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Evaluation of Osteopathic Medical Students' and Physicians' Understanding of Inter-Professional Collaboration

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Abstract

The purpose of this study was to assess medical students' and physicians' understanding of inter-professional collaboration (IPC). It was hypothesized that students are less likely to understand the dynamics of IPC than practitioners, and that students in pre-clinical years are as likely as students in clinical years to support IPC. An electronic survey was sent to students and alumni of the participating medical school, 299 students and 279 alumni responded. Significantly different responses between students and practitioners were observed for both understanding dynamics of and support for IPC including questions regarding how referrals are made ($p = 0.007$) and how electronics are used as a means of communication ($p = 0.022$). There were significant linear trends showing greater understanding of the roles and responsibilities of the various healthcare professionals as the years of clinical experience increased ($p < 0.001$). There was no significant difference between the groups of preclinical and clinical students regarding support for IPC ($p = 0.31$). Students have a better awareness of IPC, understanding the roles of members of the healthcare team when compared to practicing physicians. The results of this study may guide medical school curriculum planners to adjust existing or design new IPE programs accordingly.

Keywords: Inter-professional Collaboration, Inter-professional Education, Osteopathic Medical Students, Osteopathic Medical School Alumni

1. Introduction

Inter-professional collaboration (IPC) is a process whereby healthcare providers from multiple disciplines work together as a team managing a single patient care issue (Braithwaite, et al., 2013; Chung, Ma, Hong & Griffiths, 2012). The implications of collaboration are that the providers share the responsibilities and goals of patient care.

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IPC is most effective when all collaborators communicate efficiently and are motivated to participate (Atwal, & Caldwell, 2005;Chong, Aslani & Chen, 2013) Chong et al. (2013) believe that in order for collaborative care to be successful, all providers must not only be motivated, but also be willing to comply in the sharing of the decision-making processes. IPC may ultimately reduce the costs of patient care, while at the same time improving the quality of patient care and outcomes (Mior, Gamble, Barnsley, Côté & Côté, 2013). IPC provides patients with clinically effective care with fewer duplications and interruptions of services, allowing for a more patient-centered clinical experience (Atwal et al., 2005). Mior et al. (2013) described changes in low back pain management with the implementation of IPC, patients were prescribed fewer medications, had fewer physician visits, and improved functional outcomes. Challenges to effective IPC include professional stereotypes, role boundaries, and deficiencies in communication (Atwal et al., 2005).

In a comparison of various health professionals' attitudes toward IPC, Braithwaite et al. (2013) found physicians to show the most negative attitudes. Atwal et al. (2005) showed that in medical team meetings, physicians displayed a dominant role, while nurses, physical and occupational therapists and social workers demonstrated low rates of interactions with the team. These findings help curriculum planners, who will want to encourage health care professionals to receive training in teamwork skill development, in order to contribute more effectively and confidently when working inter-professionally (Atwal et al., 2005). Norgaard, et al. (2013) assessed the effects of an IPC training program on students' perceived self-efficacy. Students who had undergone IPC training reported higher scores of self-efficacy in their ability to collaborate with and identify the roles of other professionals. These results provide evidence to support the implementation of IPC training in health care curricula (Norgaardet al., 2013). Pinto et al. (2012) also investigated the influence of inter-professional education (IPE) on health care students, and they found that IPE increased their respect both for collaboration and for work of other health professionals.

2. Purpose and Hypotheses

2.1 Purpose

The purpose of the study was to assess osteopathic medical students' and practicing osteopathic physicians' understanding of IPC, with the ultimate goal of being able to utilize the knowledge gained from our results as evidence to promote an optimal environment for the development of IPE in an evolving educational curriculum.

2.2 Hypotheses

We hypothesized that osteopathic medical students are less likely to understand the dynamics of IPC than osteopathic practitioners. We also hypothesized that students in pre-clinical years (year one and year two) are as likely as students in clinical years (year three and year four) to support IPC.

