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Evaluating an interprofessional workshop on persistent pain: The role of Adult Learning and Social Identity theories

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Abstract

Interprofessional learning (IPL) is vital for developing work-ready health graduates and enhancing outcomes of people living with persistent pain. Our aim was to pilot an authentic IPL workshop on persistent pain in an Exercise Physiology Clinic. We also sought to explore the application of Adult Learning and Social Identity theories in understanding learning outcomes.

Thirty students from five health disciplines participated in a half-day workshop on IPL and persistent pain, facilitated by multidisciplinary staff. Workshop activities included authentic, simulated case studies and problem-based learning. A mixed-methods, pre-post survey showed significant increases in students' confidence in understanding their own and others' discipline roles in managing persistent pain ($p < 0.001$), readiness for IPL ($p = 0.046$) and self-efficacy ($p < 0.001$). These increases were supported by qualitative outcomes, which were mapped onto Adult Learning and Social Identity theory. A preliminary conceptual framework was developed incorporating proposed learning mechanisms.

This innovative workshop, delivered through an Exercise Physiology clinic, formed an effective learning environment, increasing understanding of discipline roles generally and in the pain context. It led to a preliminary conceptual framework to understand learning processes underpinned by theory. There is potential for application of this IPL approach for other chronic conditions.

Persistent (or chronic) pain, is defined as pain experienced every day for three months or more in the previous six-month period and affects at least one in five Australians (Access Economics, 2007). Persistent pain is associated with ageing, lower socio-economic status, less employment participation and poorer health status (Blyth et al., 2001). In 2018 in Australia, the overall cost of persistent pain was estimated to be $139.3 billion and the nation's third most costly health problem (Pain Australia, 2020). In Tasmania, an island state of Australia with a population of just over half a million people, the persistent pain problem is compounded by an ageing population, increased prevalence of chronic disease, higher lifestyle risk factors, lower educational attainment and workforce participation and higher poverty rates relative to the rest of Australia (Department of Health and Human Services [DHHS], 2018).

Although recommendations that persistent pain be assessed and managed with a multimodal, multidisciplinary approach are widely accepted (Gatchel et al., 2007), less than 10% of the Australian pain population accesses multidisciplinary care due to geographical challenges and service availability and access (Pain Australia, 2020). Tasmania, characterised by higher geographical dispersion across rural and remote areas is no exception, with access worsening with remoteness (DHHS, 2018). As the Tasmanian (and Australian) population ages, the need for a skilled health workforce to manage the growing and increasingly complex demands for persistent pain presentations will increase. This need has prompted calls for the development and enhancement of multidisciplinary undergraduate education programs (National Drug and Alcohol Research Centre, 2012; Pain Australia, 2011).

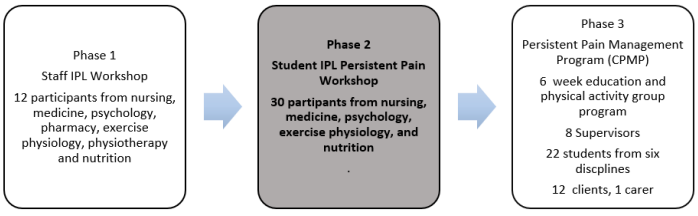
The Interprofessional Persistent Pain Project

Tasmania is serviced by one tertiary institution, the University of Tasmania (UTAS) with multiple campus locations across the state. The northern campus based in Launceston hosts multiple health degrees including medicine, pharmacy, nursing, exercise physiology, and health science (pathway to dietetics). Psychology students also undertake Professional Experience Placement (placement) within the area. On campus there is a community accessible Exercise Physiology (EP) Clinic. The EP Clinic offers final-year EP students a supportive environment to consolidate their clinical skills under the supervision of an accredited EP supervisor. The EP Clinic offers individual and group sessions for community members with a range of persistent conditions (including pain) for which exercise is known to be an effective treatment.

