

# Health Sciences Students' Readiness for Interprofessional Education (IPE) in Malaysia

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## ABSTRACT

Interprofessional education (IPE) is a collaborative learning that prepares students to work towards providing safer, patient-oriented care. This cross-sectional study using convenient sampling was conducted in August 2018 to determine University of Cyberjaya (UOC), Malaysia health science students' readiness towards IPE. A validated Readiness for Interprofessional Learning Scale (RIPLS) questionnaire was used as the main tool. The overall response rate was 90.1%. This study found high students' readiness for IPE ( $75.49 \pm 7.35$ ), and positive attitude towards IPE ( $27.56 \pm 7.35$ ). This study also found a strong, positive correlation between students' readiness and their attitudes towards IPE ( $r^2 = 0.823$ ). In conclusion, UOC health science students are ready for IPE and have positive attitude towards IPE implementation. Further studies using multicenter approach and involving larger number of students studying various health sciences programs are needed to give a clearer idea of the students' overall readiness and attitude towards IPE.

**Key words:** Interprofessional education, readiness, attitudes, healthcare students

## 1. Introduction

Interprofessional education (IPE), in the context of healthcare, is a partnership between students of all health science courses in a collaborative and coordinated approach where they are able to share decision-making and opinions regarding health and social issues (Freeth et al., 2018). It occurs when 2 or more professions learn with, from and about each other to improve collaboration and the quality of care (Barr et al., 2016) and it may include learning in academic and work-based settings, either before or after qualification (Gilbert et al., 2010).

The goal of IPE is to prepare the health science students to work together collaboratively towards a safer, patient-oriented and community-oriented healthcare system (Engel and Prentice, 2013). Such collaboration can help to enhance student receptiveness to interprofessional working environment across all healthcare disciplines (van Diggele et al., 2020). IPE also provides healthcare students an opportunity to collaborate as a component of their training prior to entering the healthcare workforce. Such collaboration

can help to enhance student receptiveness to interprofessional working environment across all healthcare disciplines (Engel and Prentice, 2013).

IPE is more than observing a student or clinician from another discipline. It involves collaboration practice through which health workers from different professional backgrounds work together among themselves and with patients, families, caregivers and communities to deliver the highest quality care. Engaging in reflection and discussion about similarities and differences in knowledge and roles between different professions is when learning takes place (Thistlethwaite, 2007). This is when misconceptions and stereotypes come to light and communication skills can be practiced (Ateah et al., 2011).

World Health Organization (WHO) published a journal 'The Framework for Action on Interprofessional Education and Collaborative Practice', with its main objective is to provide strategies and ideas that will help healthcare professionals implement the elements of IPE and interprofessional collaborative (IPC) practice (Abu-Rish et al., 2012). IPC practice is a process that is grounded in

theories and practices that are evidence-based and reflective of a philosophy that is holistic, culturally responsive and client/ family centered (Barr, 2002). These are aligned with and grew out of definitions provided by the WHO which proposes that IPC practice demands proper educational or learning approaches which enable the development of working together among different health professions with a common purpose, commitment, and mutual respect towards each other (WHO, 2011).

For the IPE to have a positive influence on IPC, the healthcare students must be willing to learn together and must be implemented as early as possible (Moran et al., 2007). IPE should be designed, implemented, and evaluated by a team comprising clinical academics from each of the health professions involved. They are people who best understand why teamwork across professional boundaries is important (Freeth, 2013).

Early participation in IPE activities promotes recognition of the need for effective communication between different health professionals and helps prepare students for professional practice (Homeyer et al., 2018; van Diggele et al., 2020). Previous studies have proven that students trained in an IPE approach have better interprofessional collaborative practice competencies compared to students without an IPE training (Homeyer et al., 2018).

In UOC, there is no structured conduct of IPE. The Faculty of Pharmacy, UOC started a pilot IPE involving Year 4 BPharm students and Year 3 BHMS students in 2019. Results from this study is hoped to encourage more faculties in UOC to implement IPE in their curriculum.