3. Methodology

3.1 Data Collection

This study was a cross-sectional survey to assess the understanding of and support for IPC shown by current osteopathic medical students and alumni of the NYIT College of Osteopathic Medicine (NYITCOM). The survey items from #8 to #22 were created to evaluate the understanding of the dynamics of IPC, including the understanding of: Workforce Independence (8), Opinions (9), Quality (10), Instruction (11), Negatives (12), Communications (13), Relationships (14), Sharing (15), Referral (16), Interactions (17), Receiving referral (18), Telephone (19), EMR email (20), Time (21), and Paperless EMR (22). The survey items from #23 to #26 and #29 to #32 were created to evaluate support for IPC as this relates to: IPE (23), Independence (24), Interdependence (25), Comfort (26), Academics (29), Rotations (30), Experiences (31), and Other Influences (32). All procedures of the investigation were conducted in accordance with the Helsinki Declaration of 1975. The consent form and the study were approved by the Institutional Review Board of the host institution (IRB# BHS-973). All osteopathic medical students in the first through fourth years at NYITCOM and all alumni of NYITCOM, as of February 2014, were sent an email with a link to the survey study, which was administered through Survey Monkey. All subjects participated voluntarily and anonymously without incentive or compensation.

3.2 Study Design / Data Analysis

The survey consisted of 57 survey items that evaluated respondents' level of understanding and support for IPC using the Likert-type scale. The original responses in 5-point Likert scale of 'Strongly agree', 'Agree', 'Neutral', 'Disagree', and 'Strongly disagree' were initially analyzed. They were further recoded into 3 categories of 'Agree', 'Neutral', and 'Disagree' by collapsing 'Strongly agree' and 'Agree' into a single category of 'Agree', and 'Strongly

disagree' and 'Disagree' into 'Disagree', in order to investigate the different responses focused in those 3 categories. Major comparisons between the groups of students and alumni, and between the groups of preclinical and clinical students, were evaluated using chi-square tests. Linear associations in responses as their years of clinical experience increased were investigated using Mantel-Haenszel tests. Statistical significance was evaluated at 5% level with α=0.05. Data was analyzed using IBM SPSS Statistics 22.

4. Results

4.1 Response Rate

Emails with a link to the survey were sent to 4994 recipients (1171 students and 3823 alumni), of which 578 responded, thus the overall response rate was 11.6%. Of the 1171 students emailed, 299 students chose to participate in the survey, a response rate of 25.5%. Of the 3823 alumni emailed, 279 chose to participate in the survey, a response rate of 7.3%.

4.2 Demographics

Table 1 contains the Study Population Demographics.

Table 1- Study Population Demographics*

		N (%)/Valid N*	Mean Age (SD):
Gender	Women	273 (46.2%)/591	33.0 (11.3)
	Men	318 (53.8%)/591	36.4 (11.9)
Race	White	411 (69.4%)/592	35.6 (12.1)
	Black	25 (4.2%)/592	37.9 (9.6)
	Asian	116 (19.6%)/592	30.3 (9.5)
	Hispanic	9 (1.5%)/592	40.6 (10.7)
	Others	31 (5.2%)/592	37.0 (11.9)
Level of Medical Training	Students-Years 1 or 2	149 (25.8%)/578	26.8 (6.5)
	Students-Years 3 or 4	150 (26.0%)/578	27.8 (6.1)
	Physicians in Training: Intern/resident/post-doc fellow	80 (13.8%)/578	32.0 (6.4)
	Attending Physicians: Attending/Residency Director/Director of Medical Education/ physician in practice	199 (34.4%)/578	46.4 (9.1)