The setting of the EP clinic and access to students training across multiple health disciplines offered an opportunity, through a small UTAS funded Teaching Development Grant, to pilot and evaluate IPL activities. Project team members consisted of staff from seven different health disciplines that were involved in teaching, placement supervision and/or clinical practice. Persistent pain was chosen as an exemplar of a relevant, highly prevalent chronic condition, significantly impacting the Tasmanian community, that authentic IPL activities could be designed to address. The EP clinic setting offered a unique contextual opportunity as IPL activities are predominantly aimed at medical and nursing disciplines (Hammock et al., 2007). Further, in a systematic review of 21 IPL evaluations involving eight health disciplines, Exercise Physiology was notably absent (Hammock et al., 2007).

The aim of the overall project was threefold: first, to improve the understanding of approaches to incorporating IPL into tertiary curricula; second, to offer students authentic opportunities to increase awareness of and skills in managing persistent pain presentations in an interprofessional context (via the EP clinic); and third, to modestly address an unmet need in the community where less than 10% of people affected by persistent pain access appropriate support. The Interprofessional Persistent Pain Project (Figure 1) consisted of three phases: a staff workshop, a student workshop and the delivery of an interprofessional community pain program co-facilitated by students and project team members (reported elsewhere). This paper focuses on the outcomes of Phase 2, the student IPL Persistent Pain Workshop.

Figure 1. The Interprofessional Persistent Pain Project phases



Interprofessional Learning and Persistent Pain

The World Health Organisation (WHO, 2010) defines Interprofessional Education occurring:

> "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (p.7)

Interprofessional learning (IPL) occurs when students from more than two disciplines interact, which may be an outcome of interprofessional education, or may spontaneously occur in an education or workplace setting (Freeth et al., 2005). For the purposes of this paper we will use the term IPL to reflect the student learning context. There is a wide body of research indicating that effective interprofessional education fosters effective collaborative practice, and in turn improves health systems outcomes (WHO, 2010; Reeves et al., 2010; Zwarenstein et al., 2009).

Given the biopsychosocial model of pain viewing persistent pain as a result of complex interactions among physiologic, psychological and social factors (Gatchel et al., 2007), pain offers an "excellent model for interprofessional teaching and learning because of pain's prevalence across divergent groups and its potential complexity requiring interprofessional involvement" (Carr & Watson, 2012, p. 60). Interprofessional learning also offers an opportunity for students to understand each other's roles and responsibilities and how to communicate using common language within the pain context (Gordan et al., 2018).

Interprofessional learning for health students predominantly takes place in the placement setting where students have exposure to authentic interactions between and within health care professionals working in teams (Anderson & Lennox, 2009) and where, depending on the setting, students can learn with and from students from other disciplines (Brewer & Barr, 2016). Such learning, however, is dependent on the presence of interprofessional workplace based teams modelling a cooperative, collaborative approach (Gordan et al., 2018). Alternatively, delivery of IPL within curricula has been and continues to be hindered by structural barriers such as course timetabling, varying discipline requirements for assessment and accreditation and poor attitudes from staff and students regarding the perceived value and relevence of IPL (Ebert et al., 2014; Lawlis et al., 2014; Reeves et al., 2016).

In examining the barriers and enablers of delivering IPL within the current project setting a workshop format was chosen to best suit the context, accessibility of students and their learning needs. Olsen & Bialocerkowski (2014), in a review of 17 studies, concluded that university-based IPL in health is feasible and effective, particularly when using patient-based scenarios and small group work to improve attitudes towards interprofessional teamwork and health professional roles. The use of a workshop approach specifically for IPL and pain has previously been shown to increase knowledge of pain management (Erikson et al., 2016) and roles of other professions and is an acceptable and satisfactory learning experience (Hadjistavropoulos et al., 2015).

Adult Learning theory, Social Identity theory and IPL

A range of theories across multiple disciplines have been applied to IPL (Hean et al., 2012) which vary in their practical application according to the different context of the learners, the learning environment and the learning activities being undertaken. In this article, two theories have been identified as applicable to the project setting to offer a useful framework to guide and explain the process and outcomes of IPL activities within the EP clinic context. As a reflection of the complex and multiple factors that impact IPL delivery (O'Leary & Boland, 2019) we have taken a layered approach, looking at theories that support and explain IPL at the level of the learner, as well as interactions between the learner and the context (Mann, 2011).

