

HOSTED BY



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: <http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132>

CrossMark

Original Article

Influence of student attributes on readiness for interprofessional learning across multiple healthcare disciplines: Identifying factors to inform educational development

M.P. Judge*, E.C. Polifroni, S. Zhu

University of Connecticut, School of Nursing, Storrs, CT 06269-4026, United States

ARTICLE INFO

Article history:

Received 27 March 2015

Received in revised form

14 May 2015

Accepted 30 July 2015

Available online 7 August 2015

Keywords:

Student attributes

Healthcare

Readiness for interprofessional learning

ABSTRACT

This investigation evaluated if individual student attributes have a predictive impact on readiness for interprofessional education (IPE). An exploratory analysis was conducted with 311 students from dental medicine, dietetics, medicine, nursing, pharmacy and physical therapy. Discipline, gender, age, academic standing, amount of clinical exposure in academic program and number of years worked in a patient care setting were evaluated as predictors of readiness for IPE using the Readiness for Interprofessional Learning Scale (RIPLS). Medical students had significantly lower RIPLS scores compared to pharmacy ($p = 0.010$) and dietetics students ($p = 0.022$). Male gender ($p = 0.005$) was a single independent predictor of IPE readiness. A higher number of years of practice had a significant interaction predictive of readiness for IPE ($p = 0.028$). Identification of factors influencing readiness for IPE are key to developing teaching and learning strategies targeted to improve teamwork, quality of care and patient outcomes. In this investigation, men with more years of practice was highly predictive of a lower RIPLS score. Based upon our findings, educational planning targeting male medical students with a higher number of years of practice would be a reasonable evidence-based step toward improving the value of IPE programs and curricula. Further work is necessary in developing focus groups, simulation and case-based exercises to influence attitudes and readiness for IPE.

Copyright © 2015, Chinese Nursing Association. Production and hosting by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Given the potential for impact of interprofessional education (IPE) on team-based care delivery [1,2] and patient outcomes

[3], progressive steps are necessary in developing interprofessional initiatives supporting collaboration across healthcare disciplines in academic institutions. Although development of IPE initiatives is critical to healthcare team

* Corresponding author.

E-mail address: michelle.judge@uconn.edu (M.P. Judge).

Peer review under responsibility of Chinese Nursing Association.

<http://dx.doi.org/10.1016/j.ijnss.2015.07.007>

2352-0132/Copyright © 2015, Chinese Nursing Association. Production and hosting by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

development, a recent systematic review by Olson and Bialocerkowski reported large literature gaps in IPE methodologies, theories and contexts [4]. Another finding by Olson and Bialocerkowski was lack of theoretical and inductive approaches in IPE development across 17 investigations evaluated in the systematic review [4]. Evidence of influence of student attributes on IPE readiness is limited and existing evidence is highly inconsistent [4]. Various attributes including discipline, age, gender, prior healthcare experience, years of patient care experience, prior exposure to interprofessional education (IPE), and current standing in academic program all have potential implications for IPE readiness.

Evidence related to student attributes is strongest with respect to healthcare discipline. Discipline-specific variations have been reported with regard to attitude and willingness to engage in interprofessional learning [5–8]. Identification of discipline specific variations can be highly informative in IPE development and can serve as a basis for interventions targeting disciplines with lower receptivity to IPE. Implementation of discipline-specific initiatives is warranted in advance of activities involving collective disciplines.

In addition to healthcare discipline, student attributes have the potential to impact readiness for interprofessional learning and remain largely unexplored [4]. Understanding of the influence of student attributes related to learning readiness is critical for in the development of interprofessional learning activities and curricula.

Although individual attributes cannot be modified, IPE planning may be individualized based upon attributes of a particular discipline, academic institution, or student cohort to ensure optimal learning outcomes. This investigation aimed to evaluate the influence of student attributes as predictors of IPE readiness.

2. Material and methods

2.1. Study design

An exploratory secondary analysis was conducted to evaluate if specific characteristics of students from dental medicine, dietetics, medicine, nursing, physical therapy and pharmacy are predictive of readiness for interprofessional learning using the Revised Readiness for Interprofessional Learning Scale (RIPLS) [9].