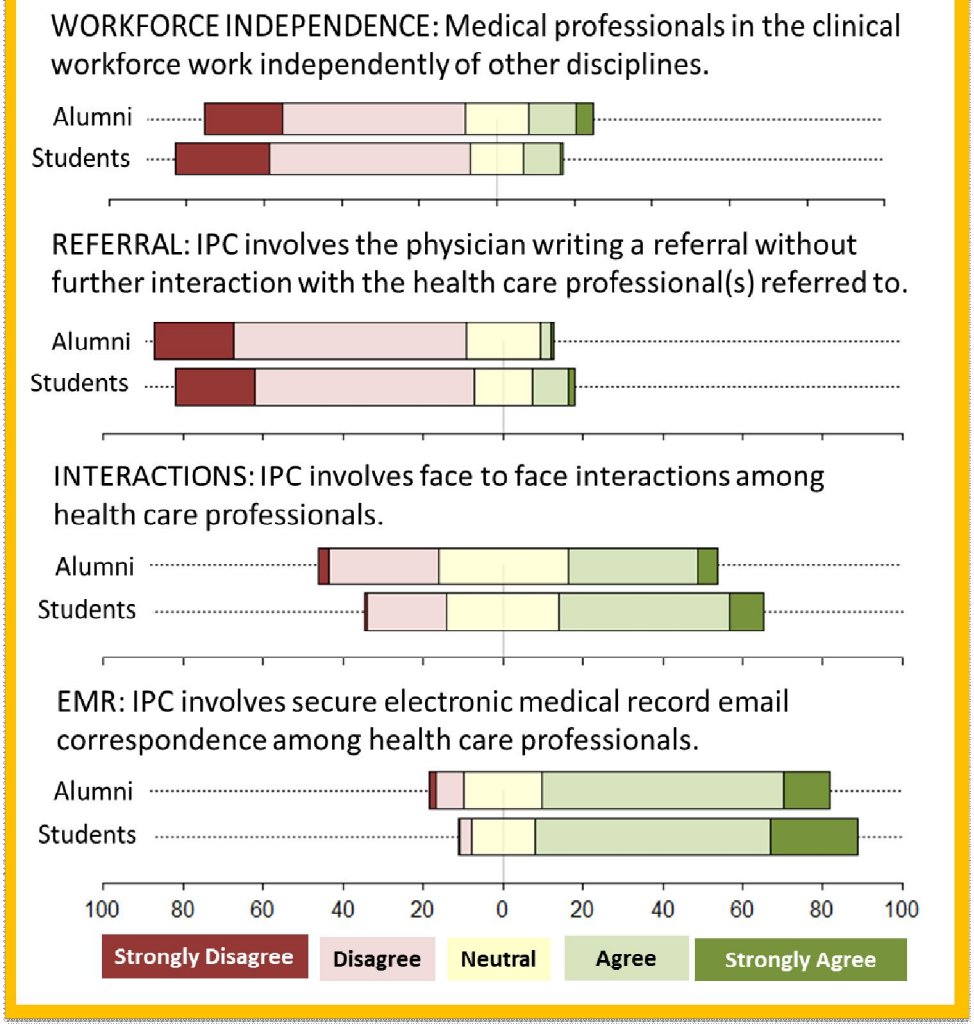
*missing data vary by subjects and variables

4.3 Understanding Dynamics of IPC-Comparison between Students vs. Alumni

Understanding the dynamics of IPC was evaluated by survey items #8 – 22 (see Appendix A to view the Survey). On several individual items, the groups of students and alumni responded differently with statistical significance. Alumni were more likely to agree than students ($p = 0.025$) to the survey item relating to Workforce Independence ("Medical professionals in the clinical workforce work independently of other disciplines" – survey item #8, and see Figure 1). On the other hand, students were more likely to agree than alumni to the survey items relating to: (a) Referral ("Inter-professional collaboration involves the physician writing a referral without further interaction with the health care professional(s) referred to" – survey item 16, and see Figure 1); (b) Interactions ("Inter-professional collaboration involves face to face interactions among health care professionals" – survey item 17, and see Figure 1); (c) EMR ("Inter-professional collaboration involves secure electronic medical record email correspondence among health care professionals" – survey item 20, and see Figure 1); and (d) Paperless EMR ("Paperless (electronic) medical records enhance the ability of health care professionals to act as professionals to act as an inter-professional team" – survey item #22, and see Figure 1), ($p = 0.007$, 0.011, 0.022, and 0.001, respectively). With the responses to those five survey items combined, the osteopathic medical students were more likely to understand the dynamics of IPC than osteopathic practitioners ($p < 0.001$).

With a composite score as a whole regarding their understanding the dynamics of IPC, however, there was no significant difference between the groups of students and practitioners (p = 0.25).

