

Describing the readiness for interprofessional education among university students attending healthcare programs: insights from a monocentric cross-sectional study

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Abstract. *Background and aim:* Readiness for interprofessional education (IPE) was recognized by international authorities as a key approach for educating students attending healthcare programs. Thus far, there are no descriptions of readiness for IPE in the Albanian context. For this reason, this study aimed to describe readiness for IPE, assessed by measuring “teamwork and collaboration” and “positive professional identity, roles, and responsibilities” among students attending healthcare programs in an Italian-speaking university based in Albania, and describe the correlations between readiness for IPE and the characteristics of the respondents. *Methods:* This study had a descriptive observational design, a cross-sectional data collection, and a convenience sampling procedure performed in a single centre. The study was accomplished between April 2020 and June 2021, involving 688 students, 38.2% of the entire population of students attending healthcare programs in the context of the investigation. *Results:* The teamwork and collaboration mean score was 4.40 (standard deviation = 0.56), and no differences were found between programs (p-value=0.159). The positive professional identity, roles, and responsibilities mean score was 4.33 (standard deviation = 0.64) with no differences between programs (p-value=0.340). Females attending nursing or midwifery reported higher positive professional identity, roles, and responsibilities scores (p-value=0.020), and females in dentistry reported higher teamwork and collaboration scores than males (p-value=0.045). *Conclusions:* Future research should evaluate readiness for IPE longitudinally to ascertain its trajectories over time and analyze any potential individual- or organizational-level variables that may impact IPE and sex-related differences regarding factors influencing IPE. (www.actabiomedica.it)

Key words: collaborative teamwork, health professions, interprofessional education, psychometric evaluation, readiness for interprofessional education

Introduction

Interprofessional education (IPE) is an educational approach aimed at strengthening “patient-centred” collaboration of workers in various sectors of health and medical care (1,2). Early participation

in IPE activities promotes recognizing the need for effective communication between different healthcare professionals and helps prepare students for professional practice (3). IPE was promoted as part of a redesign of healthcare systems to promote interprofessional teamwork and improve patient care quality and

healthcare outcomes (4,5). Recent literature describes IPE as an opportunity to change the way future healthcare professionals are educated and as an opportunity to take a step forward in educating new professionals and reconsider traditional healthcare practices (6,7).

The World Health Organization (WHO) Framework for Action on Interprofessional Education and Collaborative Practice (2010) states that effective collaboration and improved outcomes are enabled by interprofessional education, which occurs when two or more professionals learn about each other (8). To successfully implement IPE to foster collaborative practice, readiness for IPE was acknowledged as the key predictor (9,10). In this framework, the chances that students have to get interprofessional experience aid in learning the necessary skills to join a team-based healthcare staff in practice are also crucial (11). Health practitioners with sufficient IPE training are referred to as a practice-ready collaborative workforce (12). The fundamental approach in IPE is given by educative initiatives that allow students from two or more professions to learn from one another to implement successful cooperation and enhance health outcomes. Students may be prepared to join collaborative practice teams in the workplace after understanding how to collaborate across professions (8).

For assessing IPE in educational settings, the Readiness for Interprofessional Learning Scale (RIPLS) was developed by McFadyen et al. (13). RIPLS is a widely used scale among students in several healthcare fields, and its dimensionality has been described in relation to specific languages and countries (14). In this regard, some studies reported a 19-item scale with four domains: teamwork and collaboration, negative professional identity, positive professional identity, and roles and responsibilities, while a recent study in the Italian-speaking population reported a version of 14 items and two domains: Teamwork & Collaboration, and Positive Professional Identity, Roles and Responsibility (15). Overall, the RIPLS was translated and validated into Brazilian/Portuguese (16), Chinese (17), French (18), German (19), Japanese (20), Serbian (10), Swedish (21), Turkish (22), and Italian (15).

Although the availability of tools for assessing the readiness for IPE, its descriptions still need to be improved in the current literature (23). Having

descriptive studies in specific settings for mapping readiness for IPE could help improve the awareness of which aspects should be enhanced to facilitate IPE and, therefore, guide interventions to improve learning outcomes (8). For this reason, this study aimed to describe readiness for IPE, assessed by measuring “teamwork and collaboration” and “positive professional identity, roles, and responsibilities” among students attending healthcare programs (i.e., Pharmacy, Physiotherapy and Rehabilitation Sciences, Nursing and Midwifery, Medicine and Surgery, Dentistry) in the specific context of the Italian-speaking university “Our Lady of Good Counsel”, which is an Italian University based in Tirane, Albania. As a secondary aim, this investigation aimed to describe the correlations between readiness for IPE and the characteristics of the respondents within each discipline to determine discipline-specific patterns and features that shape the current weaknesses and strengths in the context of the inquiry.

