

Sri Lankan Undergraduate Healthcare Student's Perceptions of Interprofessional Learning: A Cross-Sectional Study

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1. Abstract

1.1. Introduction: Interprofessional learning primarily aims to reduce prejudice among professionals, improve awareness of the roles and duties of other professional groups, and advance teamwork and collaborative competencies. This study was conducted in order to assess the perception of undergraduate health care professional students on interprofessional education/learning in Sri Lanka.

1.2. Methods: This was a cross-sectional and descriptive-analytical study conducted in 2016 on 300 undergraduate health care professional students. The study population consisted of fourth-year undergraduate healthcare professional students' in four main professional degree programs - medicine, nursing, pharmacy and occupational therapy - across two selected Universities in Sri Lanka. Quantitative data were collected through a 19- item, validated and modified questionnaire. 'the Readiness for Inter-Professional Learning Scale (RIPLS)' containing four subscales: teamwork and collaboration, negative professional identity, positive professional identity and roles and responsibilities. Means and standard deviation (SD) of the scores were calculated. All the analyses were carried out using SPSS version 20.

1.3. Results: The total mean score for all four items was $M=69.15$ and $SD=10.97$. The RIPLS total score was significantly different between genders ($P=.028$). Statistical difference was identified between subscales and genders. In order to comparing students' RIPLS total scores by degree programs of study a significant difference was identified between each degree programs ($P<.001$) due to group size are unequal. Comparing each degree programs results of the nursing students indicate higher total score as 72.08 and the pharmacy students' highlighted lowest mean score as 61.08. The respondents between 29.7% and 53% gave the highest rat-

ing for teamwork and collaboration as strongly agree. For negative professional identity, the lowest rating by 22-27% as strongly disagree. The highest rating reported as 26.7-32% for the items in positive professional identity and for roles and responsibilities the highest rating was indicated as 10-31.3% and the lowest rating were 4.7-23.3%.

1.4. Conclusion: This analysis produced the level of undergraduate healthcare students' readiness for interprofessional learning in Sri Lanka.

2. Introduction

'Interprofessional education' was considered a step further on than 'shared-learning' models, with the focus of IPE being on collaborative practice and 'on interactive learning between the different professional groups involved' [1]. In the UK the concept developed alongside the formation of CAIPE (Centre for the Advancement of Interprofessional Education), which was responsible for the definition of IPE as it is now most commonly recognized; where two or more professions 'learn with, from and about each other to improve collaboration and the quality of care' [2, 3]. Similarly, for the WHO (2010) "IPE occurs when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" [4]. Further, Barr (2010) illustrated how IPE becomes a combination of the values, ideas, and abilities of all participating professions, whereas for CIHC (in full?), (2010) interprofessional education (IPE) is an essential approach for healthcare students who are preparing for their professional work as well as for healthcare employees to provide patients' care in a collaborative team environment [5]. Moreover, Interprofessional education is defined by Thistlethwaite, (2012) as a shared learning experience among health profession students across disciplines, with the goals of professional identification of strong clinical teams and the improvement health outcomes. For the Cochrane

Collaboration (2013), interdisciplinary instruction is: “an IPE intervention when members of more than one health and/or social care profession learn interactively together, for the explicit purpose of improving inter-professional collaboration and/or the health/wellbeing of patients/clients. Interactive learning requires active exchange between learners of different professions”.

The primary goals of interprofessional education are to alter attitudes and opinions, breed respect amongst professions, and make collaboration possible [6]. These general goals are at the center of the global initiative to improve healthcare. As outlined by the IECEP (in full?) (2011), IPE is divided into the following four primary competencies within the general medical school curriculum: Teams and Teamwork, Interprofessional Communication, Values and Ethics for Interprofessional Practice, and Roles and Responsibilities. According to numerous studies, the first important step in implementing IPCP (in full?) within a healthcare organization is to provide “Patient centered care”, which means to provide care in an environment that gives patients high quality care according to his/her needs [7, 8]. Due to its considerable importance in the health sector, Interprofessional collaboration is starting to be taught to healthcare students under the name of inter-professional education (IPE).