First, from the perspective of 'students as learners', student clinic settings have a strong emphasis on Adult Learning principles (Jakobsen et al., 2017). That is, adult learners are self-directed and internally motivated, have pre-existing experiences that enhance learning, a readiness to learn, apply knowledge to the problem and need justification for what they are learning (Knowles, 1984). Adult Learning theory has previously been shown to be highly applicable in the IPL context (Hean et al., 2012) and in healthcare (Clapper, 2010).

Second, theories based on social interactions are particularly useful in IPL as they are the essence of experiential learning in social contexts where students learn with, from and about each other (Hean et al., 2013). Social Identity theory postulates that membership of social groups is important for developing identity (Tajfel et al., 1979). There are individual benefits for developing a Social Identity within a 'professional' group that can include social support, a sense of belonging and self-efficacy. According to Social Identity theory, through shared membership, group members recognise and value each other's strengths and weaknesses (Carpenter & Dickinson, 2016).

The design of the workshop was guided by these two underlying theories situated within the local context, and was tailored to prepare students to later co-deliver a real-world community program (outcomes reported elsewhere). The workshop was also based on a biopsychosocial approach that is especially relevant for persistent pain (Gatchel et al., 2007). Fundamentally this supports a person-centred team approach (Carpenter & Dickinson, 2016). Effective teamwork relies on the ability to understand and capitalise upon the roles of other health professionals in complex, chronic care situations (Nitz et al., 2013). Simulation has been shown to be an effective approach for building interprofessional communication skills (Foronda et al., 2016) and enhancing self-efficacy in clinical situations (Watters et al., 2015).

In addressing an identified local need, national calls for pain management education and recommendations for authentic methods of IPL (Gordan et al., 2018) we aimed to evaluate the learning outcomes of the student IPL Persistent Pain Workshop, within the context of Adult Learning and Social Identity theories.

Method

The Student IPL Workshop

Thirty students from five disciplines (exercise physiology, psychology, nursing, medicine and health science - nutrition) based at the northern regional campus of UTAS voluntarily participated in a half day IPL workshop focusing on persistent pain management. Members of the project team from each discipline selected cohorts of students to invite to the workshop based on access/availability to attend. Students were verbally invited via lectures and tutorials or by email.

The student IPL workshop content was developed (as an outcome of the Phase 1 staff workshop, see Figure 1) and facilitated by multidisciplinary staff members (see Table 1). The half-day workshop program involved interactive activities designed to generate understanding of the role of other disciplines; simulated case study scenarios and problem-based learning focused on persistent pain. Activities were designed to encourage authentic, multidisciplinary interaction and reflection (see Table 1). Students were also able to observe interprofessional practice role-modelled by the project team as they facilitated the workshop. The intended learning outcomes (ILOs) of the workshop were to:

1. Increase understanding of the role of other health disciplines overall and within the context of persistent pain management.
2. Experience working in collaboration with other disciplines in the assessment and management of a case study client with persistent pain.
3. Experience the use of key skills of communication, teamwork and reflection in a multidisciplinary context.

Table 1. Description of workshop content

Session Topic and Learning Activity	Facilitator Discipline	Format and Resources
1. Understanding scope of practice across different disciplines • Butchers' paper mounted on walls with each of the discipline's titles written on it • Students brainstorm the role of others' disciplines • At the end of the activity, a student from each discipline discusses the scope of practice identified and adds or amends any information	Clinical and Health Psychology	Large group work
2. Introduction to persistent pain • Definition and function of pain (different types: acute vs persistent; neuropathic pain) • Evidence base for multidisciplinary management of persistent pain	Exercise Physiology and Medicine	Lectures with videos Handout: • Understanding pain • Pain and exercise
3. Case based learning - Scenario of persistent pain in small interprofessional groups. Task: Read the case and discuss the following: • What might a diagnosis of persistent pain mean for a person? • Where is the pain for this person? Draw an outline of a group member's body and mark the body systems impacted. • Complete a WHO analysis of impairment, activity and participation impact	Pharmacy and Dietetics	Small interprofessional group work Case study incorporating biopsychosocial elements of pain Handouts: • WHO International Classification of Functioning, Disability, and Health framework
4. Interprofessional assessment based on case study. Task: Negotiate how you would conduct an IP assessment with your group Discussion Questions • What are 3 areas that all disciplines will gather clinical info on? • What are 3 areas that your discipline would gather different or additional info on? • What are the gaps in this scenario that need to be followed up? • What would be the benefits/challenges of an interprofessional assessment? • What are the benefits/challenges of a discipline specific assessment?	Nursing	Small interprofessional group work Handout: • Benefits/challenges of discipline specific / interprofessional Assessment
5. Pain management plan Using the case presentation develop a collaborative management plan Discussion Questions: • Discuss the difference between treatment and self-management • Reflection: Brainstorm some of the barriers to implementation of the treatment plan	Medicine	Small interprofessional group work Handouts: • Management plan template • Cochrane reviews • Discipline guidelines

