Evaluation of inter-professional seminar involving patient-partners and caregivers

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ABSTRACT

Objective : To assess the contribution of interprofessional education (IPE) for pre-graduate students from eight study branches. These seminars had patient-partners and caregivers as co-facilitators for reflexive conversations, with educational goals of learning interprofessional communication and involving patients in decision-making.

Methods : A pre/post seminar comparison with 2 questionnaires about the students' professional identity, multidisciplinary collaboration and patients' involvement, and the richness of stakeholders' definitions.

Results : 1142 students participated in the course (n=740 after removing missing data). The results indicate that this type of education helps students feel more confident in their ability to communicate and collaborate (z=-10,204; p<0,001), involves patients in their care plan (z=-7,996; p<0,001) and fosters the competence and autonomy of the post-graduate students in their own professional field (z =-10,627; p<0,001). It also enriches the definition of patients' roles (n=399; z=-17,276; p<0,001).

Conclusion: Including patients-partners and caregivers in IPE enriches the professional identity and increases the self-efficacy of futures caregivers.

Practice implications: This program exposed students to collaborative care practices, can reduce their resistance to this type of practice after graduation by making them more confident in using a structured team approach and recognising its benefits for both patients and caregivers.

1. Introduction

Interprofessional collaboration (IC) refers to the process in which professionals who depend on each other work together to meet the needs of patients [1]. IC is a crucial aspect in enhancing healthcare quality and is now considered as one of the major challenges that need to be addressed [2]. Indeed, previous studies have shown that the implementation of IC has a positive impact on healthcare organisations as well as on different outcome indicators such as staff satisfaction, patient satisfaction, and health status [3,4].

Best et al. pointed out that effective IC starts with the development of a professional identity (PI), which is defined as the construction of a complex identity made up of all the commitments,

behaviours and skills specific to a professional role as well as the ethical and moral values that this complex identity encompasses. Today, the construction of a PI for healthcare professionals should integrate new models of care centred around patient or in partnership with the patient, as well as issues of social responsibility of the systems [5,7]. Indeed, the evolution of the patient's participation, place, and involvement in the healthcare system plays a crucial role in constructing the identity of the health professionals with whom they will collaborate. In this regard, Schrewe et al. [8] support that PI is “constructed in difference from others, including from outside of the medical profession”. According to the authors, a clearer understanding of “patient as others” must be the basis of any PI conceptualisation. As suggested, “physicians exist only because patients do”, confirming the need for patient participation inside the construction of the professional identity.

The training period is described as a critical period in the construction of the PI [6]. Biehl et al. reinforce this argument by demonstrating that students with an early understanding of their intended professional profile are more able to anticipate the challenges of professional and educational choices [5]. If patient-inclusive PI is constituent of the IC, interprofessional education (IPE) is crucial for its development. IPE is defined as "opportunities for two or more health/social professions to learn with, from and about each other to improve collaboration and quality of care" [9]. In their systematic review of various studies of IPE in university programmes for future health professionals, Reeves et al. demonstrated that the attitudes and perceptions developed by learners about each other are improved because of their IPE [10]. However, evidence regarding behavioural changes, organisational practices and patient benefits is more limited [10].

Research on learning-teaching activities for IC training highlights the importance of considering both the caregivers’ and the patients’ self-efficacy behavioural theory [11]. Bandura defines self-efficacy (SE) as "people's beliefs about their ability to produce effects". Researchers also highlighted correlations between SE and nurses' professional values [12,13]. They have found that work values focusing on the patient’s needs could increase the sense of SE for both caregivers and patients, improving the outcomes of care and support provided to them.

To tailor teaching to the patient's needs and perspectives, Vanier et al. have developed an IPE scheme that brings together students from 13 different health and psychosocial science study branches at the University of Montreal (UdeM) on several occasions in partnership with patients [14]. The vision of "patient-as-a-partner" has been introduced in their IPE curriculum since 2010. These authors define the patient-partnership as "*a person who is gradually enabled to make free and enlightened health care choices. He is respected in all aspects of his being and he is a full member of his interprofessional team. His 'life-project' constitutes the guiding principle according to which clinical decisions are to be made inside"*. Including patients in teaching programs, health policy committees and research is also a specificity of this concept.