The evidence on worldwide IPE in undergraduate and postgraduate education, the results of studies provides valuable insight for related researchers regarding the necessity of IPE in medical education (drafting?). (references?) Notably, the assessment of the effectiveness of IPE’s was also an important aspect. The quality of IPE programs varied substantially across different countries. In many developing countries are still struggling to implement this concept. (You have lost me. Unclear to what study you are referring.) They face so many challenges due to less human and physical capacities. The reported evidences of IPE initiatives in Sri Lanka are quite less (than what?). As a developing country, Sri Lanka concern about the positive health outcomes to reach the MGD (in full with reference) goals. The curricula of all the medical faculties were based on the British system of medical education [9]. In 1995, the traditional discipline-based curriculum was changed to a more integrated and student-centered curriculum. The contents for the core curriculum were classified into four main areas; namely basic sciences knowledge, clinical competencies, generic competencies, and professional values which include ethical issues and commitment to continuing medical education. The main features of the new curriculum (introduced when by whom?) are the integration of subject content, the introduction of a system-based module system, early exposure of students to clinical and community learning environments, and the introduction of a behavioral sciences stream. The teaching/learning methods have shifted from traditional lecture based didactic teaching activities towards methods involving greater student participation. These include small group discussions (SGD), problem-based learning tutorials (PBL), student seminars, staff seminars, dramas, debates, poster sessions, and field-based teaching (10). The history of undergraduate medical education in Sri Lanka dates back to 1870, when the Colombo Medical School was founded. In 1942, the University of Ceylon was established, and the medical school acquired university status as the Faculty of Medicine [10]. Over time, more faculties of medicine were established; at present, there are six medical faculties in Sri Lanka. If undergraduate/ graduate students, edu-

cate and trained about interprofessional team work skills and methods will help to provide collaborative patient care to improve patients’ outcomes and will helps to mitigate current health challenges in Sri Lanka. Learning to practice is very much essential to reduce the gaps, conflicts between each professionals. Through introducing IPE will helps to address future health challenges, increase both practitioners and patients satisfaction and enhance quality of service delivery involving more different health professionals together.

3. Methods

3.1. Data Collection Instrument

The Readiness for Interprofessional Learning Scale (RIPLS) revised by McFadyen et al., (2005) was used to measure the undergraduate health care student’s attitudes toward interprofessional teams and readiness for interprofessional education [12]. RIPLS was originated by Parsell and Bligh (1999) to assess student’s attitudes towards interprofessional education as a 19-item questionnaire consisting of three subscales including teamwork and collaboration, positive and negative professional identity, and professional roles and responsibilities to assess perceptions and attitudes of healthcare students towards interprofessional learning (.....).As the first instrument designed to evaluate the “readiness” of healthcare students for shared activities, the RIPLS allows educators to quantify the impact of interventions on healthcare students (6, 7). McFadyen et al. (2005) revised the RIPLS, dividing the original three subscales into four, while increasing stability and improving psychometrics. The four subscales are [1] Teamwork and Collaboration (items 1–9, total possible score 45); [2] Negative Professional Identity (items 10–12, total possible score 15); [3] Positive Professional Identity (items 13–16, total possible score 20); and [4] Roles and Responsibilities (items 17–19, total possible score 15). Each statement, participants were asked to provide their response using a 5-point Likert scale with 1 representing “Strongly Disagree” and 5 representing “Strongly Agree”. This scale has excellent reliability with a Cronbach’s alpha of 0.90 [12]. Subsequent studies using healthcare professions have also found the RIPLS to demonstrate acceptable levels of validity and reliability [13, 15]. Readiness for Interprofessional Learning Scale (RIPLS) (McFayden et al., 2005), illustrated in Appendices A. The scales enable quantitative measurement of changes in attitudes and perceptions towards IPE, as well as assess students’ readiness for interprofessional collaboration. McFadyen et al (2005) reported internal consistency based on the adaptive version as follows: Teamwork and Collaboration .79/.88, Negative Professional Identity .60/.76, Positive Professional Identity .76/.81, and Roles and Responsibilities .40/.89.

3.2. Data Collection

Data were collected from health professions students at the Faculty of Medicine, University of Kelaniya and Faculty of Medical Sciences, University of Sri Jayardaneepura including MBBS, Nursing, Pharmacy and Occupational Therapy. Data were collected from 300 students (120 male and 180 female); included in this group were 203 MBBS students (71 Male and 132 Female); 40 Nursing students (18 Male and 22 Female); 37 Pharmacy students (22 Male and 15 Female); and 20 OT students (9 Male and 11 Female). The response rate was 67.7% of MBBS students 13.3% of nursing students 12.3% of pharmacy students and 6.7% of OT students (Table 1). Completion of the survey was voluntary. In addition to the 19

items of the RIPLS survey, students were asked four additional questions. Demographic questions included age, gender, program of study and the University.

