

Evaluation of an interprofessional education intervention in partnership with patient educators

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Abstract. *Background and aim of the work:* Patient involvement in interprofessional education is a novel approach to building collaborative and empathic skills in students. However, this area of teaching is lacking in rigorous studies. The project aimed to evaluate whether an interprofessional education intervention in partnership with patient educators (IPE-PE) would increase readiness for interprofessional learning and empathy in health sciences students. *Methods:* This is the report of a didactic innovation project. Participants included 310 undergraduate health sciences students who took part in an IPE-PE intervention. Data were collected before and after the training, using the Readiness for Interprofessional Learning Scale (RIPLS) and the Jefferson Scale of Empathy-Health Professions Student version (JSE-HPS). Only at the end of the intervention, a data collection form was administered to explore the value of the patient educator in the training and to investigate the socio-demographic variables. *Results:* The mean age of participants was 21±3.2 SD years and 76% were female. The Wilcoxon signed-rank test showed significant changes from before to after the IPE-PE in the RIPLS total score ($m=42.7\pm 5.8$ SD vs 44.62 ± 5.9 SD, $z=-4.168$, $P<0.001$) and in the JSE-HPS total score ($m=112.7\pm 12.5$ SD vs 116.03 ± 12.8 SD, $z=-4.052$, $P<0.001$). *Conclusions:* Our students reported that IPE-PE had helped them to become more effective healthcare team members, to think positively about other professionals, and to gain an empathic understanding of the perspective of the person being cared for. The results of the project confirm that the intervention promoted the development of empathy, fostering a better understanding of the patient-centred perspective. (www.actabiomedica.it)

Key words: patient involvement, patient educator, interprofessional education, empathy, person-centred care, undergraduate health sciences students

Introduction

The rise in chronic disorders due to ageing has resulted in the need for greater clinical integration that requires the coordination of person-centred care (PCC) rather than focusing solely on the individual

clinical problem (1-3). The complex nature of today's health care necessitates the involvement of different disciplines, emphasising the importance of having health professionals from all specialities who are experts in collaborative teamwork (4). Interprofessional Collaborative Practice (ICP) happens when health

workers from different professional backgrounds work alongside patients, families, carers and communities to deliver the highest quality of care (5). Interprofessional education (IPE) has been endorsed by multiple healthcare stakeholders as a key element in achieving a “collaborative practice-ready” workforce, namely a workforce that has learned how to work in an inter-professional team and has established interprofessional collaborative practice. IPE is defined by the WHO as an educational model wherein healthcare students are trained to integrate their diverse interdisciplinary expertise by learning with, from, and about each other (5). In contrast to siloed training, where future health professionals are trained separately, IPE aims to prepare a health workforce that is collaborative, complementary, and capable of holistic PCC (5-7). The evidence directly linking IPE to patient and healthcare outcomes is still under construction and IPE has been defined as a “great truth awaiting scientific confirmation”. Even so, several studies have shown a positive impact on the working environment (improved department culture, collaborative team behaviours, fewer clinical errors) of diverse hospital and primary care settings, and on patient health outcomes (8,9). However, the scoping review by Fox et al. on teaching interprofessional teamwork skills to health professions students concluded that the lack of rigorous, comparable studies in this area makes recommending one teaching method or assessment measure over another challenging (10). Moreover, a recent integrative review concluded that the IPE literature suggests several promising outcomes. Nevertheless, additional research is needed to determine best practice methods for curriculum development and integration (4). Considering that patients should be seen as co-creators in the care process, who share responsibility with the health professional, and taking into account the promising findings of a systematic review following the implementation of a PCC approach (11), involving the patient in training processes could be an interesting teaching strategy in co-designing the development and implementation of educational programmes. Students who have educational experiences with service users have been shown to develop a better understanding of the PCC perspective and gain the skills they need to work effectively in an interprofessional environment (12).