Learning activities were designed to scaffold students' learning with the intent of preparing them to later co-facilitate an interprofessional persistent pain management program for local community members (outcomes reported elsewhere).

Workshop evaluation

All workshop attendees (N=30) were invited to participate in the pre and post evaluation, which occurred on the same day as the workshop.

Design and data collection

Olson and Bialocerkowski (2014) recommend that interprofessional education research takes a realistic approach to evaluation inclusive of contextual factors, therefore participants completed a pre and post survey using a mixed method approach, tailored to assess the learning outcomes of the IPL workshop. Pre-workshop open-ended questions were designed to gauge students' understanding of IPL and any past IPL experiences. Change was measured using the Readiness for Interprofessional Learning Scale (RIPLS: Parsell & Bligh, 1999), the Generalised Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) and tailored confidence scales with items addressing workshop learning outcomes. Post workshop open-ended questions elicited three top learnings from the workshop from each participant. Ethics approval was received from the Tasmanian Social Sciences Human Research Ethics Committee (H0015313).

Measures

Readiness for Interprofessional Learning Scale (RIPLS: Parsell & Bligh, 1999)

The RIPLS assesses a student's readiness to engage in interprofessional education and consists of 18 items. Responses are measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The tool has 3 subscales: teamwork and collaboration, negative and positive professional identity, and roles and responsibilities. An example question is "Shared learning will help me to understand my own professional limitations." The items are averaged with higher scores indicating greater perceived readiness for shared learning. The RIPLS has been shown to demonstrate acceptable internal consistency and high content validity (Parsell & Bligh, 1999) and has been validated for use in an undergraduate context (Carpenter, 1995)

General Self-Efficacy Scale (GSES: Schwarzer & Jerusalem, 1995)

The GSES measures students' perceived self-efficacy used to cope with variety of demands in life and consists of a 10-item psychometric scale. Responses were measured on a 4-point Likert scale ranging from 1 (not true at all) to 4 (exactly true). An example question is: "I can solve most problems if I invest the necessary effort". The items were averaged with higher scores indicating greater perceived self-efficacy. The GSES has been shown to demonstrate good internal consistency and reliability (Scholz et al., 2002) as well as construct validity (Tipton & Worthington, 1984).

Tailored confidence rating scales

In order to measure students' levels of pre and post workshop confidence, six questions were designed focusing on confidence relating to understanding of others' roles, persistent pain management and collaboration and communication with other professionals. The six questions were congruent with the intended learning outcomes of the workshop. Responses were measured on a 5-point Likert scale ranging from 1 (no confidence) to 5 (very confident). For example: "How confident are you in collaborating with other professions to assess the needs of patients with persistent pain?". Self-appraisal of confidence levels has been used previously in learning contexts (Stewart et al., 2001). Levels of confidence are related to self-concept and self-efficacy and have been shown to be a strong predictor of learning achievement in educational contexts (Stankov et al., 2012).

Data analysis

A theory-informing inductive data analysis approach was undertaken whereby theory or theories are evolving throughout the research process and are informed by researchers' values, experience and perceptions (Varpio et al., 2019).

Quantitative data analysis

Descriptive statistics were conducted to analyse the demographic characteristics of the sample (discipline, number of practical experience placements and IPL experiences). Pre-post workshop data were tested for normality and paired sample t-tests were conducted for normally distributed data. The Wilcoxon matched-pairs signed-ranks test was used for non-parametrically distributed data.