In Malaysia, studies are still lacking on readiness for IPE involving students from different health science courses. This study was conducted to determine the attitudes towards IPE among health science students, to determine the association between students' demographic factors and their readiness for IPE and to correlate the students' readiness for IPE with their attitudes towards IPE.

## 2. Method

### 2.1. Study Design and Setting

A cross-sectional study was conducted at University of Cyberjaya (UOC), formerly known as University College of Medical Sciences (CUCMS), Malaysia. UOC offers several undergraduate health science programs. In this study, MBBS program was classified as medical program, and other programs were classified as allied health sciences program. Student representatives from each program were identified and approach to schedule the questionnaire distribution. The questionnaires were distributed to the medical, pharmacy, physiotherapy, homeopathy, and allied health sciences students before their lectures. A total of 892 students were identified, based on the number provided by the university's Admission and Record Department, as potential participants and were sampled conveniently. The English language

version of the questionnaire was used as English is the main language used as the medium for all teaching-learning activities at UOC. The questionnaires, together with the Respondent Information Sheet (RIS) were distributed and collected at the end of the lectures or at some other times agreed by the students. Students who agreed to participate were required to provide their consent by signing the Informed Consent form. Only students who returned the completed questionnaires and their consent forms were included for final study analyses. Students who did not return the documents or did not complete the questionnaire were considered as non-responders.

### 2.2. Instrument

The study instrument consists of 2 sections. Section 1 is on students' demographics and Section 2 is the Readiness for Interprofessional Learning Scale (RIPLS). RIPLS is a 19-item, 5-point Likert scale self-reporting tool that assesses perceptions of healthcare students' knowledge, skills, and attitudes regarding readiness to learn with other healthcare professionals. It was originally developed by Parsell and Bligh (1999) and revised by McFadyen et al. (2006). It is divided into 4 subscales namely Teamwork and Collaboration (9 items), Negative Professional Identity (3 items), Positive Professional Identity (4 items) and Roles and Responsibilities (3 items). The Teamwork/Collaboration subscale assesses the valuing of cooperative learning and respecting students from other healthcare professionals, and the Negative Professional Identity subscale measures the tendency of an individual to value and benefit from collaborative relationships with other healthcare professionals. The Roles and Responsibilities subscale measures the practical application of interprofessional skills with other healthcare professional students. Both subscale scores and total scores can be rated. Each item uses 5-point Likert Scale with '5 = strongly agree' and '1 = strongly disagree'. A higher mean score represents high readiness for IPE and positive attitude towards IPE.

### 2.3. Data Analysis

The Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Chi-Square test was used to determine the association between students' demographic factors and their readiness for IPE. Pearson's Correlation Coefficient test was used to determine the correlation between students' readiness for IPE scores with their attitude scores towards IPE. Comparison of students' mean subscales and mean overall scores with their demographic data were conducted using t-test (for 2 groups) such as between genders, and ANOVA (> 2 groups) such as between programs and year of study. Tukey post-hoc tests were conducted for all statistically significant ANOVA results. The data were also re-analysed with non-parametric tests to confirm there was no difference in results. All the

results were considered significant if  $p < 0.05$ .

A pilot study was conducted with a group of 10 students from different study programs to test the feasibility and applicability of the instrument. The result of the pilot study showed that the survey was clear and understood. The Cronbach Alpha value for Subscale of Teamwork and Collaboration was 0.70, Negative Professional Identity was 0.75, Positive Professional Identity was 0.78 and Roles and Responsibilities was 0.70. The revised version of the survey was distributed to potential respondents in August 2018.

#### 2.4. Ethical approval

This study was granted ethical approval from UOC Research Ethics Review Committee (CRERC) prior to conduct of the study (CRERC reference number: CUCMS/CRERC/ER/082). The approval was granted on 30 April 2018.

### 3. Results

#### 3.1. Participant Demographics

A total of 804 (out of 892) students participated in this study and were included for final analyses. The overall response rate was 90.1%. Among all participants, almost 40% were MBBS students. About one-third of the students were in 1st year and majority of them are female students. The majority of students were taking medical courses  $n = 315$  (39.2%), enrolled in 1st year  $n = 233$  (30.0%), were predominantly female  $n = 562$  (69.9%) and were between the age group of 21–25  $n = 494$  (61.0%). The full demographic distribution is outlined in Table 1.