Another study from Raynault et al., has analysed how IPE activity, including patients-as-trainers and patient-partnership model within the student teams, enriched collaboration over time throughout the semester. The results have shown that students were more prepared to adopt a partnership approach with patients afterwards[15]. In addition, a study on IPEs has highlighted that this type of training also facilitates the development of the future nurses' PI, while also resulting in a better perception of the identity of other health professionals. Lastly, it has been found that IPEs have had positive effect on communication skills in the context of IC by leading to better teamwork and more efficient patient support in the long run [16].

In 2013, the Université Libre de Bruxelles (ULB) (Belgium) established an interprofessional education learning-teaching program, followed by the Haute École Libre de Bruxelles Ilya Prigogine (HELBIP) in 2014. At the time of our study, these "training seminars on collaborative practices including the patient-partner" were aimed indiscriminately at learners at the end of their initial training course in eight health and social professions: medical doctors, nurses, pharmacists, physiotherapists, occupational therapists, osteopaths, social workers and public health executives. According to the organisers, the aim of these seminars is to open a dialogue between these different fields of study to better understand each other's professions (IP) and to learn to work together based on clinical situations, in the presence of and in collaboration with a patient-partner, who is present at these seminars.

The aim of this study is to evaluate the extent to which an IPE seminar, co-facilitated by a patient-partner and a health/social professional, influences the development of the students'

collaborative competences (IC). This evaluation includes the dual evolution of their personal and peer PIs, as well as their SE (general, interprofessional collaboration and with the patient)

2. Material and methods

2.1.Participants

For this study, the accessible population consists of the 1141 students who participated in an IPE activity during the academic years 2018-2019 (n= 536) and 2019-2020 (n= 605) (Figure 1). All students were final year students of the Pôle Santé (Healthcare Hub) at the ULB (Faculty of Medicine, Pharmacy, Public Health and Motor Sciences) or the HELBIP (Bachelors in Social Work, Nurses in charge of General Care and Occupational Therapy). As part of their participation in the IPE, students were asked to complete a pre- and post-test questionnaire. Only those who completed both pre and post ad hoc forms were included in the study.

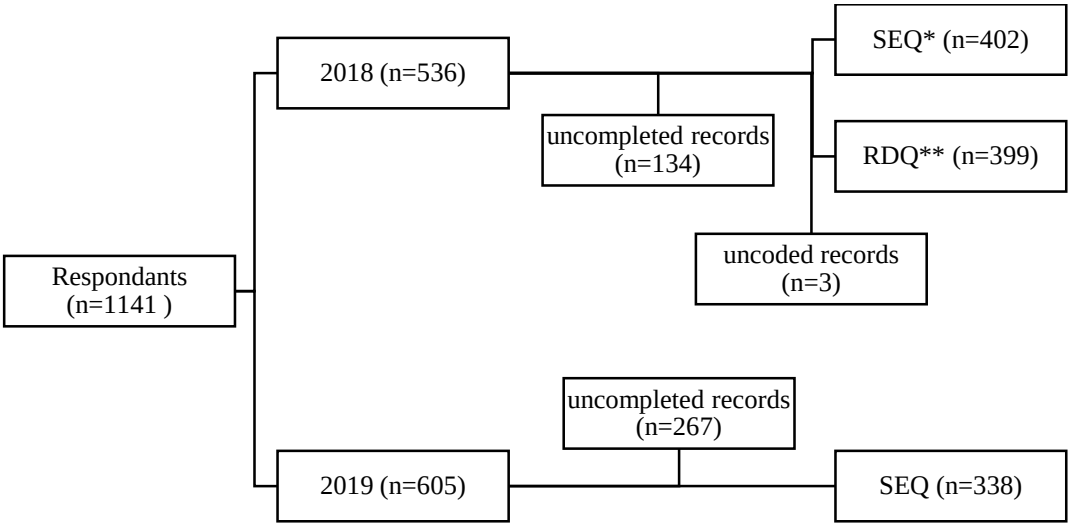

Figure 1: Flow chart of study population and sample size
**SEQ: Self-Efficacy Questionnaire*
***RDQ: Richness of Definition*

2.2. IPE Organisation

The IPE activity was divided into two learning sequences, refered to as "seminars", each lasting three hours. The first IPE seminar was focused on the discovery of the PI of the participating study branches, while the second seminar centred around the collaborative resolution of a clinical case. Some faculties incorporated specific PI activities into their curriculum or prepared students to think about how they would present their profession in front of other stakeholders, while others did not. To address this curriculum heterogeneity, several articles [17,18], presentations, and video contents were made available as free resources on the institutional e-

learning platform. These resources covered key concepts such as IC, patient-partnership, and the interprofessional care plan involving the patient-partner, and they were accessible before the pre-test and throughout the year.