2.2. Sample

In the original investigation [8], a total of 308 students from dental medicine ($n = 42$), dietetics ($n = 18$), medicine ($n = 79$), nursing ($n = 77$), physical therapy ($n = 62$) and pharmacy ($n = 27$) were invited to participate in an interprofessional learning activity as directed by their respective program coordinators. Undergraduate students from dietetics, nursing, physical therapy and pharmacy who were of varied ethnicity, age, and gender participated in the activity. Additionally, 3rd year medical and dental medicine students who were of varied ethnicity, age, gender also participated.

2.3. Recruitment

Program participation was conducted in accordance with IRB policies and procedures at the University of Connecticut. Information sheets informing students of this educational research activity were provided to coordinators to distribute to students from various disciplines who participated in the program.

2.4. Instrument

Revised Readiness for Interprofessional Learning Scale (RIPLS):

The RIPLS was developed to measure readiness of students from various healthcare disciplines for interprofessional learning experiences. The RIPLS is a 19-item likert scale survey with a score range of 19–95. High RIPLS scores are reflective of a high level of readiness for interprofessional learning [9]. The RIPLS has 4 individual subscale domains including: 1.) Teamwork & collaboration; 2.) Negative professional identity; 3.) Positive professional identity; and 4.) Roles and responsibility. The Cronbach Alpha value for the total scale is (0.89) indicating a high level of internal consistency. Participants completed the RIPLS prior to and immediately following the 4-h interdisciplinary educational program.

2.5. Procedures

In the original investigation [8], upon arriving at the planned event and prior to the planned educational activities, students were asked to complete the RIPLS. The RIPLS score served as a baseline measure of receptivity to interprofessional learning prior to the start of the educational intervention and this initial measure was evaluated related to potential predictors of readiness for interprofessional education including age, gender, standing/year in the academic program, clinical exposure, patient care exposure and prior patient care experience. Participants completed an anonymous form where they were prompted to self-report the attributes that were evaluated as potential predictors.

2.6. Statistical analyses

Hierarchical regression analysis was conducted to evaluate the extent to which demographic variables significantly predicted RIPLS score. The regression model included specific discipline, gender, age, academic standing, amount of clinical exposure in academic program and number of years (if any) worked in a patient care setting were collected in addition to the RIPLS pre-test. Hierarchical regression analyses were conducted to evaluate potentially significant interactions.

3. Results

Table 1 outlines baseline characteristics of the cohort including professional discipline type, age, gender, standing in academic program, time in the clinical setting as a component of current professional program, time in patient care and

experience prior to entering professional program. The cohort was comprised of students who were primarily within year 1–3 of their professional program. A larger proportion of the students were female without experience in healthcare prior to entering a professional program. All students had been engaged in clinical aspects of their respective programs at the time they were included in the IPE initiative. The cohort had $\alpha = 0.85$ for the RIPLS total score.

Hierarchical regression analyses revealed that when single predictors were included first (Table 2, 1), gender negatively predicted the RIPLS score (female = 0; male = 1). When the interaction terms were added in the subsequent model (Table 2, 2), there was a significant negative interactive effect by gender and years of patient care with RIPLS score. This interaction effect was significant for males and not significant for females (Fig. 1).

4. Discussion

Individual attributes can pose barriers to the IPE learning process and results of this investigation provide an evidence-base toward informing and individualizing the development of IPE initiatives for student populations of interest. In this investigation, gender was a single independent predictor of readiness for IPE with the male gender being significantly less receptive to IPE. Our finding of lower male receptivity to IPE corroborates reports of others [10,11]. Using the RIPLS, Wilhelmsson and colleagues evaluated readiness for IPE with 670 medical and nursing students and reported that female students were significantly more receptive to teamwork compared to male students [10]. Likewise, a recent report by Mohammadreza et al. explored student attitudes with a total of 1976 health profession students using the Jefferson Scale of Attitudes Toward Interprofessional Collaboration (JeffSATIC) and reported women to have significantly higher JeffSATIC mean scores than men [11]. Collectively, including the results of our investigation, reduced receptivity to IPE has been reported in 3 large investigations using 2 different measures of IPE receptivity. These collective results strongly support the need for outreach and intervention with male students in

health professions toward improving receptivity to IPE and teamwork in healthcare delivery.