However, the review by Repper and Breeze showed that IPE initiatives involving service users are few and far between (13). A rapid review of the factors that influence service user involvement in interprofessional education, practice, and research concluded that service users are more engaged in IPE and ICP than in education and research (14). Given the emerging trends in patient-centred care, it is important for all team members to cultivate empathic skills (15). Empathy has emerged as a critical tool in breaking down the barriers inherent to teamwork (16). Although the importance of empathy is undeniable, a significantly high percentage of health professionals seem to find it difficult to adopt a model of empathic communication in their everyday practice, in particular due to the lack of education on empathy (17). While some studies have shown that students have poor empathic abilities, or even that such abilities are in decline (18-20), others have demonstrated that empathy is a teachable skill (21-24). As suggested by Sur (2021), empathy is important not only in the patient-provider relationship but also among healthcare team members; empathy improves interactions between team members (25). Finally, the lack of emphasis on PCC in medical education continues to hinder its implementation (2). Our didactic innovation project aimed to evaluate the effectiveness of an interprofessional education intervention with the patient educator in terms of the readiness for interprofessional learning and empathy of health sciences students. We also explored the students’ opinions on the added value of involving the patient educator in their IPE training.

Participants and methods

Study design and participants

This is the report of a didactic innovation project concerning the teaching with patient educators. Participants were second-year students of the Dietetics, Medicine, Midwifery, Nursing, and Occupational Therapy degree programmes, and third-year students of the Speech Therapy degree programme at the University of Modena and Reggio Emilia (Unimore).

Interprofessional education intervention in partnership with patient educators

The interprofessional education intervention in partnership with patient educators (IPE-PE) took place on a single day at Unimore's School of Medicine. All the students attended an initial theory-based plenary seminar on the following topics: "Designing the teaching process with patient educators at Unimore", "The teaching of Medical Humanities in the core curriculum of degree programmes", and "The experience of training alongside patients in the Canadian model of the University of Montreal". The 310 students were then divided into six interprofessional groups. In each group, a patient educator, in partnership with a lecturer, used interactive methods to present their disease experience to the students, giving a personal account of their experience and detailing their treatment and the healthcare services received. Each group was further divided into subgroups of 12 students. Within these subgroups, participants used the patient educator's account — as well as their own experiences of care as patients or caregivers — to reflect on best practices in care and on how the health professional can help the person being cared for and the caregiver to play an active role in the multi-professional team. Lastly, a student spokesperson from each group presented the best practices identified to all students in a plenary session.

Measurements

Immediately before (T0) and right after (T1) the IPE-PE training, a tool was administered to the students, consisting of the following three parts:

1. The Readiness for Interprofessional Learning Scale (RIPLS), a tool widely used in the literature to measure health professions students' readiness for interprofessional education [26]. The validated RIPLS, in the version adapted to the Italian educational context by Sollami et al., has a Cronbach's alpha of 0.92 [27]. This scale consists of 10 items on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).
2. The 20-item Jefferson Scale of Empathy-Health Professions Student version (JSE-HPS), a reliable and valid self-questionnaire composed of three self-reported subscales: perspective taking, compassionate care, and standing in the patient's shoes, aimed at subjectively measuring the level of general empathy (28). In the JSE-HPS, participants are asked to indicate their level of agreement or disagreement with each statement (from 1 [strongly disagree] to 7 [strongly agree]), with ten items negatively worded (reverse-coded when scored). The total score ranges from a minimum of 20 to a maximum of 140: higher scores denote higher levels of empathy. The psychometric qualities of the JSE-HPS were confirmed in Italian samples of nursing students with a Cronbach's alpha of 0.78 (24,29).
3. On completion of the IPE-PE training, a data collection form was administered to investigate selected socio-demographic variables (gender, age) and the students' opinions were collected by means of the following two open-ended statements "What is the added value of the 'Patient Educator' for you in your IPE training?" and "Free-format comments and suggestions on the training intervention".