#### 3.2. Readiness for Interprofessional Learning Scale

Overall, the students showed high readiness for IPE with the total mean score of  $75.49 \pm 7.35$ , and positive attitude towards IPE with the overall score for Subscale 2 and 3 were  $27.56 \pm 7.35$ . The findings are consistent with previous studies (Alruwaili et al., 2020; Lestari et al., 2016).

Table 2 shows the mean and standard deviation for each item in RIPLS. The statements rated highest were no. 7, “For small-grouping learning to work, students need to respect and trust each other” and no. 8 “Team-working skills are vital for all healthcare students to learn”. Both statements have mean scores of  $4.48 \pm 0.55$ , and  $4.41 \pm 0.65$  respectively. The lowest rated statements were no. 18, “I am not sure what my professional role will be” and no. 12 “Clinical problems solving can only be learnt effectively with students from my own discipline”. Both statements have mean scores of  $2.21 \pm 1.03$  and  $3.24 \pm 0.99$  respectively.

The students’ total scores of RIPLS ranged from 9 to 95 with the mean score of  $75.49 \pm 7.35$ . Meanwhile, their mean scores of Subscales 1, 2, 3 and 4 were  $38.45 \pm 4.36$ ,  $10.96 \pm 2.31$ ,  $16.60 \pm 2.10$  and  $9.48 \pm 1.87$  respectively, as shown in Table 3. In addition, the students also showed positive attitude towards IPE with the total mean scores of Subscales

**Table 1. Demographic distribution of participants.**

Variable	Descriptor	N	%
Age	16–20 years	285	35.4
	21–25 years	494	61.0
	26–30 years	21	2.6
	31–35 years	4	0.2
Gender	Male	242	30.1
	Female	562	69.9
Study Programs	MBBS	315	39.2
	BPharm	241	30.0
	BPhysio	56	7.0
	BHMS	95	11.8
	BOSH	97	12.0
Year of Study	1st year	233	30.0
	2nd year	219	27.2
	3rd year	152	18.9
	4th year	159	19.8
	5th year	41	5.1
Current CGPA	3.50–4.00	142	23.0
	3.00–3.49	322	52.2
	2.50–2.99	128	20.8
	2.00–2.49	18	2.9
	$\leq 1.99$	7	1.2
Student Council Member	Yes	40	5.0
	No	764	95.0
Highest Academic Qualifications	Foundation	670	83.3
	Diploma	75	9.3
	Bachelor’s Degree	19	2.4
	A-level	40	5.0

MBBS = Bachelor of Medicine & Bachelor of Surgery; BPharm = Bachelor of Pharmacy; BPhysio = Bachelor of Physiotherapy; BHMS = Bachelor of Homeopathic Medical Sciences; BOSH = Bachelor of Occupational Safety & Health.

Foundation = A 1-year pre-university program that is equivalent to the A level program.

Diploma = A 3-year program offered for students who do not qualify to be enrolled in the Bachelor’s program. However, Diploma graduates may pursue to higher degrees after the completion of the program.

2 and 3 is  $27.56 \pm 7.35$ .

The results of ANOVA in Table 4 showed that there is no statistically significant difference in overall RIPLS mean score between age groups. However, the result showed that there is significant difference between age groups in Subscale 4. Post hoc Tukey test was done and showed that the mean differences are between age 21–25 years and 31–35 years group ( $p = 0.036$ ). Other subscales showed no statistically significant difference.

The results of independent sample t-test revealed there were statistically significant differences in mean RIPLS score for all subscales between genders. The p-value for overall RIPLS score is 0.003, as shown in Table 5. Subscale 1 a p-value of 0.05 while subscales 2, 3 and 4 showed a p-value of  $< 0.001$ .

Table 6 shows the students’ study programs and the RIPLS mean scores. The medical students indicated the highest mean overall scores of the total RIPLS among the students ( $76.33, \pm 7.50$ ). In contrast, the allied health students scored the lowest in RIPLS ( $72.22 \pm 7.15$ ).