Figure 1: Understanding the dynamics of IPC



4.4 Support for IPC-Comparison between Clinical vs. Preclinical students

Support for IPC was evaluated by survey items #23 – 26 and survey items #29 – 32. The two groups responded similarly on all individual items except one about Rotations. ("I have learned to act as an interdisciplinary team member in my academic clinical rotations" – survey item #30). On the survey item Rotations, clinical students were more likely to agree and less likely to be neutral than preclinical students (p < 0.001). With a composite score as a whole regarding their support for IPC, there was no significant difference between the groups of preclinical students and clinical students (p = 0.31).

4.5 Comparison between Students vs. Alumni

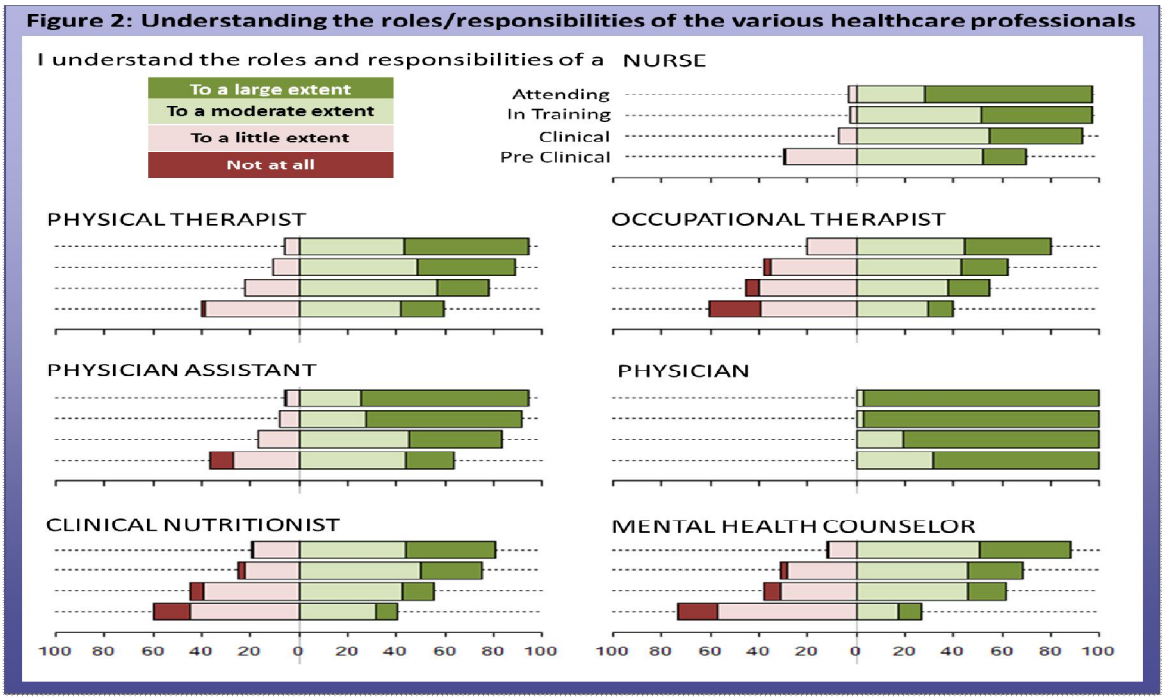
There were statistically significant differences in responses between students and alumni on their support for IPC. Compared to students, alumni were more supportive of the survey items relating to: (a) Independence ("In my professional career, successful treatment of patients, independent of other professionals, can occur" – survey item 24); (b) Rotations ("I have learned how to act as an interdisciplinary team member in my (current or prior) academic clinical rotations" – survey item 30); and (c) Experiences ("I have learned how to act as an interdisciplinary team member in my previous clinical experiences" – survey item 31), (p = 0.004, < 0.001, and 0.001, respectively). For the survey item of IPE ("Inter-professional education is a necessary component for successful inter- professional collaboration" – survey item 23), students were more supportive than alumni (p = 0.022).