Ethical considerations

This didactic innovation project was approved and authorised by the degree programme directors. All students were informed about the objectives and methods of this didactic innovation project and their participation was voluntary. This evaluation was conducted in accordance with the Declaration of Helsinki. Students were asked to anonymously complete the scales and questions before and after the IPE-PE, and completion of the tools coincided with issuance of the informed consent. A code was assigned to each participant to ensure student anonymity. Because this is a didactic innovation project, Ethics Committee approval was not required following national laws.

Statistical analysis

Descriptive statistics such as mean and standard deviation were used to summarise the socio-demographic characteristics of the participants and their RIPLS and JSE-HPS scores. The Wilcoxon signed-rank test compared pretest-posttest data for each item and total score of both the RIPLS and the JSE-HPS. A P -value of $P < 0.05$ was defined as statistically significant. The data were analysed using SPSS® Software (version 28, IBM Corporation, 2021). Content analysis was used to analyse the qualitative data and determine the presence of certain themes.

Results

Characteristics of the participants

A total of 310 students participated in the IPE-PE, broken down as follows: 8 Speech Therapy students, 13 Occupational Therapy students, 15 Dietetics students, 15 Midwifery students, 126 Medical students and 133 Nursing students, all on degree courses in Modena. Although there were differences between degree programmes, 76% of the sample were female, as shown in Table 1.

The mean age of participants was 21 ± 3.2 SD years, in an age range of 19-55 years, with no significant differences. The mean age of female participants was 21.2 ± 3.6 SD and male participants 20.5 ± 1.4 SD.

Quantitative analysis

Readiness for Interprofessional Learning Scale (RIPLS). The RIPLS showed internal consistency of $\alpha = 0.89$ in the first measurement and $\alpha = 0.92$ in the second. The Wilcoxon signed-rank test revealed significant changes from before to after the IPE-PE training in the RIPLS total score ($m = 42.7 \pm 5.8$ vs 44.62 ± 5.9 , $z = -4.168$; $P < 0.001$), showing greater readiness for interprofessional learning among students after the interprofessional education intervention, as reported in Table 2. There were statistically significant improvements in all the 10 RIPLS items after the IPE-PE (Table 2).

Students from all degree programmes, apart from dietetics, showed an increase in the mean total RIPLS score. This difference was statistically significant for nursing and medical students, as shown in Table 3. Speech therapy and occupational therapy students showed a higher mean total score for the scale than students from other degree programmes at both T0 and T1.

Jefferson Scale of Empathy-Health Professions Student (JSE-HPS). The JSE-HPS showed internal consistency of $\alpha = 0.81$ in the first measurement and $\alpha = 0.83$ in the second. The mean JSE-HPS score at T0 was 112.7 ± 12.5 SD, increasing to 116.03 ± 12.8 SD at T1 in a statistically significant way ($z = -4.052$, $P < 0.001$) (Table 4).

The students from all the degree programmes showed an increase in the mean total JSE-HPS score, except for speech therapy students, who had

Table 1. Sample characteristics.

Gender	Male (n) %	Female (n) %	Total (n) %
Dietitian students	2 (13.3%)	13 (86.7%)	15 (5.1%)
Nursing students	18 (15.5%)	98 (84.5%)	116 (39.7%)
Speech therapy students	0 (0%)	8 (100%)	8 (2.7%)
Medical students	47 (37.6%)	78 (62.4%)	125 (42.9%)
Midwifery students	0 (0%)	15 (100%)	15 (5.1%)
Occupational therapy students	3 (23%)	10 (77%)	13 (4.5%)
Total	70 (23.9%)	222 (76.1%)	292 (100%)

Table 2. The RIPLS items and total scores at T0 and T1.

