

Interdisciplinary Education Involving Chronic Pain Management: The Way Forward

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Abstract

Through evidence-based research and practice, interdisciplinary/interprofessional pain management is becoming the leading treatment structure for patients suffering with chronic pain conditions. Interdisciplinary assessment and management of patients incorporate different healthcare disciplines working together under 'one roof' to manage their patients in a collaborative and team-based manner. As such, understanding how to work within an interdisciplinary framework, entails educational resources to pass on the knowledge surrounding interprofessional clinical work. There are numerous philosophies and theories underlying why and how interdisciplinary education should be administered in addition to the reasons why these approaches appear to be of benefit. Ultimately, with reference to chronic pain management, interdisciplinary education combining students from different healthcare fields in one class is suggested to enhance the learning experience and ultimate goal of eventually providing their patients' with the best possible pain outcomes following intervention.

Keywords: Chronic pain; Pain; Interdisciplinary education; Interprofessional education; Interprofessional learning.

Introduction

Pain is a complex experience that influences health, productivity, and well-being. It necessitates a collaborative team approach with a common language and clear understanding of roles and responsibilities [1]. With few exceptions, a minimum amount

of pain content has been recognized in health sciences curricula, and much of that has been disjointed by professions and delivered within a crowded agenda of conventional course topics [1]. There are a few terms used throughout this paper that are synonymous

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Received Date: 01-20-2023

Accepted Date: 01-24-2023

Published Date: 02-20-2023

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with each other; interprofessional education (IPE), interdisciplinary education (IDE) and, interprofessional learning (IPL). The following review will define IPE in more detail as well as introduce other terminology that may be used in an exchangeable manner with IPE. Evidence to support IPE will be provided, in addition to potential barriers that need to be overcome in order to promote and instill the most effective IPE systems. Questions surrounding when IPE should be provided within an educational and/or clinical setting will be discussed. The review will intermittently account for IPE with reference to interdisciplinary pain management and as such will provide a few examples that illustrate the importance of IPE when it comes to the management of patients with chronic pain (CP). Finally, pitfalls in IPE research will be briefly described with potential answers counteracting these difficulties in the future will be provided.

IPE is a growing trend across health professions and has been defined as when 2 or more professions learn with, from, and about each other to improve collaboration and the quality of care [1]. For IP learning to occur, all 3 “with, from, and about” must be present. The Year for Excellence in Pain Education was a call to action on numerous levels. The World Health Organization (WHO) submitted a report in 2013 that identified the need for a novel approach in the education of healthcare students. As one of the key factors in the report, interprofessional learning (IPL), also known as interdisciplinary education (IDE)/learning was highlighted as a tool in which to positively enhance student learning in health programs [2]. The most broadly

used definition underlying IPL, also commonly referred to as interprofessional education (IPE), is described by The Centre for the Advancement of Interprofessional Education (CAIPE) [3] as “occasions when students from two or more professions in health and social care learn together during all or part of their professional training with the object of cultivating collaborative practice” for the aim of providing patient-centered care. Pain management clinicians, for example, being educated through IPL, have the ability to provide patients with CP a selection of treatment modalities that target the various aspect of pain through a biopsychosocial model. De Oliveira, et al., [4] based on the article written by Buring, et al., [15] further define IPE in healthcare as including “educators and learners from two or more health professions and their foundational disciplines who jointly create and foster a collaborative learning environment, aiming to develop knowledge, skills and attitudes that result in interprofessional team behaviors and competence in order to improve the quality of patient care”. This definition, in contrast to that of the CAIPE definition, importantly includes educators from different healthcare professions in the IPL process, in addition to students from different disciplines. Therefore, interdisciplinary healthcare workers offer patients with access to a broad variety of services and treatment options tailored to their specific needs.

Increased consideration and focus have been given in recent years to IPE in healthcare. IPL, within the healthcare environment, has evidence of positive outcomes for patients,

however this form of learning is still not broadly offered at the undergraduate level, specifically in the clinical setting [5]. In addition, graduate level education, on a global level, also seems to lack this type of educational system. Healthcare mistakes and adverse situations often occur due to poor communication between healthcare providers which ultimately results in poor outcomes for patients and the health team. However, there is still substantial debate around when and how to introduce it in both undergraduate and postgraduate level of education [6]. Based on a socio-material theory of learning, knowledge is derived from the “dynamic and relational processes that occur between social, biological and material elements within these systems” [7]. Oates proceeds to assert that if a socio-material model of learning is applied to IPL within undergraduate or pre-qualification level, the question arises around how best to evaluate learning outcomes. De Oliveira, et al., [4] found in their research that there are different characteristics and traits amongst healthcare learners in addition to differences between students and clinicians from different stages in their educational and professional life. The above suggests a potential barrier facing IPE. If the outcomes are partly measured by the social exchanges and relationships that individual students have developed during the learning process as well as the manners in which the individuals have been affected by material components in the educational course, then creating valid and reliable assessment tasks may be challenging for the educator [7].