Qualitative data analysis

To gauge the level of pre-workshop understanding of IPL, students' definitions of IPL were compared against the Centre for Advancement of Interprofessional Education (2019) definition – "occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care" (para. 3). Based on the above definition of Interprofessional Learning, five key elements were identified: 1) Interactive learning with others, 2) Interactive learning from others, 3) Learning about each other's roles, 4) Collaboration, and 5) Quality of care. Participant definitions were by two authors (HB and KH) against these five elements and were allocated one point each for the presence of each element in each student definition, for a maximum total of five points.

Key concepts from pre and post open ended survey questions were elicited through a conventional content analysis which is a widely used approach in healthcare to describe a phenomenon. (Hsieh & Shannon, 2005). Data was entered into an excel spreadsheet. Of the 30 participants, 25 (83%) reported three learnings, three (10%) reported two

learnings and two (7%) reported one learning. Data was read and re-read by author HB to capture initial impressions. An initial coding schema was developed, then codes were organised into meaningful categories under the three Intended Learning Outcomes in line with the aims of the evaluation and frequencies noted. Category descriptions were then developed and exemplars were identified and checked by a second author ML. Any discrepancies were discussed until congruence and agreement was reached. Content areas were also assessed by HB and ML for evidence of elements of Adult Learning theory and Social Identity theory and mapped accordingly (see Table 5). Both HB and ML contributed to the content development and facilitation of the workshop and come from the disciplines of psychology and physiotherapy respectively.

Results

In total, thirty students from five disciplines consented to participate in the workshop evaluation. Discipline, prior placement/s and IPL experience/s are described in Table 2.

Prior experience with and understanding of IPL

23 out of 30 participants (77%) reported having experienced IPL prior to the workshop (Table 2). Of these 23, all but one described IPL occurring whilst on placement and 4/23 (17%) described experiencing IPL during lectures or tutorials. Examples of IPL on placement included: "collaborating with dietitian, physio, medical team members in acute care [in hospital]" and "placement… for exercise science involved working closely with the physio and team doctors for rehab programs for injury".

Table 2. Workshop participants' discipline and prior IPL experience

Discipline	n	Prior IPL Experience n (%)	Prior IPL on Placement n (%)	Prior IPL during course n (%)	Average Number of placements Range (Mean)
Exercise Physiology	11	9 (82)	7 (64)	2 (18)	1-3 (1.9)
Nursing	8	6 (75)	5 (63)	1 (13)	2-5 (4.1)
Medical	7	7 (100)	7 (100)	1 (14)	6-16* (10.8)
Health Science (Nutrition)	3	1 (33)	1 (33)	0 (0)	0-1 (0.5)
Psychology	1	0 (0)	0 (0)	0 (0)	3 (NA)
Total	30	23 (77)	22 (73)	4 (13)	

Note. *Data missing from one participant

27 students provided a pre workshop definition of IPL. 3 (11%) participants scored 5/5; 12 (44%) scored 4/5; 2 (7%) scored 3/5; 4 (17%) scored 2/5; and, 6 (22%) scored 1/5. Over half of participants (55%) could identify at least four or five of the correct elements. Table 3 gives examples of participant definitions and respective scores out of five related to the number of correct elements identified.

Table 3. Participant examples of a scored IPL definition

Total Score (/5)	Participant Example of a scored IPL definition
5	*Learning with other health professionals to gain knowledge and skills on collaborating with each other in order to manage health relating problems that will ultimately benefit the patient*
4	*The ability of students and professionals to learn within the same environment and share their experiences with one another to improve skills*
3	*Learn together with other students in other professions*
2	*Learning to work with other health professionals better and more effectively*
1	*Undertaking learning activities with students from other disciplines*

Pre and post workshop change

All scores significantly increased on the RIPLS, GSES and confidence scales from pre to post workshop (Table 4). This outcome indicated participants demonstrated increased readiness for IPL, self-efficacy and clinical confidence related to understanding own and others' disciplines and interprofessional management of patients with persistent pain, as a result of the IPL workshop experience.