The results of ANOVA in Table 6 also showed a statistically significant difference in mean RIPLS score for

**Table 2. Mean scores of each item of RIPLS (n = 804).**

No.	Item	*Mean (SD)
1.	Learning with other students will make me a more effective member of a healthcare team	4.11 (0.71)
2.	Patients would ultimately benefit if healthcare students worked together to solve patient problems	4.30 (0.71)
3.	Shared learning with other healthcare students will increase my ability to understand clinical problems	4.30 (0.67)
4.	Learning between healthcare students before qualification would improve working relationships after qualification	4.18 (0.70)
5.	Communication skills should be learned with other healthcare students	4.22 (0.77)
6.	Shared learning will help me think positively about other health care professionals	4.25 (0.62)
7.	For small-grouping learning to work, students need to respect and trust each other	4.48 (0.55)
8.	Team-working skills are vital for all healthcare students to learn	4.41 (0.65)
9.	Shared learning will help me to understand my own professional limitations	4.21 (0.68)
10.	I don't want to waste my time learning with other healthcare students	3.95 (0.92)
11.	It is not necessary for undergraduate healthcare students to learn together	3.77 (0.97)
12.	Clinical problem solving can only be learnt effectively with students from my own discipline	3.24 (0.99)
13.	Shared learning with other healthcare professionals will help me to communicate better with patients and other professionals	4.21 (0.63)
14.	I would welcome the opportunity to work on small group projects with other health care students	4.11 (0.65)
15.	Shared learning will help me clarify the nature of patients' or clients' problems	4.12 (0.65)
16.	Shared learning before qualification will help me become a better team worker	4.16 (0.67)
17.	The function of nurses and allied healthcare workers is mainly to provide support for doctors	3.55 (0.95)
18.	I am not sure what my professional role will be	2.21 (1.03)
19.	I have to acquire much more knowledge and skill than other students	3.72 (0.93)

\*All numbers are expressed as mean ( $\pm$ SD).

**Table 3. Comparison of mean scores of RIPLS and their subscales.**

Subscales	Question numbers	Range of possible point	*Mean (SD)
Subscale 1: Teamwork and collaboration	Q1–9	9–45	38.45 (4.36)
Subscale 2: Negative professional identity	Q10–12	3–15	10.96 (2.31)
Subscale 3: Positive professional identity	Q13–16	4–20	16.60 (2.10)
Subscale 4: Roles and responsibilities	Q17–19	3–15	9.48 (1.87)
Overall Total Scores			75.49 (7.35)

\*All numbers are expressed as mean ( $\pm$ SD).

**Table 4. Association between students' age and RIPLS mean score.**

Age	Subscales				*Overall Score
	*1	*2	*3	*4	
16–20 years	38.44 (4.41)	10.89 (2.55)	16.66 (2.05)	9.50 (1.93)	<b>75.49 (7.46)</b>
21–25 years	38.46 (4.35)	10.97 (2.19)	16.57 (2.12)	9.52 (1.82)	<b>75.52 (7.30)</b>
26–30 years	38.52 (3.43)	11.62 (1.53)	16.52 (2.09)	8.48 (1.89)	<b>75.14 (6.35)</b>
31–35 years	36.00 (12.73)	11.50 (3.54)	16.00 (5.66)	7.50 (2.12)	<b>71.00 (19.80)</b>
p value <sup>a</sup>	<b>0.887</b>	<b>0.551</b>	<b>0.923</b>	<b>0.036</b>	<b>0.849</b>

<sup>a</sup>ANOVA test

\*All numbers are expressed as mean ( $\pm$ SD).

**Table 5. Association between students' gender and RIPLS mean score.**

Gender	Subscales				*Overall Score
	*1	*2	*3	*4	
Male	37.79 (4.80)	10.40 (2.39)	16.16 (2.18)	9.97 (1.95)	<b>74.32 (7.87)</b>
Female	38.73 (4.13)	11.20 (2.23)	16.79 (2.04)	9.27 (1.79)	<b>75.99 (7.07)</b>
p value <sup>a</sup>	<b>0.005</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>0.003</b>

<sup>a</sup>Independent T-test

\*All numbers are expressed as mean ( $\pm$ SD).

