional students showed significant differences in mean scores on interprofessional collaboration (physician-nurse, nurse-social worker, or physician-social worker), one-way between-groups ANOVA was conducted. Social work and nursing students showed the most positive attitudes toward these interprofessional collaborations. Tables 3a, 3b, and 3c show frequencies,  $M$ ,  $SD$ ,  $F$ , and  $p$  levels for medical, nursing, and social work students' attitudes toward interprofessional collaboration as measured by the JSAPNC and the modified JSAPNC. Comparisons by profession showed that nursing and social work students had significantly higher average scores on the JSAPNC and modified JSAPNC than medical students.

Significant difference between medical, nursing, and social work students regarding attitudes toward physician-nurse collaboration was observed at  $p = \leq .005$ ,  $F [2, 68] = 9.757$ ,  $df = 2$  (see Table 3a). Compared with social work students ( $M = 51$ ,  $SD = 3.8$ ) and nursing students ( $M = 53$ ,  $SD = 4.3$ ), medical students scored lower ( $M = 48$ ,  $SD = 4.1$ ) on attitude toward physician-nurse collaboration. This result indicates that medical students had a less positive attitude toward physician-nurse collaborative relationships than did social work and nursing students.

Table 3b presents results regarding attitudes toward nurse-social worker collaboration (the modified JSAPNC). A statistically significant difference in mean scores among groups was identified ( $p = \leq .005$ ,  $F(2, 64) = 10.813$ ,  $df = 2$ ). Social work students ( $M = 54$ ,  $SD = 3.6$ ) showed a more positive attitude toward nurse-social worker collaboration than did nursing students ( $M = 51$ ,  $SD = 6.7$ ) or medical students ( $M = 47$ ,  $SD = 5.6$ ).

Regarding attitudes toward physician-social worker collaboration, Table 3c shows a statistically significant difference in scores (the modified JSAPNC) among the three groups ( $p = \leq .005$ ,  $F(2, 63) = 26.631$ ,  $df = 2$ ). Nursing students ( $M = 54$ ,  $SD = 3.6$ ) had slightly higher scores in collaboration than social work students ( $M = 53$ ,  $SD = 4.5$ ) and significantly higher scores than medical students ( $M = 45$ ,  $SD = 5.9$ ). Nursing students

showed more positive attitudes toward physician-social worker collaboration even though the nurse was not included in that relationship.

*Table 3a. Means, SD, df, F, and p for Collaborations Between Physicians and Nurses*

<b>Collaboration, students, item</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>F</b>	<b>p</b>
<b>Physician-nurse</b>			2	9.757	< .005
Medical students (total)	48.0	4.1			
Shared education/collaborative relationships	24.0				
Caring/curing	8.7				
Nurse autonomy	10.7				
Physician authority	4.6				
Nursing students (total)	53.0	4.3			
Shared education/collaborative relationships	25.4				
Caring/curing	9.1				
Nurse autonomy	12.0				
Physician authority	6.3				
Social work students (total)	51.0	3.8			
Shared education/collaborative relationships	25.7				
Caring/curing	8.9				
Nurse autonomy	11.0				
Physician authority	5.6				

*Table 3b. Means, SD, df, F, and p for Collaborations Between Nurses and Social Workers*

<b>Collaboration, students, item</b>	<b>Mean</b>	<b>SD</b>	<b>df</b>	<b>F</b>	<b>p</b>
<b>Nurse-social worker</b>			2	10.813	< .005
Medical students (total)	47.0	5.6			
Shared education/collaborative relationships	22.0				
Caring/curing	9.6				
Social worker autonomy	10.0				
Nurse authority	5.0				
Nursing students (total)	51.0	6.7			
Shared education/collaborative relationships	23.0				
Caring/curing	10.0				
Social worker autonomy	11.5				
Nurse authority	6.4				
Social work students (total)	54.0	3.6			
Shared education/collaborative relationships	25.8				
Caring/curing	11.0				
Social worker autonomy	6.4				
Nurse authority	11.0				

Table 3c. Means, SD, df, F, and p for Collaborations Between Physicians and Social Workers

Collaboration, students, item	Mean	SD	df	F	p
<b>Physician-social worker</b>			2	26.631	< .005
Medical students (total)	45.0	5.9			
Shared education/collaborative relationships	21.0				
Caring/curing	9.5				
Social worker autonomy	9.7				
Physician authority	4.6				
Nursing students (total)	54.0	3.6			
Shared education/collaborative relationships	25.1				
Caring/curing	11.0				
Social worker autonomy	11.0				
Physician authority	6.4				
Social work students (total)	53.0	4.5			
Shared education/collaborative relationships	25.0				
Caring/curing	11.0				
Social worker autonomy	11.0				
Physician authority	6.0				