RIPLS Items and Total score	Pre IPE-PE training Mean±SD	Post IPE-PE training Mean±SD	P-value^a
1. I would welcome the opportunity to work on small-group projects with other healthcare students	4.42±0.8	4.59±0.7	<i>P</i> = 0.004*
2. Learning with students from other health care professions will help me to communicate better with patients and other professionals	4.33±0.8	4.47±0.7	<i>P</i> = 0.036*
3. Learning with students from other health care professions will help to clarify the nature of patient problems	4.30±0.8	4.47±0.7	<i>P</i> = 0.016*
4. Communication skills should be learned with other healthcare students	4.17±0.8	4.38±0.8	<i>P</i> = 0.003*
5. Learning with students from other healthcare professions before graduation will help me to become a better team worker	4.46±0.7	4.57±0.7	<i>P</i> = 0.028*
6. Learning with healthcare students before graduation would improve relationships after graduation	4.33±0.8	4.47±0.7	<i>P</i> = 0.041*
7. Learning with students from other healthcare professions will help me to think positively about other professionals	4.07±0.9	4.36±0.9	<i>P</i> < 0.001*
8. Learning with students from other healthcare professions will increase my ability to understand	4.15±0.9	4.41±0.9	<i>P</i> < 0.001*
9. Learning with other students will help me to become a more effective member of a healthcare team	4.30±0.8	4.46±0.8	<i>P</i> = 0.012*
10. Learning with students from other healthcare professions will help me to understand my own limitations	4.20±0.9	4.39±0.8	<i>P</i> = 0.009*
Total score	42.70±5.8	44.62±5.9	<i>P</i> < 0.001*

^aWilcoxon signed-rank test compared pretest-posttest data for each item and the total scale score * *P* < 0.05.

Table 3. The RIPLS total scores at T0 and T1.

RIPLS Total score	Pre IPE-PE training Mean±SD	Post IPE-PE training Mean±SD	P-value^a
Dietitian students	44.22±4.9	42.78±5.1	<i>P</i> = 0.623
Nursing students	42.95±5.7	44.74±6.3	<i>P</i> < 0.001*
Speech therapy students	49.2±1.8	50.0±0	<i>P</i> = 0.317
Medical students	41.87±6	44.22±5.7	<i>P</i> = 0.007*
Midwifery students	40.33±5	43.67±2.5	<i>P</i> = 0.109
Occupational therapy students	46.37±3.2	47.75±3.4	<i>P</i> = 0.336

^aWilcoxon signed-rank test compared pretest-posttest data for the total scale score * *P* < 0.05.

started with a higher value. The increase revealed a statistically significant difference among nursing students and occupational therapy students, as shown in Table 5.

Qualitative analysis

A total of 198 students provided comments on the open-ended statement “What is the added value of the ‘Patient Educator’ for you in your IPE training?”.

Table 4. The JSE-HPS items and total scores at T0 and T1.