4. Statistical Analysis

Six of the 19 items in the RIPLS were negatively worded in the survey form; however for the sake of presentation, the scores recorded in this paper are such that a higher score is always indicative of a more positive attitude towards IPE. Cronbach alpha values were calculated to determine the internal consistency of the RIPLS instrument in study population. One- Way ANOVA were employed for each of the 19 items, as well as the 4 subscale scores and overall total score in order to evaluate students' attitudes towards IPE. Statistical analysis was done with IBM SPSS 20. (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. Chicago, IL, USA).

5. Ethical Considerations

Ethical approval of the study was obtained from the Ethical Review Com-

mittee (ERC) of the Faculty of Medicine, University of Kelaniya and the Faculty of Medical Sciences, University of Sri Jayawardanapura, Sri Lanka to collect the data from Undergraduate healthcare students. At the first through separate seminars, the purpose of the project and its voluntary nature were explained to the undergraduate healthcare students and their written consent obtained. All participants were told about their rights to withdraw from the study at any time without any penalty. Study approval was received from the Ethical Review Committees were provided with information related to the project aims and details. Undergraduate healthcare students were provided with the information before consents were obtained. Undergraduate healthcare students were able to contact the principal investigators for further details, clarification, doubts or complaints. No university personnel were involved in the data collection. All personal information remained strictly confidential and anonymous with assigned code numbers. The raw data were accessible only to the researcher and only used for the research study.

Table 1: Demographic Characteristics of the Respondents (n=300)

Gender	N		Degree Programme							
			MBBS		Nursing		Pharmacy		OT	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Male	120	40.00%	71	59.20%	18	15.00%	22	18.30%	9	7.50%
Female	180	60.00%	132	73.30%	22	12.20%	15	8.30%	11	6.11%
	300	100.00%	203	67.70%	40	13.30%	37	12.30%	20	6.70%
Age	18-21		11	5.40%	0	0	0	0	0	0
	22-25		175	86.20%	38	95%	33	89.20%	17	85%
	26-29		17	8.4%5	2	5%	4	10.80%	3	15%

6. Results

6.1. Respondent Demographics and Response Rates

A total of 300 students participated in this study, cases valid 285 and response rate of 95% cases excluded list wise based on all variables in the procedure is 15. The demographic characteristics are summarized in Table 1. The respondents included 203 MBBS students (response rate 67.7%) and 40 nursing students (13.3%) of which 37 pharmacy students (12.3%) and 20 occupational therapy (6.7%) students indicated socio-demographic characteristics. More than half of the respondents in each sample were undergraduate students who were following MBBS degree program accounting for 67.7% of this population. Occupational therapists were the least well represented, with only 6.7%. There were no equal respondents among undergraduate healthcare students and programs in both institutions. Most respondents were female (60%). All respondents, were between 20 and 30 years of age (Table 2, 3, ,4 and RIPLS subscales).

7. Discussion

This study has demonstrated the utility of the RIPLS instrument to assess the degree of students' perceptions and readiness towards IPE. The analysis showed strong internal consistency within the four subscales such as teamwork and collaboration (Q1-Q9), negative professional identity (Q.10-Q.12), positive professional identity (Q.13-Q.16) and roles and responsibilities (Q.17-Q.19) with Cronbach's Alpha values of .469. Comparing with other RIPLS studies, this indicates that RIPLS is a stable and reliable instrument for use in Sri Lankan context with students. These results

indicate that RIPLS is a valid tool for measuring the readiness of postgraduate health care professionals to engage in interprofessional learning.

Similar to the findings of some previous studies, female students demonstrated more positive attitudes towards IPE than male students. Specifically, female undergraduate students' tend to emphasize their understanding and readiness towards the IPE but no significant difference when compare with male students. However, gender has not consistently been associated with differences in RIPLS scores. Comparing with mean scores between subscales with programs of study, the significant difference of the mean scores of pharmacy students were identified. The results were calculated based on unequal number of respondents from each degree programmes.

According to the tested results on ceiling and floor effects in this study students demonstrated higher scores on the teamwork and collaboration subscale, signifying a clearer sense of team working skills are vital for all health and social care students/professionals to learn. Moreover, for the scale of positive professional identity, undergraduate were given higher rating for (Q13) the Shared learning with other health and social care professionals will help me to communicate better with patients and other professionals. Similarly, for (Q.17) Shared learning before and after qualification will help me become a better team worker. In contrast, for (Q.18)

Table 2: Students' who completing the RIPLS Questionnaire

RIPLS Subscales	Item Number	Possible Points (Range)	N	Mean	Range (SD)
Scale 1: Teamwork and Collaboration	1-9	5-45	299	37.08	9-45 (7.09)
Scale 2: Negative Professional Identity	10-12	3-15	300	7.08	3-15 (2.72)
Scale 3: Positive Professional Identity	13-16	4-20	292	15.3	4-20 (3.75)
Scale 4: Roles and Responsibilities	17-19	3-15	294	9.8	3-15 (2.26)
Total	1-19	19-95	285	69.15	26-95 (10.97)