Materials and methods

Design

This study had a descriptive observational design, a cross-sectional data collection, and a convenience sampling procedure performed in a single centre. The study was authorized by the Institutional Review Board of the University of Tirane, “Our Lady of Good Counsel” (UNIZKM), Albania (Prot. n. 336/2022).

Sample, sample size and procedure

Between April 2020 and June 2021, a cross-sectional data collection was performed among the eligible students (about $n = 1.800$ students) enrolled in pharmacy, physiotherapy and rehabilitation, nursing and midwifery, medicine and surgery, and dentistry at the UNIZKM. All students attending these courses were eligible. The data were gathered in Italian since the UNIZKM cooperates with the University “Tor Vergata” in Rome, Italy, where Italian is the official language of instruction.

The one proportion from a finite population approach (24) was used to estimate the sample size that

might properly represent students at UNIZKM who had readiness for IPE higher than or equal to a measure of adequacy (scores ≥ 4) described in roughly the 55% of the sample of a previous study performed in the same setting (15). Therefore, the sample size had to be minimally estimated as the population size (roughly 1800 students at UNIZKM)* $X/(X+\text{population size}-1)$. In this approach, $X=Z_{\alpha/2}^2 * (\text{sample proportion of } 55\%, \text{ which was the rate of scores } \geq 4) * (1-\text{sample proportion}) / (\text{margin of error})^2$. Considering a margin of error between 3 and 5 applied to a 95% confidence interval (95%CI), the representative sample size has to range between 690 and 320 students, which means that a response rate of the entire invited population of students attending the UNIZKM ranging between 38% and 18% is adequate to describe the readiness for IPE in the setting of the investigation.

All the students attending pharmacy, physiotherapy and rehabilitation, nursing and midwifery, medicine and surgery, and dentistry were invited via mail to fill out a web-based form including socio-demographic data and the Italian version of the RIPLS (I-RIPLS), and the study terminated without any need of re-invitation to fill the questionnaire when the response rate was satisfactory for the investigation (response rates higher than 18%). The invitation to be enrolled was sent simultaneously to the entire target population. It included a disclaimer to accept to be involved in the study after having read the aims and strategy to manage and store data following the General Data Protection Regulation. In this study, the university's ethical committee granted a waiver from written informed consent (Prot. n. 336/2022).

Measurements

The socio-demographic data were sex (male, female, other), age (years), and discipline (pharmacy, physiotherapy and rehabilitation, nursing and midwifery, medicine and surgery, or dentistry). The I-RIPLS was previously validated (15) and showed a two-factor structure encompassing 14 items measuring situations acting as proxies of readiness for IPE with a five-scale scale. The two factors were labelled "Teamwork and collaboration" (TW) and "Positive professional identity, roles, and responsibility" (PPI).

TW and PPI showed adequate internal consistency and were scored by computing the mean values of the items kept by each factor (15).

Statistical analysis

Data were initially examined using the frequency distribution analysis to look for potential errors, outliers, or missing data. Each quantitative variable was checked for skewness and kurtosis before the Kolmogorov-Smirnov test. Continuous variables were reported as mean and standard deviation (SD) for normally distributed data, whereas non-normally distributed variables were given as median and IQR. Numbers and percentages have been used to synthesize categorical variables. The variables used to describe the sample were compared between disciplines by using the Chi-square test for investigating differences in the distribution of the sex (males, females) and one-way ANOVA for comparing mean age differences across disciplines. Descriptive statistics fulfilled the primary aim of this study, while a correlation analysis was performed for TW and PPI in the overall sample and in the subgroups given by each discipline. A categorization of disciplines was also performed considering the courses that required a single cycle Master of Science degree (e.g., MD programs) and courses based on Bachelor of Science and Master of Science as two separate cycles (e.g., nursing). The inferential analyses were performed setting $\alpha = 5\%$ and using a two-sided null hypothesis. Analytics were performed in IBM SPSS Statistics for Windows V.27 (IBM Corp., Armonk, NY, USA).

Results

Participants

The overall sample included 688 students (response rate = 38.2%). Most of them were females ($n=432$; 63%) and attended physiotherapy and rehabilitation degrees ($n=310$; 46.2%). In the sample, education based on bachelor's and master's degrees was more frequent than single-cycle degree programs [378 (56.3%) vs 293 (43.7)]. Descriptive statistics of participants stratified per discipline are shown in Table 1.

Table 1. Characteristics of responders and comparisons between disciplines.