Table 4. Within participant changes in RIPLS, GSES and confidence scales

Measure	*n*	Pre-test *M*	Pre-test *SD*	Post-test *M*	Post-test *SD*	Mean Difference (95% CI)	*p*
RIPLS[a]	28[c]	78	7.4	82	10.0	4.0 (-0.7, 8.7)	0.047
GSES[b]	28[c]	31.3	3.8	33.4	4.1	2.1 (-0.01, 4.2)	0.002
Confidence in:							
Understanding own role	30	3.4	0.8	4.3	0.9	0.9 (0.46, 1.3)	<0.001
Understanding others' roles	30	3.8	0.7	4.4	0.5	0.6 (0.3, 0.9)	<0.001
Understanding of others' role in pain management	30	3.3	0.7	4.2	0.4	0.9 (0.6, 1.1)	<0.001
Collaborating for an IP assessment	30	3.6	0.9	4.5	0.5	0.9 (0.5, 1.3)	<0.001
Collaborating for an IP pain treatment plan	29[d]	3.4	0.9	4.4	0.5	1.0 (0.6, 1.4)	<0.001
Communicating with other professionals	30	3.9	0.8	4.4	0.6	0.5 (0.1, 0.9)	0.004

[a] Readiness for Interprofessional Learning Scale
[b] General Self-Efficacy Scale
[c] two missing values
[d] one missing score

Workshop learning outcomes

Students were asked to list three learnings from the workshop. A conventional content analysis revealed 14 content areas. The 14 content areas were categorised under the three Intended Learning Outcomes for the workshop. Seven met ILO1, two met ILO2 and five met ILO3. Elements of Adult Learning theory and Social Identity theory were also identified mapped across the content areas (Table 5).

ILO 1. Increase understanding of the role of other health disciplines overall and within the context of persistent pain management

The most frequently reported learning outcome (n=22) for the whole sample was an increased understanding of the role of other professions – e.g. "Greater insight into the roles of other health professions" and "Exercise physiology is not

the same as physiotherapy". Participants also reported an increased understanding of persistent pain in general – e.g. "Differences in acute versus persistent pain"; in relation to interprofessional practice – e.g. "how to handle persistent pain with an interprofessional approach, interprofessional is key" and recognising the complexity of pain – e.g. "How persistent chronic pain may be".

ILO 2. Experience working in collaboration with other disciplines in the assessment and management of a case study client with persistent pain

Two content areas were identified as meeting ILO2. Skills in 'how to' collaborate with other professions were identified – e.g. "Problem identification and solving", "sharing my ideas" and "team effort, looking outside the square to provide a collaborative care plan which helps the person achieve their goals". Communication was also cited by some as key in working interprofessionally – "communication and respect is extremely important in avoiding conflicts of opinions".

ILO 3. Experience utilising key skills of communication, teamwork and reflection in a multidisciplinary context

For ILO3, the positive impact of interprofessional collaboration was most frequently cited (n=10) – e.g. "That chronic pain is a multidisciplinary issue" and "How working with other health professionals leads to better care". Participants reported learning from others and some participants were also able to reflect on and recognise the potential negative impact of IP practice – e.g. "the possible negatives such as differing treatment approaches". Finally, some participants recognised that the attitude of health professionals enabled an IP approach – e.g. "There is a great willingness of each profession [at the workshop] to understand the roles of others".

Table 5. Content analysis mapped against adult learning and social identity theories

Intended Learning Outcome	Total *n*	Adult Learning Principles	Social Identity Theory
ILO 1. Increased understanding of the role of other health disciplines overall and within the context of persistent pain management			
Increased insight into others disciplinary roles	22	X	X
Increased understanding of pain	9	X	
Increased understanding of IP/MD approach to pain	7	X	X
The importance of a holistic approach/IPL approach	7		X
Increased understanding of complexity of pain	6	X	
Awareness of mindfulness/CBT as a therapy approach	3	X	
Pain management from own discipline perspective	1	X	X
ILO 2. Experience working in collaboration with other disciplines in the assessment and management of a client with persistent pain			
How to collaborate with other disciplines	5	X	X
How to communicate in an IP context	3	X	X
ILO 3. Experience utilising key skills of communication, team work and reflection.			
Collaboration Positive for patient outcomes	10	X	
Learning from others	4		X
Possible negatives of IP collaboration	3	X	X
Noticing a willingness/attitude to work together	3	X	
Consistency in interpersonal care	2		X