**Table 6. Association between students' study programs and RIPLS mean score.**

Study Programs	Subscales				*Overall Score
	*1	*2	*3	*4	
MBBS	38.87 (4.42)	10.99 (2.89)	16.61 (2.21)	9.86 (1.81)	<b>76.33 (7.50)</b>
BPharm	38.49 (4.25)	11.14 (2.20)	16.82 (2.09)	8.99 (1.85)	<b>75.44 (7.32)</b>
BPhysio	38.39 (3.88)	11.36 (2.05)	16.68 (1.65)	9.05 (1.65)	<b>75.98 (6.05)</b>
BHMS	39.06 (4.10)	11.15 (2.13)	17.02 (1.95)	8.96 (1.91)	<b>76.13 (7.04)</b>
BOSH	36.42 (4.47)	10.01 (2.09)	15.57 (1.85)	10.22 (1.65)	<b>72.22 (7.15)</b>
p value <sup>a</sup>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>	<b>&lt; 0.001</b>

<sup>a</sup>ANOVA test\*All numbers are expressed as mean ( $\pm$ SD).**Table 7. Association between students' year of study and RIPLS mean score.**

Year of Study	Subscales				*Overall Score
	*1	*2	*3	*4	
1st year	38.81 (3.84)	11.02 (2.40)	16.79 (1.88)	9.38 (1.80)	<b>76.00 (6.38)</b>
2nd year	37.81 (4.74)	10.61 (2.25)	16.33 (2.24)	9.47 (2.02)	<b>74.22 (7.95)</b>
3rd year	38.36 (4.91)	10.81 (2.40)	16.59 (2.18)	9.66 (1.75)	<b>75.42 (7.52)</b>
4th year	38.89 (4.19)	11.45 (2.21)	16.77 (2.17)	9.53 (1.88)	<b>76.64 (7.85)</b>
5th year	38.44 (3.13)	11.15 (1.88)	16.32 (1.80)	9.17 (1.76)	<b>75.08 (5.69)</b>
p value <sup>a</sup>	<b>0.091</b>	<b>0.010</b>	<b>0.126</b>	<b>0.511</b>	<b>0.019</b>

<sup>a</sup>ANOVA test\*All numbers are expressed as mean ( $\pm$ SD).**Table 8. Association between students' involvement as UOC student council committee member and RIPLS mean score.**

Involved as Student Council Committee	Subscales				*Overall Score
	*1	*2	*3	*4	
Yes	38.05 (4.76)	10.63 (2.36)	16.39 (2.05)	10.26 (2.26)	<b>75.33 (7.65)</b>
No	38.47 (4.35)	10.98 (2.31)	16.61 (2.10)	9.44 (1.84)	<b>75.50 (7.44)</b>
p value <sup>a</sup>	<b>0.560</b>	<b>0.370</b>	<b>0.490</b>	<b>0.008</b>	<b>0.882</b>

<sup>a</sup>Independent T-test\*All numbers are expressed as mean ( $\pm$ SD).

all subscales between study programs ( $p < 0.001$ ). Besides, the post-hoc Tukey test result showed the mean differences between the medical and allied health students to be statistically significant. However, no significant differences were observed between other study programs.

As shown in Table 7, the highest and the lowest mean scores of RIPLS in different year of study were respectively related to 4th year ( $76.64 \pm 7.85$ ) and 2nd year ( $74.22 \pm 7.95$ ). This could probably due to the fact that, for all of the programs except for MBBS program, Year 4 students are the most senior students. MBBS is the only 5-year program offered in UOC. The results of ANOVA indicated that there was a statistically significant difference in mean overall RIPLS score between year of study ( $p = 0.019$ ). Meanwhile, subscale Positive Professional Identity also showed a statistically significance ( $p = 0.010$ ). Post hoc test was then conducted and was found that only 4th year and 2nd year pairs showed significant difference.

The results of independent sample t-test revealed there was no statistically significant difference in mean overall RIPLS score between the students' involvement as student council committee member ( $p = 0.882$ ). However, Table 8 showed that there was a statistically significant difference in mean RIPLS score subscale 4. Other subscales do not show significant differences.