Item characteristics

Item responses were coded as follows: Strongly Disagree = 5; Disagree=4; Neutral =3; Agree=2; Strongly Agree=1. Mean scores Standard Deviations and minimum and maximum were calculated by subscales. The total mean score of all four item is (M= 69.15, SD= 10.97). The highest mean score for teamwork and collaboration is 37.8 and the lowest mean score is 7.08 identified for negative professional identity (Table 2). The mean score for positive professional identity is 15.3 however, for roles and responsibilities indicated 9.8 mean score of students' who have completing the RIPLS questionnaire. Inter item total correlation range minimum -.232 for negative professional identity and the maximum .635 for positive professional identity.

Table 3: RIPLS Score by Gender

RIPLS Subscales	Male N=120	Male (n=120) Mean (SD)	Female N=180	Female (n=180) Mean (SD)	F	P
Scale 1: Teamwork and Collaboration	120	36.07 (7.53)	179	37.74 (6.73)	4.033	.046
Scale 2: Negative Professional Identity	120	7.54 (2.64)	180	6.76 (2.74)	5.906	.016
Scale 3: Positive Professional Identity	117	14.50 (3.88)	175	15.85 (3.56)	9.297	.033
Scale 4: Roles and Responsibilities	116	9.43 (2.19)	178	9.92 (2.28)	3.208	.074
Total	113	67.38 (11.45)	172	70.30 (10.52)	4.885	.028

Gender differences

An average male mean score of 67.38 and a female means score of 70.30 in table 3. RIPLS total score was significantly different between gender (P=.028). The ANOVAs' results on each of the four subscales revealed a statistically different between Negative Professional Identity and Gender (P=.016). Compare with each items and gender, the highest mean score 37.74 indicated by female respondents for Teamwork and Collaboration, The slight gender difference were recognized for positive professional identity and roles and responsibilities compare with male gender. The male gender mean score is higher only for the subscale of negative professional identity. Statistical difference were identified between subscales and genders.

Table 4: RIPLS Score by Degree Program of Study

RIPLS Subscales	MBBS (n=203)	Nursing (n=40)	Pharmacy (n=37)	OT (n=20)	F	P
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Scale 1:Teamwork and Collaboration	38.01 (5.58)	38.53 (5.08)	30.10 (11.62)	37.60 (6.55)	15.66	<.001
Scale 2: Negative Professional Identity	7.02 (2.76)	7.15 (2.91)	7.5 (2.42)	6.50 (2.48)	0.725	0.538
Scale 3: Positive Professional Identity	15.57 (3.57)	16.23 (2.93)	13.29 (4.33)	14.70 (4.58)	5.026	0.002
Scale 4: Roles and Responsibilities	9.72 (2.28)	9.84 (2.12)	9.97 (2.17)	9.20 (2.50)	0.533	0.006
Total	70.22 (8.98)	72.08 (8.82)	61.08 (17.48)	68.00 (11.27)	8.67	<.001

Comparison between programs of study

Each subgroups was compared with each of the other subgroups. In order to comparing students' RIPLS total scores by degree programs of study a significant difference was identified between each degree programs (P= <.001) due to group size are unequal. The mean score of pharmacy students for the each category is differed significantly compare with other healthcare professional students and the lowest mean score for the teamwork and collaboration and positive professional identity and the highest mean score for negative professional identity and roles and responsibilities were significantly highlighted according to the results of the students following pharmacy degree program (Table 4). In contrast the low mean score indicated by the students in OT degree program for the positive professional identity and the roles and responsibilities. Comparing with each degree program results of the nursing students' indicates higher total score as 72.08 and the pharmacy students' highlighted lowest mean score as 61.08 for RIPLS.