## Discussion

Overall findings from this pilot study are congruent with those from previous studies (e.g., Hojat et al., 2001; Leipzig et al., 2002; Ward et al., 2008), indicating that attitudes toward collaboration are generally positive among students from medicine, nursing, and social work. When compared to nursing and social work students, medical students were less positive toward interprofessional collaboration in all three combinations. Nursing and social work student students had the most positive attitudes, with similar scores. Specifically, nursing students had the most positive attitude regarding nurse-physician collaboration and social work students had the most positive attitude toward nursing-social work collaboration. It is interesting that nursing students showed the most positive attitude toward physician-social work collaboration although though nurses were not included in the item.

There are possible reasons that social work students earned positive scores on the interprofessional collaboration; it is plausible that social work education emphasizes the importance of interprofessional collaboration approaches, as indicated in the National Association of Social Workers Code of Ethics (NASW, 2008): "Professional and ethical obligations of the interdisciplinary team as a whole and of its individual members should be clearly established." Second, social work students are trained to work in group projects in class and reach decisions as a group. This team approach is central to interprofessional collaboration.

In terms of physician and social worker collaboration, only one third of the medical students (36%) *strongly agreed* with the item *Physicians should be educated to establish collaborative relationships with social worker*. On the other hand, almost twice as many

medical students (64 %) agreed with the physician/nurse collaboration, *Physicians should be educated to establish collaborative relationships with nurse*. The findings may indicate that the medical students were less enthusiastic about collaborating with social workers than with nurses. It is also possible that physicians work more closely with nurses than with social workers and that more emphasis is placed on physician-nurse collaboration than on physician-social worker collaboration in the health care setting. It has been demonstrated that increasing discrepancies between physicians' and nurses/social workers' attitudes may contribute to increasing levels of conflicts in health care settings by the interdisciplinary care team (Leipzig et al., 2002).

Although a large number of medical students strongly agreed with items describing collaborative relationship, they were less positive than social work or nursing students about adding interprofessional relationships to their education programs. Most of all, an educational program for medical students would help them to understand why interprofessional collaboration is important and to learn about other health care professionals' values and roles in the health care team to increase competence in collaboration.

There has been little research on attitudes toward collaboration between nurses and social workers and between physicians and social workers. The current study expanded this research by adding social workers in the collaborative relationships in the health care setting. This may lead to an increase in interprofessional learning opportunities and curricula to promote IPE. Clearly, there should be more research on collaboration between social workers and other health care professionals as members of the health care team.

The study findings indicate that medical students' attitudes toward physician authority and leadership were more positive than those of nursing and social work students, who were less inclined to agree with that leadership principle. However, medical students were less positively inclined toward the nurse's or social worker's autonomy and their involvement in policy decisions concerning hospital supportive services than were nursing or social work students. Given the current emphasis on improving collaborations among health professionals and study findings of attitudes among students, it is important to develop effective education programs to improve interprofessional relationships.

### **Limitations and Implications**

The current study's findings should be understood in light of several methodological limitations. A relatively small number of students participated in the survey study. The online survey may have been ignored by students who skipped the email, resulting in a relatively low response rate. Email-distributed surveys have produced considerably lower rates of return than mail surveys and in-person surveys (Truell, Bartlett, & Alexander, 2002). The small sample size imposed limits on the external validity (generalization) of the results. Further studies, especially prospective and longitudinal projects, are needed to explore whether interprofessional education programs can improve attitudes toward interprofessional collaboration among students in health care fields.

Modified versions of the JSAPNC were used; reliabilities of these instruments were good in the current study. Although the reliability (Cronbach's alpha) of each version of the JSAPNC was calculated, we did not establish face and content validities of the instruments. While the original Jefferson survey is a psychometrically sound tool, with good construct validity and internal consistency reliability (Hojat et al., 1999), use of the modified versions of the JSAPNC was exploratory and additional psychometric tests are required to obtain sound reliability and validity scores. These results can be used to plan future studies with more rigorous designs, including larger sample sizes and randomized controlled trials, to test efforts to promote more positive attitudes toward interprofessional collaboration, which may reduce health care costs, improve quality of care for patients, and increase job satisfaction.

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