Before the first seminar, students were required to complete two questionnaires. The first quiestionnaire focused on PI and understanding the roles of patients and caregivers, while the second questionnaire assessed SE and included three dimensions: "professional competence and autonomy" (PAC), "communication and collaboration" (CC) and "patient-partnership" (PP). Students were encouraged to reflect on the professional role of the different participants they would collaborate with.

For the implementation of this IPE activity, students were divided into three groups (n~200) and further divided into twenty sub-groups of approximately 10 participants, ensuring a balanced distribution across branches. Each sub-group was co-facilitated by a duo consisting of a health professional and a patient-partner, both of whom had undergone prior training. The patients received instruction through a teaching program provided by an internal organisation of the university known as “Bureau of Patient-Partnership”. Patients were selected through interviews to ensure their willingness and abilities to share their perspectives on patient involvement in various situations. Caregivers were recruited from within the faculties. Both patients and caregivers participated in a course about the principles of interprofessional collaboration, patient-partnership, and the logistical organisation of the seminars.

The objective of this first seminar was to define the roles of the different caregivers. Students met and established the role of each participating caregiver (PI). Subsequently, they were asked to write a report on what they had learned during the session, which would facilitate a discussion in a larger group at the conclusion of the first seminar.

The second seminar usually takes place two weeks later. The students were tasked with developing an interprofessional support plan in sub-groups, including the patient-partner, based on clinical situations described in a written document. These clinical vignettes were designed to be humanised, providing name, family background, and social information, as well as realistic, representing common medical problems that required the expertise of multiple caregivers and social workers. If necessary, the co-facilitators guided the students through the

key concepts using targeted questions (e.g.: asking patients about choices or limitations in this specific situation) and ensured effective time management and comprehension of instructions. Once again, students were required to write a report which was given to the organisers at the end of the session. There was no evaluation of the content of the reports, as the primary goal was to foster group dynamics rather than assess the quality of the support plans proposed.

After participating in both seminars, each student was asked to answer the same set of questions once again. The questionnaires completed before the first seminar were referred to as the "pre-test", while those completed after the two seminars were referred to as the "post-test". Attendance at the seminars and completion of both questionnaires were the compulsory components of students' assessment. The students were unaware of their participation in this retrospective study, which received approval from Brugmann Hospital Ethics Committee (protocol number: CE202376).

2.3.Measuring Tools :

2.3.1. Richness of Definition Questionnaire (RDQ):

Students completed an open-ended questionnaire (APPENDIX A) that assessed their understanding of PI and the roles of the participating professions and the patient. In this questionnaire, students were asked to explain how they percieve the roles of each of the participating professions and the role of the patient. The RDQ provide the construction of a score (see point 2.5.1).

2.3.2. Self-Efficacy Questionnaire (SEQ):

Students were asked to assess their self-efficacy across three dimensions (APPENDIX B). They rated themselves on a four-point Likert scale (1 = "strongly disagree" and 4 = "strongly agree") regarding proficiency in PAC, CC and PP. For the PAC dimension, the questions were adapted from the revised Interdisciplinary Education Perception Scale (IEPS) [19], originally based on de Luecht et al. [20].The questions for the CC and PP dimensions were based on the writings of Hamric et al. [21]and Lecocq et al. [17], respectively.