RIPLS Subscales

Scale	Item	Question	SD (%)	D (%)	N (%)	A (%)	SA (%)
Teamwork and Collaboration 1-9/ 9 Items	Q.1	Learning with other students/professionals will make me a more effective member of a health and social care team	2.3	4	4.7	45.7	43.3
	Q.2	Patients would ultimately benefit if health and social care students/ professionals worked together	5	2	4	41.7	47.7
	Q.3	Shared learning with other health and social care students/ professionals will increase my ability to understand clinical problems	3.7	4	4.3	49	39

	Q.4	Communication skills should be learned with other health and social care students/professionals	3.7	6.7	7	41.7	41
	Q.5	Team working skills are vital for all health and social care students/professionals to learn	5.7	2	5.3	34	53
	Q.6	Shared learning will help me to understand my own professional limitations	4	3	9	42.7	41
	Q.7	Learning between health and social care students before qualification and for professionals after qualification would improve working relationships after qualification/ collaborative practice	5	8	11.7	45.7	29.7
	Q.8	Shared learning will help me think positively about other health and social care professionals	3.3	5.3	10.7	47.3	33.3
	Q.9	For small-group learning to work, students / professionals need to respect and trust each other	6.3	4.7	6.3	42.3	40.3
Negative Professional Identity 10-12/3 Items	Q.10	I don't want to waste time learning with other health and social care students / professionals	27	45.7	12.3	8.7	6.3
	Q.11	It is not necessary for undergraduate / postgraduate health and social care students / professionals to learn together	27	40	13.7	13.7	5.7
	Q.12	Clinical problem solving can only be learnt effectively with students / professionals from my own school / organization	22	34	18	19	7
Positive Professional Identity 13-16/4 Items	Q.13	Shared learning with other health and social care professionals will help me to communicate better with patients and other professionals	4.7	9.3	8.7	44	32
	Q.14	I would welcome the opportunity to work on small group projects with other health and social care students / professionals	4.3	12.3	8.7	45	28.3
	Q.15	I would welcome the opportunity to share some generic lectures, tutorials or workshops with other health and social care students / professionals	4.3	11.7	16.3	41	26.7
	Q.16	Shared learning and practice will help me clarify the nature of patients' or clients' problems	6	9.3	9.3	45	30.3
Roles and Responsibilities 17-19/3 Items	Q.17	Shared learning before and after qualification will help me become a better team worker	4.7	8.3	11	44	31.3
	Q.18	I am not sure what my professional role will be / is	23.3	33.3	17.3	15.7	10
	Q.19	I have to acquire much more knowledge and skill than other students / professionals in my own faculty / organization	5.7	17.7	33.7	26.3	15.3

RIPLS subscales

The entire data were tested for ceiling and floor effects to identify the students' attitudes on IPE. The respondents' between 29.7% and 53% gave the highest rating for teamwork and collaboration as strongly agree, whereas 2.3% to 6.3% of respondents gave the lowest rating, strongly disagree. For negative professional identity, the highest rating were given by 5.7 to 7% and lowest rating by 22-27%. The highest rating reported as 26.7-32% and 4.3- 6% as lowest rate for the items in positive professional identity. For roles and responsibilities the highest rating were indicated as 10-31.3% and the lowest rating were 4.7-23.3%. For Q.18, the proportions were 10% giving highest rating and 2.3% giving lowest rating. For the Q.19 the 15.3% of respondents giving highest rate and the 5.7% were giving lowest rate. In contrast, there is a significance of the results for the subscales of roles and responsibilities (Q17-Q19) were bring forward.

under the scale of roles and responsibilities were indicated lowest rating. This lowest rating highlighted that, undergraduate healthcare students' doesn't have clear idea about their own professional roles and responsibilities. Considering the subscale of negative professional identity, the majority students' were given lowest rating for (Q.10-Q12). This indicates that the health professional students at selected health institutions were not having adequate background knowledge on IPE. However, the results of this study indicate that undergraduate health professional student's demonstrated greater readiness for interprofessional learning and having positive perception towards IPE.

8. Conclusion

In terms of strengths, the high number of respondents in this study was an obvious advantage along with the successful attempt to measure the responses of those who failed to respond to the initial survey. Moreover, the relatively high alphas, which demonstrate the internal reliability. The major challenge encounter for this study were unable to include all the disciplines related to the healthcare education. A possible weakness of the study is that the students surveyed did not have some previous exposure to interprofessional learning through their programs of study and unequal number of the sample. Moreover, the authors have found no comparable study in Sri Lankan context about IPE with which to align the results obtained in this study. The findings of this study suggest the undergraduate students have positive perception on IPE and they have an idea on neces-

sity of IPE learning during the program of study. The needs of IP learning during the health professional degree programs would be essential for the countries like Sri Lanka to manage effective patient care. This results indicates that the level of perception of undergraduate healthcare students on IPE. However, this analysis produced the level of undergraduate healthcare students' readiness on IP learning in Sri Lanka