To our knowledge, our investigation is the first to report a significant interaction between years of practice experience and gender. Lower IPE receptivity was associated with male healthcare students with more practice experience. Specific factors involved in influencing reduced IPE receptivity in this specific group remain unexplored. Although readiness for IPE was measured prior to the interactive IPE exercise, students were not blinded to the educational content and aware that the focus was on patient safety. Students with more years of patient care experience are likely to have been exposed to patient safety content on multiple occasions making topic content a potential confounder with respect to IPE readiness. Based upon this interaction, we conclude that years of experience and prior content exposure should be carefully considered in planning IPE topics and activities [12]. A recent report by Acquavita et al. reported qualitative data from a cohort of students from different professional programs where students were probed to provide suggestions for IPE activities and specific suggestions included: communication skill building, case discussion with different professions, research seminars, guest lectures from different disciplines, and learning about different professions and how unique contributions can be made toward a common goal [12]. Personal barriers identified included being unreceptive to learning from other professionals, personally held stereotypes and misperceptions about other professions and profession-centrism [12]. Information regarding level in the program and timing of content [13] previous IPE exposure [14], knowledge of discipline specific educational background and roles [12,13] and preconceived attitudes toward functionality of teams in healthcare in this group will also provide valuable information in the development of intervention strategies.

In a previous investigation with the same cohort, our research group reported discipline-specific differences in readiness for IPE [15]. It is noteworthy to mention in the context of this earlier report that RIPLS scores of medical students were significantly lower than those of other disciplines. In this investigation medical students were required to travel to the IPE activity and the travel requirement may have posed and inconvenience on these students and negatively impacted attitudes and receptivity toward the IPE activity. Although travel requirement may have impacted our outcomes, multiple other investigations have also reported significantly lower IPE readiness in medical students compared to other professional healthcare disciplines [10,11,16]. To date, one small mixed methods investigation reported no difference between disciplines [12]. Collectively, the literature points to a need for discipline-specific interventions toward improving readiness for IPE in medical school curricula [10,11,15,16].

Our findings in combination with those of others provide an evidence of the need to individualize strategies toward improving IPE readiness and identify supportive interventions for male students in health professions [10,11], particularly male medical students with prior clinical experience. As a first step in this process, focus groups conducted by member-leaders [12] with students of interest may contribute to our understanding of barriers to IPE readiness and factors

Table 1 – Baseline characteristics.

	(n = 311)
Age	M = 21.68, SD = 6.35
Gender	65.9% F
Year in program	68% 1st years–3rd years 31.5% 3rd years–6th years
Time in clinical setting (Semesters)	M = 2.44, SD = 1.76
Time in patient care (Yrs)	M = 1.90, SD = 2.40
Prior experience	35.2% Yes 64.8% No
N (%) by discipline	Dental: 42 (13.5%) Medicine: 79 (25.4%) PT: 62 (19.9%) Nursing: 77 (24.8%) Pharmacy: 27 (8.7%) Dietetics: 18 (5.8%)

Table 2 – Regression models for single and combined characteristics related to RIPLS score.

Model	Predictors	Standardized Beta Coefficients	t	p-value
1	Age	–0.064	–0.975	0.331
	Gender	–0.176	–2.817	0.005 ^a
	Prior experience	0.074	1.183	0.238
	Year in patient care	–0.092	–1.410	0.160
2	Age	–0.088	–1.337	0.182
	Gender	–0.032	–0.364	0.716
	Prior experience	0.107	1.429	0.154
	Years of patient care	0.003	0.043	0.965
	Gender × Prior experience	–0.043	–0.495	0.621
	Gender × year in patient care	–0.203	–2.217	0.028 ^a

^a Significant.

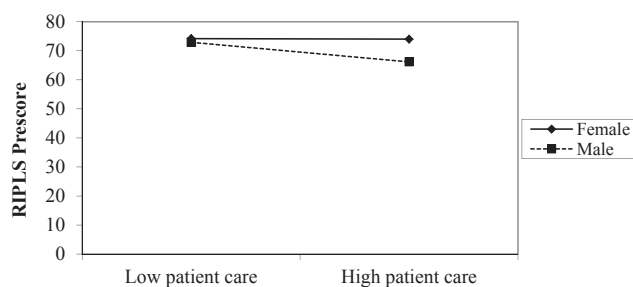


Fig. 1 – Interaction experience on readiness for IPE by gender.

impacting attitudes toward IPE. This information would be useful in determining if there are distinct ethnographic considerations in planning future IPE interventions. Overall, the literature points to a need for further support with effective communication, role knowledge and careful planning of content with timing in the professional program [12–14].