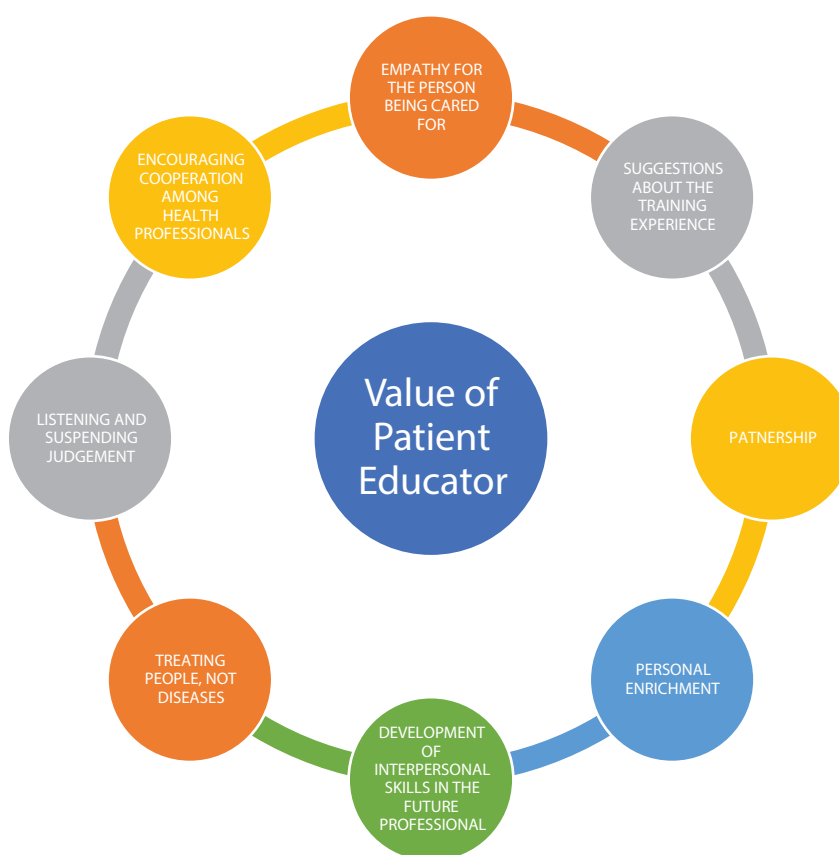
JSE-HPS Items and Total score	Pre IPE-PE training Mean±SD	Post IPE-PE training Mean±SD	P-value^a
1. Health care providers' understanding of their patients' feelings of their patients' families does not influence treatment outcomes	5.53±1.7	5.86±1.8	<i>P</i> = 0.009 [*]
2. Patients feel better when their health care providers understand their feelings	6.45±1.0	6.56±0.8	<i>P</i> = 0.097
3. It is difficult for a health care provider to view things from patients' perspectives	4.20±1.4	4.14±1.6	<i>P</i> = 0.705
4. Understanding body language is as important as verbal communication in health care provider – patient relationship	6.07±1	6.26±1	<i>P</i> = 0.042 [*]
5. A health care provider's sense of humor contributes to a better clinical outcome	4.54±1.5	4.72±1.6	<i>P</i> = 0.181
6. Because people are different, it is difficult to see things from patients' perspectives	4.15±1.6	4.26±1.7	<i>P</i> = 0.265
7. Attention to patients' emotions is not important in patient interview	6.58±1	6.41±1.4	<i>P</i> = 0.337
8. Attentiveness to patients' personal experiences does not influence treatment outcomes	5.93±1.4	6.17±1.4	<i>P</i> = 0.012 [*]
9. Health care providers should try to stand in their patients' shoes when providing care to them	5.79±1.3	6.14±1	<i>P</i> < 0.001 [*]
10. Patients value a health care provider's understanding of their feelings which is therapeutic in its own right	6.18±1	6.40±0.9	<i>P</i> = 0.019 [*]
11. Patients' illnesses can be cured only by targeted treatment; therefore, health care providers' emotional ties with their patients do not have a significant influence in treatment outcomes	5.68±1.4	6.01±1.5	<i>P</i> = 0.002 [*]
12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints	5.87±1.4	6.08±1.5	<i>P</i> = 0.044 [*]
13. Health care providers should try to understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language	6.11±1.2	6.43±0.9	<i>P</i> = 0.001 [*]
14. I believe that emotion has no place in the treatment of medical illness	6.25±1.2	6.26±1.3	<i>P</i> = 0.832
15. Empathy is a therapeutic skill without which a health care provider's success is limited	5.84±1.5	6.05±1.2	<i>P</i> = 0.106
16. Health care providers' understanding of the emotional status of their patients, as well as that of their families is one important component of the health care provider - patient relationship	6.10±1	6.33±1	<i>P</i> < 0.012 [*]
17. Health care providers should try to think like their patients in order to render better care	5.08±1.4	5.39±1.4	<i>P</i> = 0.010 [*]
18. Health care providers should not allow themselves to be influenced by strong personal bonds between their patients and their family members	3.33±1.6	3.60±1.7	<i>P</i> = 0.055
19. I do not enjoy reading non-medical literature or the arts	6.06±1.5	5.90±1.6	<i>P</i> = 0.378
20. I believe that empathy is an important factor in patients' treatment	6.23±1.2	6.41±1.1	<i>P</i> = 0.037 [*]
Total score	112.7±12.5	116.03±12.8	<i>P</i> < 0.001[*]

^aWilcoxon signed-rank test compared pretest-posttest data for each item and the total scale score * *P* < 0.05.