2.4.Validation of the SEQ:

In order to achieve the study objective, an evaluation of the psychometric properties of the analysis tool was conducted. The SEQ underwent a Principal Component Analysis (PCA) with promax rotation on all responses. Questions with a factor loading below 0.5 were excluded from

analysis. To ensure internal consistency within the questionnaire, Cronbach's alpha was calculated for both pre- and post-test questionnaires. The PCA revealed the existence of three dimensions within the SEQ (combining results from 2018 and 2019) (TABLE 1). The identified dimensions consist of 6 items for CC (Q12,Q11,Q8,Q15,Q13,Q9), 4 items for PP (Q4,Q2,Q1,Q10), and 4 items for PAC (Q6,Q7,Q16,Q17). Four questions (Q3, Q5, Q14, Q18) were excluded from the analysis as their factor loading did not exceed 0.5. The internal consistency of the identified factors (collaborative skills, patient involvement, and professional skills) was good for both the pre- and post-test, with alpha scores ranging from 0.70 to 0.84.

Table 1: PCA and Internal Consistency of Self Efficacy Questionnaire (SEQ)

	Factor Analysis after Promax rotation*			Cronbach's Alpha	
	First Factor	Second Factor	Third Factor	Pre-test	Post-Test
First Factor : Communication & Collaboration (CC)					
Q12	**0,85**	-0,03	-0,05	0,81	0,84
Q11	**0,85**	-0,02	-0,05		
Q8	**0,83**	-0,05	-0,04		
Q15	**0,71**	0,08	-0,08		
Q13	**0,69**	-0,02	0,11		
Q9	**0,53**	0,06	0,22		
Second Factor : Patient-Partnership (PP)					
Q4	-0,04	**0,86**	-0,03	0,70	0,81
Q2	0,00	**0,85**	-0,05		
Q1	-0,05	**0,82**	-0,02		
Q10	0,12	**0,65**	0,10		
Third Factor : Professional Autonomy & Competencies (PAC)					
Q6	-0,11	-0,09	**0,86**	0,73	0,75
Q7	0,02	-0,01	**0,75**		
Q16	-0,01	0,01	**0,75**		

Q17	0,13	0,10	**0,61**	

* Promax with Keiser Normalization; Rotation converged in 5 iterations; Q3, Q5, Q14 and Q18 have been deleted; Factor loadings >0,50 are in bold

2.5.Data analysis

2.5.1. Data Coding :

The responses to the open-ended questions in the RDQ were coded into sub-themes by two reviewers. A comparison was conducted between the identified sub-themes from the two reviewers and a third external reviewer. These sub-themes were then organised into five main topic themes, specific to each professional field. All responses where scored based on a second screening of each definition by the reviewers, using the constructed themes and sub-theme grid. The presence of a theme in the proposed definition was scored as "1", and the absence as "0" for each of the five themes. The definition richness score is the sum of the scores of the themes present within a definition, ranging from 0 to 5.

2.5.2. Statistics

To verify whether the definitions were enriched by the IPE activity, a Wilcoxon signed-ranks test was performed on the whole sample, as well as within each pathway, by comparing the richness of definition before and after IPE.

Subsequently, a Wilcoxon signed-ranks test was conducted to compare the pre-post differences in the sums of scores within the different SEQ categories. A confidence interval of 95% was used for all analyses.

3. Results

3.1.Sample size

Out of the initial population, 740 student participants (2018 & 2019) completed the SEQ, and 399 responded to the RDQ (2018) before and after the IPE activity. Participants who only completed one of the two pre/post tests were excluded from our study (Figure 1). Three missing codings were identified and also removed from the study. Our sample included representation from all study branches (TABLE 2).

Table 2: Professional Group Sizes (n)

	2018		2019
Study Branches	RDQ	SEQ	SEQ
Medical Doctor	91	92	60
Pharmacist	61	62	47
Physiotherapist	86	86	66
Osteopath	21	21	24
Public Health	76	77	85
Nurse	14	14	26
Occupational Therapy	39	39	29
Social Worker	11	11	1
Total	399	402	338
		740	

3.2. Richness of definition Questionnaire (RDQ)

3.2.1. Global results

A Wilcoxon signed test was conducted to analyse the improvement in the definition richness score across all students and by study branches (n=399) (TABLE 3). The overall analysis shows an improvement in the definition scores for the roles of doctors ($z=-2.497$, $p=0.012$), pharmacists ($z= -2.601$, $P=0.009$), osteopaths ($z=-2.412$, $p=0.016$), nurses ($z=-2.336$, $p=0.019$), occupational therapists ($z=-8.326$, $p<0.001$) and patients ($z=-17.276$, $p<0.001$). Conversely, a decrease in richness was observed for the definition of social workers ($z=-5.834$, $p<0.001$). The definitions of the roles of physiotherapists ($z=1.642$, $p=0.102$) and public health executives ($z=-0.0292$, $p=0.773$) do not seem to have been influenced by the IPE.