With regard to current CPGA, 1st year students from the MBBS and BPharm program were excluded from the analyses as the students did not have any CPGA to report. Students from other programs have completed their 1st semester and their intake started in March 2018. The total number of respondents for current CGPA was 617. The variance distribution of CGPA group and highest academic qualification group are not equal. Hence, non-parametric was used, instead of ANOVA. Kruskal-Wallis test was used to analyse CGPA group while Mann-Whitney test was used to analyse highest academic qualifications group. Both results

**Table 9. Association between students' current CGPA and RIPLS mean score.**

Current CGPA		*3.50–4.00	*3.00–3.49	*Below 3.00	X <sup>2</sup> statistic (df) <sup>a</sup>	p value <sup>a</sup>
Subscale	1	38.00 (5.00)	38.00 (6.00)	37.00 (5.00)	2.588 (2)	0.274
	2	11.00 (2.00)	11.00 (2.00)	11.00 (2.00)	2.862 (2)	0.239
	3	16.00 (2.00)	16.00 (3.00)	16.00 (4.00)	1.530 (2)	0.465
	4	9.50 (1.25)	10.00 (3.00)	10.00 (2.00)	4.069 (2)	0.131
*Overall Score		74.00 (9.00)	75.00 (8.75)	74.00 (11.00)	0.736 (2)	0.692

<sup>a</sup>Chi-Square test

\*All numbers are expressed as median (IQR).

**Table 10. Association between students' highest academic qualifications and RIPLS mean score.**

Highest Academic Qualification		*Foundation studies	*Others	Z score <sup>a</sup>	p value <sup>a</sup>
Subscale	1	38.00 (6.00)	37.00 (5.50)	-1.513	0.130
	2	11.00 (2.00)	11.00 (2.50)	-0.120	0.904
	3	16.00 (2.00)	16.00 (3.00)	-1.227	0.220
	4	10.00 (3.00)	9.00 (2.00)	-1.795	0.073
*Overall Score		75.00 (10.00)	74.00 (7.00)	-1.435	0.151

<sup>a</sup>Mann-Whitney U test

\*All numbers are expressed as median (IQR).

showed no statistically significant difference in mean RIPLS score for all subscales between students' current CGPA and their highest academic qualifications, as shown in Table 9 and 10. Pearson's correlation test showed that there was a statistically significant strong correlation between the student's mean readiness score and mean attitude score towards IPE ( $r^2 = 0.823$ ,  $p < 0.001$ ).

#### 4. Discussion

A total of 804 students participated in this study, which constituted almost all active healthcare science students during the study period. The high sample size was encouraging and should provide high level of confidence in robustness of the results. Overall, the findings result showed that the students have a high readiness for IPE and positive attitude towards IPE. According to the Horsburgh et al. (2001), the students showed positive attitudes towards shared learning as they deemed that it can help them acquire teamworking skills and enhance professional working relationships.

This study also showed that there was a statistically significant difference in students' mean RIPLS overall score between genders, study programs and year of study. This indicated that students' readiness for IPE was dependent to these demographic factors. In overall, female students displayed marginally higher total RIPLS mean scores, indicating their high readiness for IPE as compared to male students. In other study done by Wilhelmsson et al. (2011), it was found that regardless of study programs, female students were more positive towards teamwork in an interprofessional settings than male students. It was logical to assume that

gender differences played a role in determining students' attitude and readiness for IPE (Lie et al., 2013). This is an important finding of this study where the number of Malaysian graduates from the medical field are predominantly females. In 2021, it was reported that females made up for about 70% of the healthcare workforce (Petri, 2021).

Meanwhile, in term of study programs, medical students scored highest in RIPLS while allied health students scored the lowest. This showed that the medical students have the highest readiness for IPE and were ready to work and learn from students in other health professions. However, allied health students scored higher in Roles and Responsibilities subscale and hence, were more aware about their roles and responsibilities as healthcare professionals than medical students. Medical students also believed that they have to acquire much more knowledge and skills than other students (Maharajan et al., 2017).