Author contributions

Authors worked together in study conception, and implementation. Judge and Polifroni designed the trial and conducted data collection. Zhu and Judge conducted the statistical analyses. Polifroni obtained project funding. Judge drafted the manuscript and all authors contributed substantially to manuscript development and revision. Judge takes responsibility for the paper as a whole.

Funding

Funding in support of this project was provided from the University of Connecticut School of Nursing.

Conflict of interest

None.

Acknowledgements

We would like to express our gratitude to the program coordinators of the schools of dental medicine, dietetics, medicine, nursing, pharmacy and physical therapy at the University of Connecticut for their efforts in planning and executing this important interprofessional learning activity. Thank you also to our student participants for their time and valuable contribution to this investigation.

REFERENCES

- [1] Interprofessional Education Collaborative Expert Panel. *Core competencies for interprofessional collaborative practice. Report of an expert panel*. Washington, DC: Interprofessional Education Collaborative; 2011.
- [2] World Health Organization (CH), Framework for Action on Interpersonal Education and Collaborative Practice. Winter. 2010. Available from: http://www.who.int/hrh/resources/framework_action/en/index.html.
- [3] Reeves S, Perrier L, Goldman J, Freeth D, Zwarenstein M. Interprofessional education: effects on professional practice and healthcare outcomes (update). *Cochrane Database Syst Rev* 2013;3. <http://dx.doi.org/10.1002/14651858.CD002213.pub3>.
- [4] Olson R, Bialocerkowski A. Interprofessional education in allied health: a systematic review. *Med Educ* 2014;48(3):236–46.
- [5] Rose M, Smith K, Veloski JJ, Lyons JK, Umland E, Arenson CA. Attitudes of students in medicine, nursing, occupational therapy and physical therapy toward interprofessional education. *J Allied Health* 2009;38(4):196–200.
- [6] Wilhelmsson M, Ponzer S, Dahlgren LO, Timpka T, Faresjo T. Are female students in general and nursing students more ready for teamwork and interprofessional collaboration in healthcare? *BMC Med Educ* 2011;11(15) [online].
- [7] Lie DA, Fung CC, Trial J, Lohenry K. A comparison of two scales for assessing health professional students' attitude toward interprofessional learning. *Med Educ Online* 2013;18(21885) [online].
- [8] Judge MP, Polifroni EC, Maruca AT, Hobson ME, Leschak A, Zakewicz H. Evaluation of students' receptiveness and response to an interprofessional learning activity across health care disciplines: an approach toward team development in healthcare. *Int J Nurs Sci* 2015;2(1):93–8.

- [9] McFadyen AK, Webster V, Maclaren WM. The test-retest reliability of a revised version of the Readiness for Interprofessional Learning Scale (RIPLS). *J Interprofessional Care* 2006;20(6):633–9.
- [10] Wilhelmsson M, Ponzer S, Dahlgren L-O, Timpka T, Faresjo T. Are female students in general and nursing students more ready for teamwork and interprofessional collaboration in healthcare? *BMC Med Educ* 2011;11(15).
- [11] Mohammadreza H, Ward J, Spandorfer J, Arenson C, Van Winkle LJ, Williams B. The Jefferson scale of attitudes toward interprofessional collaboration (JeffSATIC): development and multi-institution psychometric data. *J Interprofessional Care* 2014. <http://dx.doi.org/10.3109/13561820.2014.962129> [early online].
- [12] Acquavita SP, Lewis MA, Aparicio E, Pecukonis E. Student perspectives on interprofessional education experiences. *J Allied Health*; 43(2): e31–6.
- [13] Horsburgh M, Lamdin R, Williamson E. Multiprofessional learning: the attitudes of medical, nursing and pharmacy students to shared learning. *Med Educ* 2001;35:876–83.
- [14] Hood K, Cant R, Baulch J, Gilbee A, Leech M, Anderson A, et al. Prior experience of interprofessional learning enhances undergraduate nursing and healthcare students' professional identity and attitudes to teamwork. *Nurse Educ Pract* 2014;14:117–22.
- [15] Judge MP, Polifroni EC, Maruca AT, Hobson ME, Leschak A, Zakewicz H. Evaluation of students' receptiveness and response to an interprofessional learning activity across health care disciplines: an approach toward team development in healthcare. *Intern J Nurs Sci* 2015;2(1):93–8.
- [16] Simin D, Milutinovic D, Brestovaci B, Andrijevic I, Cigic T. Improvement of teamwork in health care through interprofessional education. *Srp Arh Celok Lek* 2010;138(7–8):480–5.