Table 5. The JSE-HPS total scores at T0 and T1.

JSE-HPS Total score	Pre IPE-PE training Mean±SD	Post IPE-PE training Mean±SD	P-value ^a
Dietitian students	116.67±15.7	118.89±15.4	$P = 0.574$
Nursing students	110.36±12.7	114.65±12.5	$P < 0.001^*$
Speech therapy students	125±6.0	125.2±4.5	$P = 0.786$
Medical students	111.69±13	114.16±14.8	$P = 0.065$
Midwifery students	115±8.7	123.3±4.7	$P = 0.285$
Occupational therapy students	113.88±8	121.38±8.7	$P = 0.001^*$

^aWilcoxon signed-rank test compared pretest-posttest data for the total scale score * $P < 0.05$.

**Figure 1.** Value of patient educator in interprofessional education.

By means of content analysis, as show in Figure 1, the following eight themes emerged.

1. *Empathy for the person being cared for.* Most participants reported that the patient educator was beneficial for gaining an empathic understanding of the perspective of the person being

cared for and their needs from a holistic viewpoint, fostering communication and rapport: “The patient educator is a must in the training of future health professionals, because they bring their own experiences and perspectives to the table, thus resulting in greater reflection and consideration and fostering increased

- empathy and communication (S2); In my opinion, in my training it is essential to have an all-round view of the patient, their relatives and caregivers, without underestimating their needs and emotional state (S11); It enables me to understand the patient's perspective in a broader, deeper sense. This means I am able to put myself in their shoes (S12); Having a different outlook, from an additional perspective. Truly empathising with the patient (S68); No student/professional can know symptoms better than a patient who has experienced them first-hand (S101); Giving importance to the patient's feelings and needs (S119); The patient educator is an even better way for me to learn how to put myself in others' shoes (S140)".
2. *Suggestions about the training experience.* Some students identified the special educational contribution that training with a patient educator can offer, in terms of effectiveness, practicality, realism and uniqueness, and as a foretaste of the professional experience: "It definitely brings to light a perspective that is often overlooked, and in a more practical and effective way than reading about it in books or on slides (S6); A different perspective that is not found in books, which we can only become aware of through experiences like this one (S28); It offered me a perspective that, despite being essential in my future profession, I would only ever have considered after a long time in the profession, as a result of experience (S37); Taking a more real-life look at situations previously studied in books and understanding certain dynamics that cannot be found in books through good/bad experiences (S110); It makes the things explained to us in lectures more real. It teaches us things that we cannot learn by studying (S139)".
 3. *Partnership.* According to the participants, training with the patient educator encouraged them to see the person being cared for as an active participant in the therapeutic relationship and a partner in the decision-making process, from diagnosis to therapy: "The patient is no longer a "passive" element in terms of decision-making. As such, they become an "active" participant able to make a key contribution to diagnosis, treatment and care (S52)".
 4. *Personal enrichment.* Several students stated that this type of teaching is enriching and fosters personal growth: "It nurtures an improved rapport between doctors and patients, but also simply between individuals, is hugely enriching and aids mutual understanding (S47); All patients have their own experiences, which can only be understood by listening to first-hand accounts of disease from people who have experienced it, and this cannot be found in books. Sharing is undeniably a source of personal enrichment for both parties (patient-health worker) (S131); The "Patient Educator" provides a starting point from which we can best learn and achieve the objective of the degree programme. Working with the patient educator enriches us as compassionate human beings and as practitioners of the profession (S198)".
 5. *Development of interpersonal skills in the future professional.* As a result of the training experience, participants appear to have become more aware of the importance of receiving training not only on theoretical content but also on interpersonal skills: "Thanks to the "patient educator", it is easier to understand and reflect on how important it is to have not only professional training but also training in being compassionate (S5); It helps us understand the humanistic aspect of medicine and teaches us something that cannot be studied, but that can only be learned by listening to those on the other side of the relationship (S17); It clearly shows the human aspect of medicine, which is something that cannot be found in books (S45); Starting to come into contact with real life experiences/suffering, reminding us that we have to be "human beings" first and foremost, before doctors (S46); It is precisely their unique life experience that they can share with us; we need to learn how to approach and support patients and their families (S59)".