This finding may provide objective support for the goal to incorporate IPE early on in the education process, when students demonstrate a positive association with such a goal to help them with future IPC. To the survey item relating to Independence ("In my professional career, successful treatment of patients, independent of other professionals, can occur" – survey item 24), alumni are more supportive than students ($p = 0.004$). As for the survey item relating to Independence noted above, this finding may provide objective support for alumni having greater confidence in their sole ability to treat patients. In regard to the survey item of Comfort ("In a clinical work environment, I am comfortable asking a medical professional from another discipline about his/her responsibilities" – survey item 26), a significant linear trend ($p = 0.027$) was found, which may show that those with more advanced training are more supportive of this, and they understand that healthcare related inquiries are actually an accepted part of professional interactions. To the survey item of Experiences ("I have learned how to act as an interdisciplinary team member in my previous clinical experiences" – survey item 31), alumni are more supportive than students ($p = 0.001$), and this survey item also showed significant linear trends ($p = 0.005$). Results of this survey item may indicate that those with more advanced training are supportive to the statement regarding the positive effect of previous clinical experiences upon interdisciplinary cooperation.

4.6 Other Findings

Survey items #35, #37, #39, #41, #43, #45 and #47 evaluated the extent to which respondents understand the roles and responsibilities of specific health care professionals, including registered nurses, physical therapists, occupational therapists, physician assistants, physicians, clinical nutritionists, and mental health counselors. There were significant linear trends between years of clinical experience and understanding of the roles and responsibilities of the various healthcare professionals. Attending physicians demonstrated a greater extent of understanding than students ($p < 0.001$ for all seven professionals) [see Figure 2]. Survey items #36, #38, #40, #42, #44, #46 and #48 evaluated the source of understanding of those seven health professionals with the given choices of academic coursework, academic clinical rotations, previous clinical experiences and other experience. The most significant statistical trend in this analysis was for the category related to academic clinical rotations throughout all questions, where, as may be expected, there was a significant increase in percentage response between the Year 1 and 2 students and the Year 3 and 4 students, with $p = 0.001$, and a linear trend of $p = 0.001$. The second most significant statistical trend for this group of questions related to the category of previous clinical experiences. In general, these significant trends may point to the importance of direct clinical experiences enhancing ones understanding of health professionals, with all groups from Years 3 and 4, Physicians in Training, and Attending Physicians attributing their source of understanding to experiences attained during either academic clinical rotations or previous clinical experiences.

Figure 2: Understanding the roles/responsibilities of the various healthcare professionals



5. Discussion

The results demonstrate that with regard to our first hypothesis, there was no significant difference between students and alumni in their overall understanding of the dynamics of IPC. However, upon further statistical analysis of where students and alumni differ, the results demonstrated particular trends where students and alumni hold different opinions of how physicians communicate with other professionals on a daily basis. Students responded with more agreement that inter-professional collaboration involves face-to-face interactions, as well as secure electronic medical record email correspondence, whereas alumni were more likely to disagree (see Figure 1). Further investigation may elucidate where this difference in responses originates. Possibly, alumni with many years of experience are used to a different type of communication (written referrals and consultations), while they also recognize limitations for ensuring face-to-face interactions. In comparison, today's generation of student physicians may be more comfortable communicating by cellular phone and email, and they may also have the expectation that the face-to-face interactions will be possible in their future IPC. Further, students may be demonstrating idealistic views of how inter-professionalism should occur, while alumni are responding with experience based on their current and prior work environments. Regarding students' understanding of referrals without further interaction with the health care professional referred to, the results indicated that students agreed to this statement more than practicing physicians (see Figure 1). However, overall, students as a group disagreed with the statement, and the statistically significant linear trend indicated that there was less agreement with this statement with advancing levels of experience. Thus, with experience, physicians realize the importance of good communication with colleagues referred to in the workplace. Another statement for which differences of opinion between the students and the alumni were identified was regarding "medical professionals in the clinical workforce work independently of other disciplines." Students were more likely than alumni to disagree with this statement, and further, there was a statistically significant linear trend indicating less disagreement with the statement with more advanced training (see Figure 1). This difference may indicate that with greater experience, comes the confidence of handling a clinical situation independently. Also, this may indicate that students early on in training think that less independence is a part of the collaborative processes. It is important to understand these differences, in order for physicians to be educated about the expected best means of communication for collaboration.