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References

- Boehm LM, Vasilevskis EE, Mion LC. Interprofessional Perspectives on ABCDE Bundle Implementation. *Dimensions of Critical Care Nursing*. 2016; 35(6): 339-47.
- Barr H, Ross F. Mainstreaming interprofessional education in the United Kingdom: a position paper. *J Interprof Care*. 2006; 20(2): 96-104.
- Loheny K, et al. Interprofessional Education: What Measurable Learning Outcomes Are Realistic for the Physician Assistant Profession? *J Physician Assist Educ*. 2016; 27(2): 63.
- Lee B, et al. Attitudes of medical school deans toward interprofessional education in Western Pacific Region countries. *J Interprof Care*. 2012; 26(6): 479-83.
- Mahler C, Berger S, Reeves S. The Readiness for Interprofessional Learning Scale (RIPLS): A problematic evaluative scale for the interprofessional field. *Journal of Interprofessional Care*. 2015; 29(4): 289-291.
- Neville CC, et al. Team decision making: design, implementation and evaluation of an interprofessional education activity for undergraduate health science students. *J Interprof Care*. 2013; 27(6): 523-5.
- Bhutta ZA, et al. Education of health professionals for the 21st century: a global independent Commission. *The Lancet*. 2010; 375(9721): 1137-8.
- Dimoliatis ID, Roff S. Interprofessional/multiprofessional health professions education: designing an efficient search to scope the literature of this exploding field. *Health Info Libr J*. 2007; 24(4): 274-82.
- Anderson ES, Lennox A. The Leicester Model of Interprofessional education: developing, delivering and learning from student voices for 10 years. *J Interprof Care*. 2009; 23(6): 557-73.
- Kulnik ST, et al. Implementing an interprofessional model of self-management support across a community workforce: A mixed-methods evaluation study. *J Interprof Care*. 2017; 31(1): 75-84.
- D'Amour D, et al. The conceptual basis for interprofessional collaboration: core concepts and theoretical frameworks. *J Interprof Care*. 2005; 116-31.
- Thistlethwaite JE. Interprofessional education and the basic sciences: Rationale and outcomes. *Anat Sci Educ*. 2015; 8(4): 299-304.
- Thistlethwaite JE. Interprofessional education: implications and development for medical education. *Educación Médica*. 2015; 16(1): 68-73.
- Barr H. *Interprofessional Education: The Genesis of a Global Movement* The Centre for the Advancement of Interprofessional Education. 2015.
- Maharajan MK, et al. Attitudes and Readiness of Students of Healthcare Professions towards Interprofessional Learning. *PLoS One*. 2017; 12(1): e0168863.
- Brashers V, et al. The University of Virginia interprofessional education initiative: an approach to integrating competencies into medical and nursing education. *J Interprof Care*. 2012; 26(1): 73-5.
- Opina-Tan LA. A pilot implementation of interprofessional education in a community-academe partnership in the Philippines. *Educ Health (Abingdon)*. 2013; 26(3): 164-71.
- Pecukonis E, et al. Interprofessional leadership training in MCH social work. *Soc Work Health Care*. 2013; 52(7): 625-41.
- Kulczycki A, Windle S. Honor killings in the Middle East and North Africa: a systematic review of the literature. *Violence Against Women*. 2011; 17(11): 1442-64.
- Hosny S, et al. Integrating interprofessional education in community-based learning activities: case study. *Med Teach*. 2013; 35: S68-73.
- Jacobs JL, et al. Building a successful platform for interprofessional education for health professions in an Asian university. *Med Teach*. 2013; 35(5): 343-7.
- Lin YC, et al. The impact of an interprofessional problem-based learning curriculum of clinical ethics on medical and nursing students' attitudes and ability of interprofessional collaboration: a pilot study. *Kaohsiung J Med Sci*. 2013; 29(9): 505-11.
- Altin SV, Tebest R, Kautz-Freimuth S, Redaelli M, Stock S. Barriers in the implementation of interprofessional continuing education programs – a qualitative study from Germany. *BMC Medical Education*. 2014; 14: 227.
- Wang R, et al. Implementation and evaluation of an interprofessional simulation-based education program for undergraduate nursing students in operating room nursing education: a randomized controlled trial. *BMC Med Educ*. 2015; 15: 115.
- Wilby KJ, et al. Attitudes of pharmacy and nutrition students towards team-based care after first exposure to interprofessional education in Qatar. *Journal of Interprofessional Care*. 2014; 29(1): 82-4.
- Indika Karunathilake, DS. and a.A.O. Ranjan Dias, *Medical Education Reforms in Sri Lanka*. Medical Education in Asia Pacific. 2006; 10.
- De Silva BS, Rolls C. Health-care system and nursing in Sri Lanka: an ethnography study. *Nurs Health Sci*. 2010; 12(1): 33-8.
- Soan EJ, et al. Exercise physiologists: essential players in interdisciplinary teams for noncommunicable chronic disease management. *J Multidiscip Healthc*. 2014; 7: 65-8.