Discussion

The aim of this study was to evaluate the student learning outcomes of an interprofessional workshop focusing on persistent pain management, based in an EP clinic setting. The majority of participants attending the workshop identified having prior experience of IPL, mainly in the placement setting. Reflective of this exposure, over half could readily offer an appropriate definition of IPL. For the IPL descriptions that didn't fully meet the WHO definition, there was a basic awareness of multidisciplinary learning among the participants. Despite participants' prior IPL exposure, a significant increase in readiness for IPL and self-efficacy was demonstrated when comparing pre and post workshop scores on study measures, suggesting that the workshop enhanced learning beyond traditional lectures, tutorials and placements. A major outcome was participants reporting increased insight into others disciplinary roles in addition to recognising the positive contribution interprofessional practice makes to patient care. There were also significant increases in participants' confidence in the understanding of self and others' disciplinary roles in general and in the persistent pain context, as well as how to collaborate interprofessionally for pain assessment and treatment planning. Quantitative outcome data were congruent with qualitative responses indicating that the content and approach met the workshop's intended learning outcomes. The outcomes of our study using a multidisciplinary workshop format, problem based learning and patient scenarios are consistent with prior studies (Olson & Bialocerkowski, 2014) demonstrating effective learning. The workshop format is a useful approach to deliver health education to more closely replicate the practice environment (Foronda et al., 2016) and can lead to improved attitudes towards teamwork and interprofessional interaction (Morison et al., 2003; Olson & Bialocerkowski, 2014). Students were also able to observe the multidisciplinary project team modelling teamwork and communication during the workshop, which Taylor and Hamdy (2013) consider to be vital education principles underlying teaching and learning in clinical settings. Morison et al., (2003) further suggests that relevant, practice focused subjects facilitated by 'professional experts' contributes to successful IPL through authentic applied learning activities.

A common barrier of delivering IPL within existing curriculum structures is managing siloed and complex timetable structures (Reeves et al., 2016). The unique challenge of bringing together students from five health disciplines to participate in an IPL workshop within curriculum (as opposed to placement settings) was addressed through the ability and motivation of the project team. Previous literature has identified enablers to integrating IPL as organisational support and leadership (Reeves et al., 2016) facilitator skills (enthusiasm, commitment, role modelling), shared interprofessional vision, displaying equal status, professional collaboration and commitment to unified goals (Lawlis et al., 2014), with all elements present throughout the current project. The success of this format offers further impetus to address complex and growing healthcare needs of the community through provision of authentic IPL oppotunities.

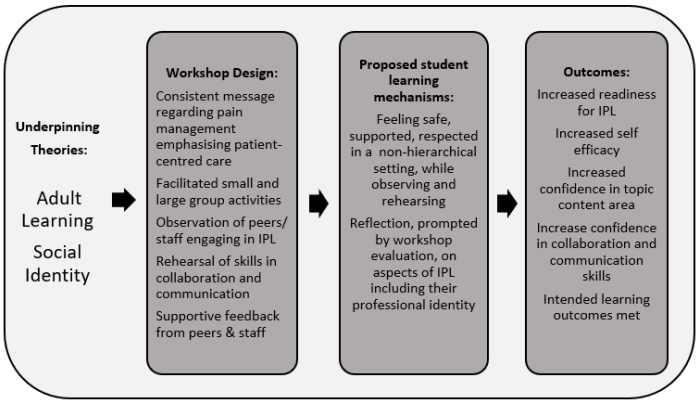
A preliminary conceptual framework

Consistent with Varpio et al's. (2019) theory-informing inductive approach, a preliminary conceptual framework was developed throughout the data analysis and interpretation phases of the evaluation (Figure 2). There was evidence of elements of Adult Learning and Social Identity theories in the evaluation outcomes. Concepts of Adult Learning were present particularly where participants reported an increased understanding of other disciplines' roles and within the context of persistent pain management. Participants indicated not only an increase in knowledge needed to understand others' disciplines but were able to reflect upon and apply that knowledge to process related elements such as communication and positive attitudes. This application of knowledge, combined with internal motivation, pre-existing experiences and justification for learning certain content provides evidence that the workshop format and activities were conducive to meeting Adult Learning needs.