For year of study, the results show that in overall, the 4th year students show the highest readiness for IPE. They believed that clinical problem solving can be learnt more effectively with the students from other disciplines. Williams et al. (2013) stated that as students progressed through their degrees, their appreciation for collaborative teamwork and their understanding of their profession's identity grew, however this appeared to negatively affect their willingness to engage in interprofessional learning with other healthcare students (Williams et al., 2013).

The study showed that there was no statistically significant difference in students' mean RIPLS overall score between age groups. However, there was a statistically

significant difference in mean score Subscale Roles and Responsibilities, especially between age group 21–25 and 31–35, indicating age may influence students' awareness on their roles as future healthcare professionals and responsibilities that they will hold.

There was also no statistically significant difference in students' mean RIPLS overall score between the students' current CGPA and their highest academic qualifications. Horsburgh et al. (2001) also stated that CGPA do not influence students' readiness for IPE, although their studies showed that students with higher CGPA (3.50–4.00) tend to have lower negative attitude towards IPE (Horsburgh et al., 2001).

Findings from a study by Judge et al. (2015) showed that students with higher number of practice had a significant interaction with their readiness for IPE (Lestari et al., 2016). However, the result in this study showed that students with foundation/ matriculation qualifications scored higher in the RIPLS as compared students with other qualifications. This indicated that they had higher readiness for IPE than others, including students with diploma qualifications.

The study also showed no statistically significant difference in mean overall RIPLS score between the students' involvement as student council committee member. However, the result showed that there was a statistically significant difference in mean RIPLS score subscale 4 between the students' involvement as student council committee member. This shows that the students' engagement in student council play an important role in shared learning as it gave students experience to work with students from other professions. Lestari et al. (2016) stated that students who had already collaborated with students from other professions in the student council had a more positive attitude towards IPE. Such opportunities to interact and learn together with other healthcare students can help them develop their communication skills, leadership skills and collaborative skills (Judge et al., 2015).

Lastly, the study also found that there was a statistically significant positive and strong correlation between students' readiness for IPE with their attitudes towards IPE. This means that students with high readiness for IPE will also have positive attitudes towards IPE. This result was supported with a study done by Keshtkaran et al. (2014). They stated that most students with high readiness for IPE tends to have a positive attitude towards IPE (Keshtkaran et al., 2014).

## 5. Conclusion

The main findings of this study were that the healthcare students in UOC have high readiness for IPE and positive attitude towards IPE. Moreover, it was found that students' readiness for IPE may influenced by their genders, study programs and current year of study. Other demographic data do not seem to influence students' readiness for IPE and their attitudes towards IPE. However, the study was conducted not

without any limitations. Firstly, the study was conducted involving students from one university. Secondly, the final year MBBS students were not around the campus as they were undergoing their clinical postings. This has resulted in lower number of participation from the final year MBBS students. Other limitations include method of questionnaire distribution and potential selection bias. The questionnaire was distributed based on schedules mutually agreed by the researcher and the potential respondents. This method could be improved by doing more proper recruitment process to ensure voluntary involvement of the students. Further studies are suggested to involve health sciences students from more universities and to include larger number of participants and improvement on the study protocols (i.e., data collection and evaluation).

## List of abbreviations

BHMS	Bachelor of Homeopathic Medical Science
BOSH	Bachelor of Safety and Health
BPharm	Bachelor of Pharmacy
BPhysio	Bachelor of Physiology
CGPA	Cumulative Grade Point Average
CRERC	CUCMS Research Ethics Review Committee (CRERC)
CUCMS	Cyberjaya University College of Medical Sciences
GPA	Grade Point Average
IIUM	International Islamic University Malaysia
IPC	Interprofessional Collaboration
IPE	Interprofessional Education
IPL	Interprofessional Learning
ISCO	International Standard Classification of Occupation
MBBS	Bachelor of Medicines and Bachelor of Surgery
OSCE	Objectively Structured Clinical Examination
RIPLS	Readiness for Interprofessional Learning Scale
RIS	Respondent Information Sheet
SPSS	Statistical Package for the Social Sciences
UKM	Universiti Kebangsaan Malaysia
UM	Universiti Malaya
UOC	University of Cyberjaya
WHO	World Health Organization

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