With regard to our second hypothesis, we found that indeed, students in pre-clinical and clinical years of education demonstrated no statistically significant difference in their support of IPC. Overall, students demonstrated a strong support for IPC. From these results, it may be further hypothesized that implementing IPE while students are eager to support IPC will yield optimal collaborative efforts once those students enter the workforce as physicians. Coster et al. (2008) stated that implementing IPE at the start of health profession education would be beneficial due to students' heightened enthusiasm and willingness to learn together at that time. Carpenter and Dickinson (2016) presented the evolution of contact theory as something that can be a useful tool for future curriculum planners, who use this to learn from past successes and failures in IPE. A contact theory framework has been utilized either to plan IPE programs or to analyze reasons for an IPE program failure. Further investigation may demonstrate the effects of implementing IPE at earlier stages in the curriculum, and the current study points to the finding that all the students show a strong support for IPC.

Norgaard et al. (2013) have discussed that one of the prerequisites of successful inter- professional collaboration is sufficient knowledge of the roles of the other professionals. Without such knowledge, challenges will arise when trying to collaborate. It is interesting to note that other results from our study showed physicians to have a greater understanding as compared to students, regarding the roles and responsibilities of other health care professionals (see Figure 2). Further, when asked where this understanding came from, physicians most often cited academic clinical rotations or previous clinical experience as the source. Both students and alumni demonstrated a strong understanding of their own professional roles and responsibilities. Perhaps implementing a course that would educate medical students about the roles and responsibilities of other health care professionals would optimize inter-professional collaboration at an earlier stage in their careers. An addition to the curriculum such as this may complement the usual clinical experiences that allow physicians to learn about the roles of other health care professionals. Wang and Bhakta (2013) investigated a multidisciplinary team-based student-run clinic, where the students reported this experience provided them with a broader perspective of their colleagues, as well as an enhanced sense of respect for them. Lumague et al. (2009) stated that multidisciplinary teams of students in a stroke unit, reported that they not only better understood IPC, but also agreed that their educational systems should include these types of clinical inter-professional learning.

Insalaco, Ozkurt & Santiago (2006) have shown that without IPE, students have a tendency to develop negative perceptions and stereotypes of other professions, as well as inflated perceptions of their own profession. Cox, Cuff, Brandt, Reeves & Zierler (2006) discuss that use of this model points to the benefit of IPE throughout health professionals training, from the classroom, where there is typically limited exposure to other health professionals, to the clinical settings, where collaborative learning is more readily available. Thus, overall, a proactive educational focus, with consideration of IPE at many or all junctures of the educational continuum, including ongoing career development, will best produce future collaborators.

5.1 Limitations

One limitation was that the target respondents were limited to members of the NYITCOM community. Future researchers may consider including a larger, more randomized population with medical students and physicians, as well as students and practitioners of other health-related fields. In addition, this study focused on knowledge, understanding and support of inter-professional collaboration (IPC), with a secondary goal to glean useful information for future IPE. A recent literature review by O'Carroll, McSwiggan & Campbell (2016) included studies that had both health and social care professionals, and that in addition assessed attitudes to both IPC and IPE. Other limitations include that the study involved a large number of survey items (57) and utilized two types of scales. That may have contributed to the response rate and the dropout rate. Future researchers may consider looking in to the longer-term health-related patient outcomes derived from IPE, with a concomitant goal to evaluate any associated improvement in IPC.

5.2 Conclusion

The results provide an appreciation of medical students' awareness of IPC and their understanding of the roles of the members of the healthcare team in comparison to practicing physicians. This study may guide medical school curriculum planners to adjust existing or design new inter-professional educational programs accordingly.

6. References

Atwal, A., &Caldwell, K. (2005). Do all health and social care professionals interact equally: a study of interactions in multidisciplinary teams in the United Kingdom. *Scand J Caring* Sci; 19(3), 268-273.

Braithwaite, J., Westbrook, M., Nugus, P., Greenfield, D., Travaglia, J., Runciman W.,&et al. (2013). Continuing differences between health professions' attitudes: the saga ofaccomplishing systems-wide interprofessionalism. *Intl J for Qual Health Care*, 25(1), 8-15.