29. Kim K, Ko J. Attitudes toward interprofessional health care teams scale: a confirmatory factor analysis. *J Interprof Care*. 2014; 28(2): 149-54.
30. Makino T, et al. Attitudes toward interprofessional healthcare teams: a comparison between undergraduate students and alumni. *J Interprof Care*. 2013; 27(3): 261-8.
31. Mahler C, et al. Internal consistency of the readiness for interprofessional learning scale in German health care students and professionals. *BMC Med Educ*. 2014; 14: 145.
32. Fernandes AR, et al. Dissecting through barriers: A mixed-methods study on the effect of interprofessional education in a dissection course with healthcare professional students. *Anat Sci Educ*. 2015; 8(4): 305-16.
33. Rotz ME, et al. Exploring first-year pharmacy and medical students' experiences during a longitudinal interprofessional education program. *Currents in Pharmacy Teaching and Learning*. 2015; 7(3): 302-11.
34. Hermann CP, et al. Preparing Nursing Students for Interprofessional Practice: The Interdisciplinary Curriculum for Oncology Palliative Care Education. *J Prof Nurs*. 2016; 32(1): 62-71.
35. Maeno T, et al. Japanese students' perception of their learning from an interprofessional education program: a qualitative study. *International Journal of Medical Education*. 2013; 4: 9-17.
36. Talwalkar JS, et al. Readiness for interprofessional learning among healthcare professional students. *Int J Med Educ*. 2016; 7: 144-8.
37. Tsakitzidis G, et al. Participant evaluation of an education module on interprofessional collaboration for students in healthcare studies. *BMC Med Educ*. 2015; 15: 188.
38. Turkelson C, et al. Improving Nursing Communication Skills in an Intensive Care Unit Using Simulation and Nursing Crew Resource Management Strategies: An Implementation Project. *J Nurs Care Qual*. 2016.
39. Boland DH, et al. Interprofessional immersion: Use of interprofessional education collaborative competencies in side-by-side training of family medicine, pharmacy, nursing, and counselling psychology trainees. *J Interprof Care*. 2016; 30(6): 739-46.
40. El-Awaisi A, et al. A Middle Eastern journey of integrating Interprofessional Education into the healthcare curriculum: a SWOC analysis. *BMC Med Educ*. 2017; 17(1): 15.
41. Willgerodt MA, et al. Interprofessional education and practice guide No. 4: Developing and sustaining interprofessional education at an academic health center. *J Interprof Care*. 2015; 29(5): 421-5.
42. Reid R, et al. Validating the Readiness for Interprofessional Learning Scale (RIPLS) in the postgraduate context: are health care professionals ready for IPL? *Med Educ*. 2006; 40(5): 415-22.
43. Aston SJ, et al. Interprofessional education: a review and analysis of programs from three academic health centers. *Acad Med*. 2012; 87(7): 949-55.
44. Hoffman SJ, Harnish D. The merit of mandatory interprofessional education for pre-health professional students. *Med Teach*. 2007; 29(8): e235-42.
45. Rowthorn V, Olsen J. Putting the pieces together: creating and implementing an Interprofessional Global Health Grant Program. *Healthc (Amst)*. 2015; 3(4): 258-63.
46. Chan EA, et al. Interprofessional education: the interface of nursing and social work. *J Clin Nurs*. 2010; 19(1-2): 168-76.
47. Wang J, et al. Pharmacy students' attitudes towards physician-pharmacist collaboration: Intervention effect of integrating cooperative learning into an interprofessional team-based community service. *J Interprof Care*. 2016; 30(5): 591-8.
48. Vaughan JJ, et al. A method for developing standardised interactive education for complex clinical guidelines. *BMC Med Educ*. 2012; 12: 108.
49. Berger S, et al. Anchoring interprofessional education in undergraduate curricula: The Heidelberg story. *J Interprof Care*. 2017; 31(2): 175-9.
50. Shrader S, et al. Interprofessional Education and Practice Guide No. 7: Development, implementation, and evaluation of a large-scale required interprofessional education foundational programme. *J Interprof Care*. 2016; 30(5): 615-9.
51. Byakika-Kibwika P, et al. A situation analysis of inter-professional education and practice for ethics and professionalism training at Makerere University College of Health Sciences. *BMC Res Notes*. 2015; 8: 598.
52. Ogawara H, et al. Systematic inclusion of mandatory interprofessional education in health professions curricula at Gunma University: a report of student self-assessment in a nine-year implementation. *Hum Resour Health*. 2009; 7: 60.
53. Milot E, et al. Building an interfaculty interprofessional education curriculum: what can we learn from the Université Laval experience? *Educ Health (Abingdon)*. 2015; 28(1): 58-63.
54. Luebbers EL, et al. Implementation and evaluation of a community-based interprofessional learning activity. *J Interprof Care*. 2017; 31(1): 91-7.
55. Pardue KT. A framework for the design, implementation, and evaluation of interprofessional education. *Nurse Educ*. 2015; 40(1): 10-5.
56. Meche P, et al. Design and implementation of an interprofessional education course for undergraduate students at the University of Applied Sciences Western Switzerland: the Geneva experience. *J Interprof Care*. 2015; 29(3): 279-80
57. Wang Y, et al. Attitudes toward Physician-Nurse Collaboration in Pediatric Workers and Undergraduate Medical/Nursing Students. *Behav Neurol*. 2015; 2015: 846498.
58. Barker KK, Bosco C, Oandasan IF. Factors in implementing interprofessional education and collaborative practice initiatives: findings from key informant interviews. *J Interprof Care*. 2005; 19: 166-76.
59. Zhang S, Lo EC, Chu CH. Attitude and awareness of medical and dental students towards collaboration between medical and dental practice in Hong Kong. *BMC Oral Health*. 2015; 15: 53.