3.2.2. Patient definitions

When the scores are separately analysed by study branches, the patient definition score increased in all study branches (social workers $p=002$; others $p<0.001$). Every single branch has a better score for patients definitions, which is unique among our results.

3.2.3. Profession definitions

Osteopaths and social workers did not improve their scores for any other profession except for patients. For doctors, an improvement is observed for the definition of pharmacists (z=-2.531 ,p=0.011) and occupational therapists (z=-5.101, p<0.001), and a decrease for public health executives (z=-2.375, p=0.017) and social workers (z=-3.552, p<0.001). Among pharmacists and nurses, the scores increase for occupational therapists (z=-3.898, p<0.001 (pharmacist); z=-2.292, p=0.028 (nurse)). Physiotherapists were the only ones to improve their definitions of public health executives (z=-3.732, p<0.001) while they also improved those of occupational therapists (z=-3.530, p<0.001). Public health executives improve their score for osteopaths (z=-2.140, p=0.033) and occupational therapists (z=-3.451, p<0.001) but decreased scores for social workers (z=-2.502, p=0.013) and their own field (z=-3.141, p=0.001). Occupational therapists improved their score for nurses (z=-2.233, p=0.03) but decreased for social workers (z=-3.801, p<0.001).

Table 3: Comparison of Richness of Definitions Scores Between Pre and Post Test

	MD	**Pha**	**Phy**	**O**	**PH**	**N**	**OT**	**SW**	**Pat**
MD (n=91)		↗			↘		↗	↘	↗
Z[a]	-1,392[c]	-2,531[c]	-,440[c]	-0,804[c]	-2,375[d]	-1,534[c]	-5,101[c]	-3,552[d]	-8,333[c]
p-value[b]	0,162	0,011	0,68	0,437	0,017	0,131	<0,001	<0,001	<0,001
Pha (n=61)							↗		↗
Z	-1,719[c]	-0,282[d]	-0,956[c]	-0,800[d]	0,000[e]	-0,092[c]	-3,898[c]	-0,365[d]	-6,593[c]
p-value	0,089	0,788	0,369	0,463	1	0,949	<0,001	0,746	<0,001
Phy (n=86)					↗		↗		↗
Z	-0,303[c]	-1,149[d]	-0,206[c]	-1,267[d]	-3,732[d]	-1,806[d]	-3,530[d]	-1,698[c]	-8,159[d]
p-value	0,772	0,257	0,85	0,214	<0,001	0,08	<0,001	0,088	<0,001
O (n=21)									↗
Z	-0,646[c]	-0,723[c]	-0,187[d]	-1,467[d]	-0,121[d]	-0,320[d]	-1,854[c]	-1,485[d]	-4,061[c]
p-value	0,651	0,535	1,000	0,189	0,938	0,781	0,071	0,192	<0,001
PH (n=76)				↗	↘		↗	↘	↗
Z	-1,005[c]	-0,005[c]	-0,673[c]	-2,140[c]	-3,141[d]	-0,195[d]	-3,451[c]	-2,502[d]	-7,543[c]
p-value	0,325	0,998	0,522	0,033	0,001	0,858	<0,001	0,013	<0,001
N (n=14)							↗		↗
Z	-0,632[c]	-2,077[c]	0,000[d]	-1,265[c]	-0,447[c]	-1,508[c]	-2,292[c]	-0,333[e]	-3,140[c]
p-value	0,766	0,047	1	0,359	1	0,234	0,028	1	<0,001