6. *Treating people, not diseases.* According to the participants, the training with the patient educator encouraged them to reflect on the central importance of the person being cared for and their management: “Understanding that the patient needs to be considered from all angles and not merely with regard to their condition... (S83); Understanding how the patient lives with their disease (S84); It was useful to have a patient’s account of their experience, because good medical work does not consist purely in curing the patient physically (S89); Placing greater focus on the central importance of the patient ... and viewing them as an individual rather than as a sick person (S100); For me, the added value lies in gaining a better understanding of the emotions patients may experience in particular situations (S113); It enables you to understand the importance of the patient’s personal experience, which goes beyond the disease understood in a biological sense, also highlighting the holistic management of the patient, considering all dimensions (S147)”.
7. *Listening and suspending judgement.* The students felt that the training experience made them aware of the importance of listening, suspending judgement, and questioning themselves: “It helped me realise how important it is to listen (S193); Learning about experiences, finding out how patients are feeling and what they are really thinking, about real life. Learning to listen, not judge (S130); The patient educator is a great opportunity for us students to learn about the patient figure, so that we can listen to first-hand experiences and try to avoid errors that can be made by doctors who are too superficial (S1); I think their presence is vital, for the simple reason that, most of the time, we find ourselves working in a “set” way, without ever questioning ourselves. Therefore, the patient educator can help us understand where we go wrong the most (S128); It helps us understand our errors and strengths directly from the patient’s perspective. This is useful in improving and

understanding the way we behave with the person before us, to ensure that when we find ourselves dealing with patients, we act in the best way possible (S151)”.

8. *Encouraging cooperation among health professionals.* The participants think that the experience with the patient educator encourages cooperation within the multi-professional team: “Through the experience brought by patient educators, the healthcare figure can work better as part of a team and speak to patients with a better approach in the future (S78); Building a good level of communication, cooperation and trust with the entire multi-professional team (S125)”.

A total of 92 students provided comments on the open-ended statement “Free-format comments and suggestions on the IPE-PE training”. By means of content analysis, the following two themes emerged:

1. *Interprofessional training.* Most of the participants valued the interprofessional setting of the experience: “Shared work with other professional figures in the care context is fundamental (S32); I liked the idea of having students from different health professions degree programmes work together, because I think it gets you used to communicating and collaborating with others, recognising your own limits and taking full advantage of other professions. I would like to work together on other occasions where we can each bring our own knowledge and skills into play to solve problems and reach solutions, complementing each other. I really liked the patient educator initiative because I believe it has made me more aware and more responsible, and it imparted knowledge (S65); I think it is a unique experience that also gives us an initial insight into interdisciplinary work (S88)”.
2. *Suggestions about the training experience.* The students suggested that the experience offered should not be a one-off event, that the plenary presentation part by the lecturers should be reduced in favour of intervention by the

patient educators and training in small groups: “Devote more time to the “hands-on” part with the patient educators and caregivers and less time to lectures (S2); I would have liked to have listened to more stories, although I appreciate that time has to be spent on other activities too. Working in mixed groups was wonderful (S18); I think it is necessary to increase the number of hours spent on this training activity but distributing them over several dates and increasing student involvement. I did however really enjoy the initiative and hope that it will continue over the coming years (S22); Make today’s initiative an ongoing project to be continued during the year (S44); I think the patient educator’s accounts of their experiences were very informative and direct, and much more educational than the plenary part, because the emotions and feelings conveyed by their accounts were powerful (S76)”.