60. Liaw SY, et al. Interprofessional simulation-based education program: a promising approach for changing stereotypes and improving attitudes toward nurse-physician collaboration. *Appl Nurs Res.* 2014; 27(4): 258-60.
61. Chua AZ, et al. The effectiveness of a shared conference experience in improving undergraduate medical and nursing students' attitudes towards inter-professional education in an Asian country: a before and after study. *BMC Med Educ.* 2015; 15: 233.
62. Zheng RM, Sim YF, Koh GCH. Attitudes towards interprofessional collaboration among primary care physicians and nurses in Singapore. *Journal of Interprofessional Care.* 2016; 30(4): 505-11.
63. Ernawati DK, Lee YP, Hughes J. Indonesian students' participation in an interprofessional learning workshop. *J Interprof Care.* 2015; 29(4): 398-400.
64. Lestari E, et al. Understanding students' readiness for interprofessional learning in an Asian context: a mixed-methods study. *BMC Med Educ.* 2016; 16: 179.
65. Regmi KR, Regmi S. Medical and nursing students attitudes towards interprofessional education in Nepal. *J Interprof Care.* 2010; 24(2): 150-67.
66. El-Zubeir M, Rizk DE, Al-Khalil RK. Are senior UAE medical and nursing students ready for interprofessional learning? Validating the RIPL scale in a Middle Eastern context. *J Interprof Care.* 2006; 20(6): 619-32.
67. Vafadar Z, Vanaki Z, Ebadi A. The readiness of postgraduate health sciences students for interprofessional education in Iran. *Glob J Health Sci.* 2015. 7(4): 190-9.
68. Peduzzi M, et al. Cross-cultural adaptation of the Readiness for Interprofessional Learning Scale in Brazil. *Rev Esc Enferm USP.* 2015; 49: 7-15.
69. Zheng RM, Sim YF, Koh GC. Attitudes towards interprofessional collaboration among primary care physicians and nurses in Singapore. *J Interprof Care.* 2016; 30(4): 505-11.
70. Chan EA, et al. The use of interdisciplinary seminars for the development of caring dispositions in nursing and social work students. *Journal of Advanced Nursing.* 2009; 65(12): 2658-67.
71. Hui EC. Perceptions of ethical practices in Hong Kong public hospitals: inter- and intra-professional similarities and differences. *J Nurs Manag.* 2010; 18(6): 746-56.
72. Curran VR, Sharpe D, Forristall J. Attitudes of health sciences faculty members towards interprofessional teamwork and education. *Med Educ.* 2007; 41(9): 892-6.
73. Zanotti R, Sartor G, Canova C. Effectiveness of interprofessional education by on-field training for medical students, with a pre-post design. *BMC Med Educ.* 2015; 15: 121.
74. Woermann U, et al. Attitude towards and Readiness for Interprofessional Education in Medical and Nursing Students of Bern. *GMS J Med Educ.* 2016; 33(5): 73.
75. McFadyen AK, Webster VS, Maclaren WM. The test-retest reliability of a revised version of the Readiness for Interprofessional Learning Scale (RIPLS). *J Interprof Care.* 2006; 20(6): 633-9.