OT (n=39)						↗		↘	↗
Z	-1,833[c]	-1,161[c]	-1,998[c]	-1,843[c]	-1,582[c]	-2,233[c]	-0,091[d]	-3,801[d]	-5,543[c]
p-value	0,073	0,261	0,054	0,072	0,112	0,03	0,969	<0,001	<0,001
SW (n=11)									↗
Z	-0,440[c]	-0,378[c]	-1,508[c]	-1,466[c]	-1,461[c]	-0,905[c]	-1,150[c]	-1,994[d]	-2,871[c]
p-value	0,797	1	0,234	0,203	0,195	0,563	0,332	0,078	0,002
Total (n=399)	↗	↗		↗		↗	↗	↘	↗
Z	-2,497[c]	-2,601[c]	-1,642[c]	-2,412[c]	-0,292[d]	-2,336[c]	-8,326[c]	-5,834[d]	-17,276[c]
p-value	0,012	0,009	0,102	0,016	0,773	0,019	<0,001	<0,001	<0,001

a, Wilcoxon signed-ranks paired test

b, exact two tailed p-value

c, based on negative ranks

d, based positive ranks

e, sum of positive ranks equal sum of negative ranks

↗, p<0,05; Sum of Ranks Pre- Test < Sum of Ranks Post-Test

↘, p<0,05; Sum of Ranks Pre- Test > Sum of Ranks Post-Test

Abbreviation: MD, Medical Doctor; Pha, Pharmacist; Phy, Physiotherapist; O, Osteopath; PH, Public Health Executive; N, Nurse, OT, Occupational Therapist; SW, Social Worker; Pat, Patient.

3.3.Self-Efficacy Questionnaire (SEQ)

There is a difference between the Pre- and Post-test (TABLE 4) in favour of an improvement of the score within the themes Communication & Collaboration (CC) (z=-10,204, P<0,001), Patient-Partnership (PP) (z=-7,996, p<0,001) and Professional Autonomy & Competencies (PAC) (z=-10,627, p<0,001) (TABLE 3).

Table 4: Wilcoxon Signed Ranks Test for SEQ Pre-Post Tests

	Ranks	N	Mean Ranks	Sums Ranks	Z	p-value †
Communication & Collaboration (CC)	Negative Ranks	150	245,46	36819,50	-10,204*	<0,001
	Positive Ranks	393	282,13	110876,50		
	Ties	197				
	Total	740				
Patient-Partnership (PP)	Negative Ranks	172	253,81	43654,50	-7,996*	<0,001
	Positive Ranks	364	275,44	100261,50		
	Ties	204				
	Total	740				
Professional Autonomy & Competencies (PAC)	Negative Ranks	151	232,82	35156,00	-10,627*	<0,001

Positive Ranks	389	285,13	110914,00
Ties	200		
Total	740		

† asymptomatic two tailed p-value

* based on negative ranks

4. Discussion and Conclusion

4.1.Discussion

From a general point of view, our data show that the IPE activity studied influences the participants' Professional Identity (PI) and Self Efficacy (SE), which suggests a positive influence on Interprofessional Collaboration (IC).

The collected data support the hypothesis that this type of IPE positively impacts patient involvement. Previous studies at UdeM have also demonstrated the positive effect of IPE, including Patient-partner interactions, on students learnings [14]. Another study showed that students were more incline to embrace the patient-partnership model rather than the paternalist model during these type of IPE[15]. Analysing PI and SE provided further insights into the benefits of IPE activities. The definition of patients showed improvement across all study branches (social workers p=002; others p<0.001), and Patient-Partnership (PP) score on the SEQ was higher after the seminars (z=-7,996, p<0,001). The inclusion of patient-partners (patients-as-trainers) in IPE appears to enhance the definition of patient roles and increase students' self-efficacy.

Furthermore, the study reveals that the participants in the IPE seminars tended to provide richer definitions for the roles of doctors (p= 0.012), pharmacists (p=0.009), osteopaths (p= 0.016), nurses (p=0.019), and occupational therapist (p<0.001) at the end of the IPE. Therefore, this type of IPE, which fosters collegial PI definition and collaborative clinical case resolution, enriches the definition of the PI of the professions and provides role clarification by enhancing knowledge of different professions and their scope of practice[10]. Understanding one's own PI, including roles and limits, enable professionals to comprehend potential interactions and complementarities among various health and social professions, ultimately facilitating coordinated care for patient. Additionally, these IPEs have a positive impact on communication among students [22], as the patients' definitions of caregivers roles contribute to the construction of PI [8].