Conclusion

The project aimed to evaluate whether an interprofessional education intervention with the patient educator would increase readiness for interprofessional learning and empathy in health professions students. The second objective was to explore the students’ opinions on the added value of involving the patient educator in their interprofessional training. Our study found that students’ perceptions of readiness for interprofessional learning were more positive after the IPE with the patient educator. A statistically significant increase was achieved for all the items on the RIPLS scale after the IPE-PE training. According to the participants, learning with students from other healthcare professions improved their communication skills, their understanding and their ability to deal with patients’ problems. The students also stated that interprofessional learning experiences before graduation would help them to work better as part of a team, to think more positively about other professionals and to become more effective members of a healthcare team, understanding their own limits. This suggests positive attitudes to shared learning across all student groups, in

line with studies on Interprofessional Scenario-Based Simulation Training (30,31) and other research in the field of IPE in high-fidelity patient simulation (32,33). Internal consistency was very good for RIPLS and the scale confirmed its ability to measure significant changes in attitudes both within each profession and between professions (31). In our project, the mean empathy total score of the JSE-HPS increased after the interprofessional education intervention in partnership with patient educators. The training was therefore effective in improving the empathic ability of health sciences students. The results of our study confirm that empathy is not incidental, but that it can be cultivated through interprofessional education. Empathy is important not only in the patient-healthcare professional relationship, but also among healthcare team members (25). The participants stated that the IPE-PE was effective for gaining an empathic understanding of the perspective of the person being cared for and that it fostered the learning of patient-centred and collaborative competencies. As suggested by Zaleski et al., to ensure full implementation of the patient-centred care model, it is vital that all team members develop empathic skills (15). Our results confirm that students who have had educational experiences with patients develop a better understanding of the patient-centred perspective (12). Our students appreciated the authenticity of real patients’ experiences, a perspective not found in books and that can only be learned through training experiences that include the true voice of patients (34-36). As described by Cooper and Spencer-Dawe, the patient educators shared their experiences and provided a “real life” perspective (12). According to the students, who enjoyed the IPE immensely, involving the patient educator in the interprofessional training fostered communication, cooperation and trust between team members. Lastly, the participants suggested that the IPE-PE training initiative should not be a one-off event but that it should continue throughout the years of their degree programmes.

Our results confirm the effectiveness of involving patient educators in interprofessional education for the development of collaborative and empathic skills in undergraduate health sciences students. The participants reported that the new training intervention helped them to become more effective healthcare

team members, to think positively about other health professions students and to gain empathic understanding of the perspective of the person being cared for. The results of the project confirm that the intervention promoted the development of empathy, fostering a better understanding of the patient-centred perspective. Considering that a limitation of the study is that it is monocentric, future studies on repeated and multicentric educational interventions would allow supporting the scientific evidence of efficacy. Another limitation of this study is the scarce exploration of students' experiences, therefore qualitative studies are to be encouraged which will allow to discover the characteristics of interprofessionalism and the underlying learning mechanisms to favor it.

Acknowledgements: The authors wish to thank all students who participated in this project, the two speakers (Prof Marie-Claude Vanier and Mr Mathieu Jackson) of the seminar entitled "Training with patients in Canada in the model of the University of Montréal", finally the patient educators and teachers (Mrs Simona Barbi, Mr Lorenzo Chiessi, Mrs Marta Coffrini, Mrs Luisa Draghetti, Dr Giuliana Ferrari, Mrs Miriam Ferrarini, Mrs Linda Giugni, Dr Giulio Malmusi, Mr Massimo Maniero, Mrs Silvana Plumari, Dr Donatella Portera, Dr Alba Ricchi, Mrs Francesca Rossi, Prof Gilda Sandri).

Conflict of Interest Statement: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article". It has to be placed before the references.

Authors Contribution: Conceptualization, PF, FL and MSP; methodology, PF and FL; data acquisition, CV, FL, AS, GA; data curation and formal analysis, PF and CV; interpretation of data, PF, CV, FL, SA, SR and RDL; writing-original draft preparation, PF, CV and FL; writing-review and editing, PF, CV, FL, SA, SR, AS, RDL, GA and MSP. All authors have read and accepted the published version of the manuscript and agree that they are responsible for all aspects of the work.

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Received: 29 May 2023

Accepted: 15 September 2023

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