	Overall (n=688)		Pharmacy (n = 80)		Physiotherapy and rehabilitation science (n=310)		Nursing and Midwifery (n=68)		Medicine and Surgery (n=160)		Dentistry (n=53)		P-value
	n	%	n	%	n	%	n	%	n	%	n	%	
Sex													
Females	432	63	68	85.00	151	48.70	49	72.10	122	76.30	29	54.70	<0.001
Age													
Years (mean, SD)	23.75	4.76	20.62	2.09	24.18	4.26	27.24	8.62	23.29	3.74	21.27	1.87	<0.001
Discipline													
Pharmacy	80	11.9	-	-	-	-	-	-	-	-	-	-	-
Physiotherapy and rehabilitation science	310	46.2	-	-	-	-	-	-	-	-	-	-	-
Nursing and Midwifery	68	10.1	-	-	-	-	-	-	-	-	-	-	-
Medicine and Surgery	160	23.8	-	-	-	-	-	-	-	-	-	-	-
Odontology	53	7.9	-	-	-	-	-	-	-	-	-	-	-
Dichotomized discipline													
Single cycle degree program	293	43.7	-	-	-	-	-	-	-	-	-	-	-
Education based on bachelor and master	378	56.3	-	-	-	-	-	-	-	-	-	-	-
Teamwork and collaboration													
Score (mean, SD; theoretical range from 1 to 5)	4.4	0.56	4.35	0.70	4.41	0.54	4.41	0.42	4.46	0.51	4.11	0.70	0.159
Positive professional identity, roles, and responsibility													
Score (mean, SD; theoretical range from 1 to 5)	4.33	0.64	4.33	0.78	4.34	0.59	4.25	0.57	4.41	0.62	3.79	0.79	0.340

Abbreviations: indicates 17 missing data; SD: standard deviation.

The frequencies of students in each discipline significantly differed in the sample of respondents (p -value < 0.001). Precisely, participants who attended pharmacy were 80 (11.9%), 310 (46.2%) attended physiotherapy and rehabilitation sciences, 68 (10.1%) attended nursing and midwifery courses, 160 (23.8%) attended medicine and surgery, and 53 (7.9%) dentistry. The comparisons of mean age between students attending the five disciplines included in this study indicated statistically significant differences (p -value < 0.001).

Readiness for IPE

The description of mean scores per discipline is depicted in Figure 1. The overall score of PPI had a mean value of 4.33 (SD=0.64), and the overall mean score of TW had a mean value of 4.40 (SD=0.56). More precisely, no statistically significant differences were reported in comparing the mean scores of PPI and TW per discipline (p -value=0.340 and p -value=0.159).

Correlations between readiness for IPE and characteristics of responders

As shown in Table 2, TW and PPI were positively correlated in the overall sample ($r = 0.732$; p -value < 0.001) and in each subgroup given by participants stratified per discipline. The positive correlation between TW and PPI was lower in students attending nursing and midwifery courses ($r = 0.429$; p -value < 0.001), and among these students, PPI scores were higher among females ($r_{pb} = 0.281$; p -value = 0.020). In dental students, females reported higher scores of

TW than males, as TW was positively associated with being a female ($r_{pb} = 0.276$; p -value = 0.045).

In general, the scores of TW were positively slightly correlated with age in students attending single-cycle degree programs ($r = 0.122$; p -value = 0.037).

Conclusion

This is the first study describing the readiness for IPE in Albania, even though the description concerns only a single Italian-speaking centre. In general, the reported scores showed high readiness for IPE and were similar to previous descriptions in other contexts (25,26), even though some specific aspects emerged, indicating the future directions for improving readiness for IPE in the context of the investigation.

The specific aspects emerging from this descriptive study were mainly related to the reported sex-related differences in the readiness for IPE described in the subgroups of nursing and midwives and dentistry. In the subgroups of nursing and midwives, females reported higher scores of PPI than males, and in the subgroup of dentistry, females reported higher scores of TW than males. The practical implications of this finding are related to the need for more support toward a higher level of readiness for IPE in males. The current results also highlighted the need for further investigation of sex-related differences. Precisely, future research should explore in-depth if sex plays a role as an effect modifier in influencing the relationship from factors that might affect the readiness for IPE (e.g., professional identity, values, knowledge, attitudes) toward IPE (26).

In the single-cycle degree programs, age was positively and slightly associated with TW. This result reflects the structure of these programs (e.g., MD programs), where students require to attend internships in the last couple of years, and most IPE initiatives can be experienced in practice settings (27). Therefore, students have the opportunity to practice IPE slightly later than when it is needed for bachelor's degrees. This aspect is just a characteristic of the two approaches to university education (single-cycle degree programs versus multi-cycle programs).