However, it is worth noting that the PI definitions of physiotherapists (P=0.102) and public health executives (p=0.773) do not appear to have been influenced by the IPE. For physiotherapists, one possible explanation could be that they already possess prior knowledge or mastery of their PI. This hypothesis, however, requires further testing. In the case of public health professionals, their representation of PI seems to be less established and defined, indicating a need for pre-IPE PI construction. These results suggest that certain professions might benefit from defining their own PI before engaging in IPE.

Furthermore, our results indicate a decline int the richness of social workers' definitions (P<0.001), possibly due to the small sample size (n=11) and absence of social worker students in many sub-groups. This highlights the importance of including representatives from each profession in IPE to ensure comprehensive definition of their PI. Merely providing a theoretical definition by a third party does not appear to have a significant impact.

As mentioned at the beginning of this study, our results also highlight the significantly increase in students' SE scores (p<0.001) across all questionnaire components after participating in IPE seminars. Inclusion of this type of IPE in the initial curriculum would therefore positively influence learners' development of IC skills, particularly through enhanced SE in terms of patient involvement and professional competencies. This aspect is crucial because students with high professional SE demonstrate greater resilience in overcoming obstacles, setbacks and challenges, leading to increased personal and professional satisfaction, as suggested by Bumann and Younkin [23]. Therefore, building students' confidence in their professional abilities is essential for effective integration into the care team.

Our study also aligns with the findings of Cino et al [24], who observed an increase in participants' SE after collaborating with students from different health professions programmes. Students in healthcare who learn together gain more confidence in implementing a structured team approach, recognising its positive impact on patients' well-being.

The results further demonstrate that this patient-inclusive scheme also develops learners' SE in patient-partnership (p<0.001). The involvement of patients in this educational process emerges as a key element in training professionals who embrace an inclusive approach to patient care.

Our findings also show that students from all study branches develop a more nuanced understanding of the patient's identity. IPE opportunities in many university programs primarily focus on improving understanding of PI across various roles, responsibilities, and functions of different healthcare providers. However, patient-inclusive IPE remains less common. Therefore, limited research examines the integration of patient-inclusive IPE into curriculum to prepare students for collaborative professional practice, requiring clinical decision-making and judgement [22]. Although our results do not evaluate whether this learning scheme improves shared decision making abilities, they assess the evolution of considering the patient as partner in their care. After the seminars, the students define the concept of patient in a more inclusive way, using terms (*verbatim*) such as *partner (actor, involvement, etc.), choice (decision, will, consent, etc.), autonomy, life project (feeling, needs, projec*t) and less in terms of recipient as *an object of care (compliance, observance, obedience)*.

As limitation of this study, some biases were identified during its conduct. The first concerns public health students, who were included as "public health executives" despite the specific fields of study within their course (epidemiology and biostatistics; management of health care and service establishments; health policy, systems and promotion; environmental health). Furthermore, public health students do not have direct contact with patients but instead analyse and act on populations. Moreover, a significant number of public health students already hold previous degrees in professions such as nursing, dietetics, or medicine, which makes defining a "public health executive" PI challenging as they have already developed another PI. Consequently, a secondary analysis focusing on this specific public health profession is warranted.

Secondly, another bias related to the analysis of definitions was identified. It was observed that scoring based on short definitions is not the most appropriate method for analysing qualitative data. According to LaDonna et al. (2018), qualitative analyses of open-ended questionnaires should consider the repetition of terms, and frequency of occurrence. The authors emphasise that qualitative analysis is not solely based on counting the frequency of responses, but rather uncovering the deeper meaning behind the data. When utilised appropriately, it enhances our comprehension o social phenomena [25]. Conducting semi-structured interviews, following the COREQ Reporting Guidelines [26], would provide a better understanding of stakeholders' PI representation before and after the IPE. Additionally, investigating Partner-Patient perceptions

before and after the IPE would offer a clearer view of the added value of this approach for patients. Another way to evaluate this IPE is through qualitative analysis of reported materials, such as PI written reports and support plan.