Carpenter, J., &Dickinson, C. (2016). Understanding interprofessional education as an intergroup encounter: The use of contact theory in programme planning. *J Interprof Care*, 30 (1), 103-108.

Chong, W.W., Aslani, P., &Chen, T.F. (2013). Multiple perspectives on shared decision-making andinterprofessional collaboration in mental healthcare. *J Interprof Care*, 27(3),373- 379.

Chung, V.C., Ma, P.H., Hong, L.C., &Griffiths, S.M. (2012). Organizational determinants of interprofessional collaboration in integrative health care: systematic review of qualitative studies. *PloS ONE*, 7(11), e50022.

Coster, S., Norman, I., Murrells, T., Kitchen, S., Meerabeau, E., Sooboodoo, E., &et al. (2008).Interprofessional attitudes amongst undergraduate students in the health professions: A longitudinal questionnaire survey. *Intl J Nurs Stud*, 45(11), 1667-1681.

Cox, M., Cuff, P., Brandt, B., Reeves, S., &Zierler, B.(2016). Measuring the impact of interprofessional education on collaborative practice and patient outcomes. *J Interprof Care*, 30(1), 1-3.

Insalaco, D., Ozkurt, E., &Santiago, D. (2009). Attitudes and knowledge of students in the allied health professions toward their future professional team members. *J Allied Health*, 35(3), 142-146.

Lumague, M., Morgan, A., Mak, D., Hanna, M., Kwong, J., Cameron, C. &et al.(2009). Interprofessional education: the student perspective. *J Interprof Care*, 20(3), 246-253.

Mior, S., Gamble, B., Barnsley, J., Côté, P., &Côté, E. (2013). Changes in primary care physician's management of low back pain in a model of interprofessional collaborative care: an uncontrolled before-after study. *Chiro Man Therap*, 21(1), 6.

Norgaard, B., Draborg, E., Vestergaard, E., Odgaard, E., Jensen, D.C., &Sørensen, J. (2013). Interprofessional clinical training improves self-efficacy of health care students. *Med Teach*, 35(6), 1235-1242.

O'Carroll, V., McSwiggan, L., &Campbell, M. (2016). Health and social care professionals' attitudes to interprofessional working and interprofessional education: A literature review. *J Interprof Care*, 30(1), 42-49.

Pinto, A., Lee, S., Lombardo, S., Salama, M., Ellis, S., Kay, T., &et al.(2012). The impact of structured inter-professional education on health care professional students' perceptions of collaboration in a clinical setting. *Physiother Can*, 64(2), 145-156.

Wang, T.,&Bhakta, H. (2013). A new model for interprofessional collaboration at a student-run free clinic. *J Interprof Care*, 27(4), 339-340.

Appendix A

Inter-professional Collaboration: Research Survey

1. What is your age? _____

2. What is your gender?
__ Female __ Male

3. What is your race/ethnic category? Please select all that apply.
__ American Indian or Alaska Native __ Asian __ Black or African American
__ Hispanic __ Native Hawaiian or other Pacific Islander __ White
__Other (please specify)

4. Select the choice that best describes you
__ NYIT College of Osteopathic Medicine Student
__ NYIT College of Osteopathic Medicine (formerly NYCOM) Alumnus

5. In which year of study are you currently?
__ 1st Year __ 2nd Year __ 3rd Year __ 4th Year __ Academic Scholar Year

6. What year did you graduate from NYIT College of Osteopathic Medicine (formerly NYCOM)?
_____

7. Please select the titles(s) which best describe you:
__ Intern
__ Resident
__ Post-Doctorate Fellow
__ Physician in Practice
__ Attending Physician
__ Residency Program Director
__ Director of Medical Education
__ Other (Please specify)

For the following statements, please select the response that best represents your current perception or opinion.