Elements of Social Identity theory were also present in the outcomes with participants able to compare and reflect upon the role of other disciplines and their own. Clark et al., (2009) state that the process of becoming a health professional is a social one where realities, knowledge, thought patterns, and, ultimately, self-identities are created from a shared sense of reality assumed by the health professional group. Social Identity theory supports the notion that membership of a social group is important for developing identity, accessing support, increasing self-efficacy and feeling a sense of belonging (Tajfel et al., 1979), however, in a uniprofessional education setting there lies a risk in fostering competition, rather than collaboration among professions (Gordan et al., 2018). McPherson et al. (2001) suggests that practice-focused IPL can mitigate competition and enhance collaboration and ensure that each profession's unique learning is retained while students learn the value of the other disciplines' contribution to healthcare. Developing insight into other's roles is key for the development of own role identity which Olsen and Brosnan (2017) suggest is important to mitigate the potential for interprofessional practice to undermine conventional professional roles. Adult Learning and Social Identity theories offer a complementary approach incorporating the 'what' and the 'how' in understanding the learning outcomes for students participating in this IPL workshop focused on pain management.

Consistent with Dornan et al's (2019) experience base learning pedagogy we also postulate that the learning activities offered during the workshop, which were aimed at generating authentic multidisciplinary interactions in a supportive setting, created a positive environment for student learning. Dornan et al. highlight the importance of offering a supportive participatory experience for students to observe (being present and learning without hands-on involvement), rehearse (practising tasks without patient care contribution) and contribute (being given responsibility to undertake tasks). These opportunities in conjunction with capability and authentic patient learning foster skills development and identity formation. The supportive behaviour of the facilitator/clinician is key to creating these conditions (Dornan et al., 2019) and although these elements were not specifically evaluated, we propose these conditions were present in the workshop design and delivery. We propose that a combination of all of these elements contributed to the learning outcomes identified by the participants and the significant post workshop changes on the scaled measures. Future research could specifically examine the importance of these conditional elements within a workshop setting and further test the proposed framework.

Figure 2. Preliminary conceptual framework, with proposed student learning mechanisms for the Interprofessional Persistent Pain Project workshop



Limitations

There are several limitations to this study. The sample size was modest and therefore we were unable to examine differences in learning outcomes by discipline or level of IPL experience. We also did not ask for a post workshop IPL definition as a measure of change but have extrapolated through the qualitative responses that the participants experienced an increase in understanding of IPL, beyond basic multidisciplinary learning. Confidence levels in participants' understanding and skills development were self-reported and not otherwise assessed. The workshop was voluntary for students, therefore the pre-existing motivation and interest from the students could indicate a bias in motivation to attend and achieve learning outcomes. We are also unaware how many students declined to attend. The follow up measure was undertaken directly after the workshop, therefore we do not know the longer term impact of the learning outcomes.

Future directions

This workshop format shows promise for delivering authentic health related IPL activities. Replication with a larger sample would assist to demonstrate generalisability of the approach, testing and refinement of the proposed conceptual framework and the potential for the approach to be adapted across different chronic conditions and settings. This potential adaptability is valuable for the Tasmanian educational context, given the above national average rates of other chronic conditions such as diabetes, obesity and multiple sclerosis (DHHS, 2018). There is also potential to explore online learning delivery options to mitigate scheduling, geographical location and varying student

number challenges. Although a newer area in IPL literature, there is some evidence to suggest that online IPL facilitation may be a feasible approach (Evans et al., 2019).

Conclusion

This study showed that a face to face workshop format involving multidisciplinary students and staff using authentic, real-world learning activities to increase understanding of interprofessional practice within the persistent pain context, is effective. The outcomes also offer support for a preliminary framework to potentially explain how the workshop design, underpinned by Adult Learning and Social Identity theories can potentially generate learning mechanisms leading to learning outcomes. As health education moves toward replicating the practice environment, and the need for persistent pain education continues, the outcomes of this study have also contributed to the broader literature on approaches to integrating IPL within curriculum and uniquely within an EP clinic setting. A preliminary conceptual framework has been proposed suggesting potential student learning mechanisms within the context of IPL and pain management. For those educational institutions wanting to embed IPL into curriculum while considering local context, this educational approach offers a useful and potentially flexible model that could be adapted and tested across multiple chronic conditions, disciplines and settings. As the prevalence of chronic conditions continues to rise in Tasmania (and nationally), integrating a deliberate, interprofessional approach across curriculum will be vital in preparing workforce ready health graduates into the future.

Disclosure

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