Another limitation of this study is the heterogeneity of the curricula and the absence of a prior PI construction activity for some study branches. Lack of preparation in defining an adequate PI that aligns with the official professional profile could lead participation learners to inadvertently spread misinformation to other study branches. Therefore, careful harmonisation of pre-IPE professional identity preparation is necessary. Stubbs et al. highlights that students who participate in introductory IPE courses at the beginning of their curriculum maintain positive dispositions towards subsequent IPE activities [27]. Moreover, introducing collaborative practices during formative years is crucial, as students become more reluctant to engage in such practices once established in their professional lives [28].

Lastly, investigating student's SE at the end of their training in large groups limits the ability to analyse SE evolution through longitudinal study design due to logistical considerations. However, assessing SE at different stages of training is essential to determine whether its effects persist over time. Therefore, we recommend conducting SE assessments throughout all years of training.

4.2.Conclusion:

Participation in an IPE programme co-facilitated by a patient and a health/social professional improves learners' self-efficacy in three dimensions: Communication & Collaboration (CC) ($z=-10.204$, $P<0.001$), Patient-Partnership (PP) ($z=-7.996$, $p<0.001$) and Professional Autonomy & Competencies (PAC) ($z=-10.627$, $p<0.001$). It heterogeneously enriched the definition of other stakeholders' roles while unanimously enriching the definition of the patient's roles (social worker $p=0.002$; others $p<0.001$). Therefore, this IPE scheme enhances participants' definition of their own and their colleagues' Professional Identity (PI), Self-Efficacy (SE) and patient-partnership (PP) - key elements components of Interprofessional Collaboration (IC). Based on the results, we can conclude that the inclusion of patient-partners and caregivers in an IPE program has a positive impact on the development of participants' interprofessional communication (IC) skills.

4.3.Practice implications:

Implementing such IPEs proves to be an innovative approach to improve interprofessional collaboration and encourage students involvement of patient in the therapeutic decision-making process. However, the success of this type of IPE relies on training patients and caregivers in theoretical frameworks of patient-partnership and sharing their hands-on experience. When analysing professional identity among public health executives, it is crucial to consider the diverse range of study branches within their curriculum and explore strategies for effectively integrating them into an interprofessional education program based on clinical vignette.

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Declaration of Competing Interest
None.

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Declaration of Generative AI and AI-assisted technologies in the writing process

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APPENDIX A : RDQ

Dimension: Professional identity & understanding of partners' roles
Define in a few words or an expression your understanding of the role of each of the following stakeholders
• Medical Doctor • Pharmacist • Physiotherapist • Osteopath • Public health • Nurse • Social worker • Occupational therapist • Patient

APPENDIX B : SEQ

Items of Self-Efficacy Questionnaire

Dimensions	Cronbach's Alpha		n°	Questions	Factor Loadings
	Pre	Post		*To what extent do you agree with the following statements?*	
Collaborative Skills	0,81	0,84	12	I am able to share my point of view respectfully	**0,85**
			11	I am able to understand the point of view of others before expressing my opinion	**0,85**
			8	I am able to listen carefully to the views of others	**0,83**
			15	I am able to adapt if a more creative proposal/alternative is proposed by a colleague from another profession	**0,71**
			13	I am able to take collective action towards a common goal	**0,69**
			9	I am able to identify the common objectives and concerns I share with other professionals and the final goal of interventions	**0,53**
Patient Involvement	0,7	0,81	4	I plan support/interventions with the patient.	**0,86**

			2	I determine with the patient the interventions based on his/her aspirations and priorities.	**0,85**
			1	I define the priorities of the support/interventions with the patient.	**0,82**
			10	I interpret and validate the information gathered with the patient before proposing a support plan/interventions.	**0,65**
Professional Abilities	0,73	0,75	6	I am well trained	**0,86**
			7	I am very positive about my contribution and achievements.	**0,75**
			16	I consider myself competent in my professional field.	**0,75**
			17	I am very positive about my goals and objectives.	**0,61**

Declaration of interests

☒The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Maxime Etenaille: Conceptualization, Methodology, Data Curation, Writing – original Draft, Visualisation. **Dan Lecocq**: Resouces, Validation, Writing – review and editing. **Pascaline Herpelinck**: Resources, Validation, Writing – review and editing. **Françoise Parent**: Conceptualization, Methodology, Writing - review & editing . **Jennifer Foucart**: Conceptualization, Methodology, Writing – original Draft, Supervision.