The high scores in readiness for IPE reflect the experience of educators in organizing activities to

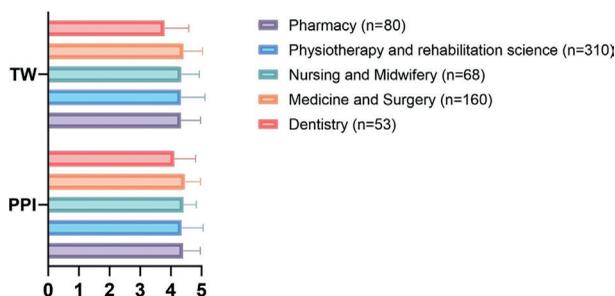


Figure 1. Description of readiness for IPE in each discipline.

Table 2. Correlations between the domains of Readiness for Interprofessional Education and characteristics of responders (overall and stratified per discipline).

	TW		PPI		
	r	P-value	r	P-value	
Overall					
	TW	–	–	0.732	<0.001
	PPI	0.732	<0.001	–	–
	Age	0.062	0.105	0.006	0.867
	Discipline	0.001	0.997	0.006	0.880
	Sex	0.019	0.614	0.026	0.490
Pharmacy					
	TW	–	–	0.835	<0.001
	PPI	0.835	<0.001	–	–
	Age	0.068	0.55	0.058	0.607
	Sex	0.001	0.996	0.052	0.644
Physiotherapy and Rehabilitation science					
	TW	–	–	0.747	<0.001
	PPI	0.747	<0.001	–	–
	Age	0.060	0.261	0.044	0.437
	Sex	-0.01	0.865	0.001	0.991
Nursing and Midwifery					
	TW	–	–	0.429	<0.001
	PPI	0.429	<0.001	–	–
	Age	-0.079	0.521	-0.164	0.18
	Sex	0.181	0.139	0.281	0.020
Medicine and Surgery					
	TW	–	–	0.673	<0.001
	PPI	0.673	<0.001	–	–
	Age	0.111	0.163	0.026	0.745
	Sex	-0.063	0.431	-0.034	0.672
Dentistry					
	TW	–	–	0.818	<0.001
	PPI	0.818	<0.001	–	–
	Age	0.23	0.102	0.134	0.344
	Sex	0.276	0.045	0.168	0.228

Single cycle degree program					
	TW	–	–	0.764	<0.001
	PPI	0.764	<0.001	–	–
	Age	0.122	0.037	0.056	0.342
	Sex	0.052	0.377	0.046	0.437
Education based on Bachelor's and Master's					
	TW	–	–	0.699	<0.001
	PPI	0.699	<0.001	–	–
	Age	0.022	0.670	-0.03	0.565
	Sex	0.015	0.766	0.034	0.514

Abbreviations: TW: Teamwork and collaboration; PPI: Positive professional identity, roles, and responsibility.

facilitate cross-professional learning occasions as, in the context of the investigation, some previous activities have been performed to involve educators in embracing IPE (15). Educators can use some guiding concepts to prepare IPE, including communication styles, teamwork, patient-centred treatment, role clarification, team functioning, patient/client/family/community-centred care, collaborative leadership, interprofessional communication, and interprofessional conflict resolution (27–29). However, the lack of precise criteria in some of the current IPE programs makes it difficult to create an interprofessional environment (27–29).

In general, universities need help to create an academic strategy based on shifting from traditional education to IPE (30). Each program is driven by a set of objectives and skills that its alums must attain before receiving a degree, and this program is deeply focused on each profession. Only a few universities mention IPE as necessary in the curricula (30). Another critical element for embracing IPE is the need for a thorough planning procedure, including curriculum mapping, faculty engagement, logistics, the selection of venues and resources, and charting expectations for student workload (31).

This study has some limitations that require to be discussed. First, the monocentric design needs to be revised to ensure the generalizability of the results in the Albanian and international contexts, especially

if we acknowledge that the UNIZKM is an Italian-speaking university based in Albania. Second, the cross-sectional data collection does not help determine the within-subject longitudinal trajectories of TW and PPI. Longitudinal descriptions are highly needed in future studies as only a few studies are available in the literature (26). Third, some additional measurements (e.g., values, attitudes, academic performance, stress-related variables) are required to better understand what influences readiness for IPE.

Overall, this study showed for the first time the readiness levels for IPE of students attending health-care programs in an Italian-speaking Albanian university. The results showed that students' readiness levels for IPE are generally adequate, providing insights for future studies and practical implications for educators. Future studies should longitudinally describe readiness for IPE to determine its trajectories over time and include the assessment of the potential individual-level or organizational-level factors that might affect IPE. Educators should strengthen the PPI levels of males attending nursing and midwifery programs and the TW levels of males attending dentistry.

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BD: investigation, formal analysis, supervision, writing – review & editing; AA: investigation, formal analysis, supervision, writing – review & editing; gr: project administration, conceptualization, supervision, writing – review & editing; AS: conceptualization, data collection, supervision, writing – review & editing.

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