8. Medical professionals in the clinical workforce work independently of other disciplines.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

9. Inter-professional collaboration involves too many opinions.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

10. The quality of patient care is improved when professionals of multiple disciplines collaborate.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

11. All medical professionals need to receive instruction from physicians in order to understand and achieve a patient treatment goal.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

12. Inter-professional collaboration results in negative consequences for the patient.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree
13. Communication skills enhance the ability of health professionals from different disciplines to work together successfully.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

14. Inter-professional collaboration improves relationships among involved professionals.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

15. When treating patients, professionals from multiple disciplines share knowledge and ideas effectively.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

16. Inter-professional collaboration involves the physician writing a referral without further interaction with the health care professional(s) referred to.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

17. Inter-professional collaboration involves face to face interactions among health care professionals.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

18. Inter-professional collaboration involves the non-physician health care professional receiving a referral without further interaction with the referring physician.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

19. Inter-professional collaboration involves telephone interactions among health care professionals.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

20. Inter-professional collaboration involves secure electronic medical record email correspondence among health care professionals.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

21. Time constraints impact a health care professional's ability to act successfully as an inter-professional team member.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

22. Paperless (electronic) medical records enhance the ability of health care professionals to act as an inter-professional team.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

23. Inter-professional education is a necessary component for successful inter-professional collaboration.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

24. In my professional career, successful treatment of patients, independent of other professionals, can occur.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

25. In my professional career, being open to working together with other medical professionals is possible.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

26. In a clinical work environment, I am comfortable asking a medical professional from another discipline about his/her responsibilities.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

27. I am aware of the stereotypes within my own chosen profession.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

28. Approaching another medical professional in a health-care field different from my own is intimidating.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

29. I have learned how to act as an interdisciplinary team member in my (current or prior) academic coursework.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

30. I have learned how to act as an interdisciplinary team member in my (current or prior) academic clinical rotations.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

31. I have learned how to act as an interdisciplinary team member in my previous clinical experiences.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

32. I have learned how to act as an interdisciplinary team member in my other experiences.
(Please specify) _____
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

33. I am aware of the stereotypes of other medical professions.
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

34. Based on my interactions with other health professionals, I believe that they understand both the differences and the similarities between an osteopathic physician (D.O.) and an allopathic physician (M.D.).
(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

For the following statements, please select the response that best represents your current perception or opinion.
35. I understand the roles and responsibilities of a nurse.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

36. I gained this knowledge through my (please select all that apply to you):
Academic coursework ( )Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____

37. I understand the roles and responsibilities of a physical therapist.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

38. I gained this knowledge through my (please select all that apply to you):
Academic coursework ( )Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____
39: I understand the roles and responsibilities of an occupational therapist.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

40. I gained this knowledge through my (please select all that apply to you):
Academic coursework ( )Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____

41: I understand the roles and responsibilities of a physician assistant.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

42. I gained this knowledge through my (please select all that apply to you):
Academic coursework ()Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____

43: I understand the roles and responsibilities of a physician.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

44. I gained this knowledge through my (please select all that apply to you):
Academic coursework ( )Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____

45: I understand the roles and responsibilities of a clinical nutritionist.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

46. I gained this knowledge through my (please select all that apply to you):
Academic coursework ( )Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No
Other experience ( )Yes ( )No
Please specify other experience:_____

47: I understand the roles and responsibilities of a mental health counselor.
(1) Not at all (2) To a little extent (3) To a moderate extent (4) To a large extent

48: I gained this knowledge through my (please select all that apply to you):
Academic coursework ()Yes ( )No
Academic clinical rotations ( )Yes ( )No
Previous clinical experiences ( )Yes ( )No

Other experience ( )Yes ( )No
Please specify other experience:_____

49: Prior to entering your medical educational program, did you have ANY experience (whether paid, volunteer or observational) in a health related profession? (yes or no)

50: How many of those health related experiences (prior to the start of your medical education program) did you have?_____

51: Please list your most significant health related experience here:_____

52: Your role in this experience was: __ Paid __ Volunteer __ Observation

53: How long was this experience?
(choices): < 1 month, 1 month to < 1 year, 1 to 5 years, > 5 years

54: If you have a second most significant health related experience, please list that here: _____

55. Your role in this second experience was: __ Paid __ Volunteer __ Observation

56. How long was this second experience?
(choices): < 1 month, 1 month to < 1 year, 1 to 5 years, > 5 years

57. Please add any comments. _____

Thank you for your participation!