Health science students continue to receive

minimal pain science education, yet these students become clinicians who educate the next generation [7]. Increasingly, scientific journals have noted that limited pain education as being a major challenge to change positive pain outcome statistics in the United States [8]. The Institute of Medicine (IOM) (2011) has recommended expanding and redesigning pain education in order to change the current culture of inadequate management. Policy changes in education in both undergraduate pain curricula and postgraduate educational proposals, in addition to patient care would enable better pain management for patients [8]. Globally, the IASP has been instrumental in raising the awareness of ‘freedom from pain as a human right’, along with the WHO and the United Nations [9]. Initiatives such as these gain media attention and permit conversations between policy makers and professionals involved in pain. The importance of harnessing interdisciplinary pain management to the national agenda cannot be overemphasized [8]. The Framework for Action on Interprofessional Collaboration and Practice, highlighted the current status of interprofessional collaboration around the world and stressed the need for leaders of health and education to work together in preparing a ‘collaborative practice-ready’ health workforce [8]. Seemingly, this preparation should take place prior to graduation from an academic institution and therefore, denotes that healthcare providers should be ready to work together, as an interdisciplinary team, from day one in the clinic. This would certainly be the case when managing patients with CP as well as other medical conditions. The WHO has suggested

that IPL should advance communication and collaboration between students and therefore prepare them for interdisciplinary teamwork once graduated [2]. Presently, IPE is claimed to have significant relevance in training healthcare professionals [4]. As a result, numerous governments and health organizations, globally, have created substantial resources in order to encourage IPE development [4,10,11].

Team-based, patient-focused care is desired but elusive for patients with CP or Opioid Use Disorders (OUD). International, competency-based curricula have been published for pain management, addiction medicine, and interprofessional collaborative practice. Academic programs are beginning to develop these competencies [12]. For example, CP and opioid use disorders (OUD) are widespread, and costly health problems that are best treated with an interdisciplinary biopsychosocial approach. A blended educational program to help professionals in an emergency department observation unit (EDOU) was developed to better understand and treat this population [12]. Limitations during the COVID-19 pandemic became a challenge for Arnstein, et al., [12] to combine digital and traditional interprofessional teaching methods. Several challenges became transparent and thus lessons were learned from conducting this educational program during COVID-19. Part of the original IPE agenda included having in-person case study reviews and on-unit huddles. Because of the COVID-19 distancing restrictions with limited available space, Arnstein, et al., [12] were restricted to groups of only 4 staff and 2 faculty. Although the group sessions were

intimate and permitted better participation in discussions, these restrictions limited the number of staff who could take part. However, the resultant merging of digital technology with traditional teaching methods, such as didactic education, assisted professionals with gaining valuable knowledge, skills, and confidence. In addition, it facilitated access to the resources needed to care for this underserved population [12]. As restrictions have been relaxed, this hybrid-style educational model is likely to continue as a more efficient alternative to traditional or digital learning techniques alone [12]. In addition, the use of video communication apps such as ZOOM software (Zoom Video Communications, San Jose, CA) or Microsoft VR Teams [Microsoft Corporation, Mountain View, CA] would certainly aid in embracing interdisciplinary teaching, such as IPL for pain management. Thus, there is a need for educational research on the best way for health professionals to master the core competencies through collaborative IDE. This model, as noted, is required for patients with CP, including those patients suffering from opioid and other addictions, as well as possible overdose presenting in the EOUD [12]. Finally, to emphasize the above point another prominent study found that an IPE model aided with decreasing opioid prescription and doses [13].

It is also vital to consider what is not defined as IPL. Buring, et al.,[14], via referring to a book edited by Greiner and Knebel, [15] describes various examples of conditions in which IPL may not be established. Firstly, students from different health professions in

a classroom, receiving the same educational experience from the teacher without including reflective interactions amongst the students. Secondly, a lecturer from a different profession navigating a classroom learning experience without drawing connections into how the alternate professions would relate in an interprofessional or interdisciplinary style of care. A final clinical example would be participating in the patient care environment which may be led by an individual from another profession, with lack of sharing of decision-making or accountability for the patient. Therefore, constructive IPL needs to embody a defined set of parameters to create a successful learning process for the students within a program or clinical setting.

Blue, et al., [16], through their research which focused on 'embedding interprofessional education within an academic health center' describe four domains that are necessary to accomplish a suitable IPE model: the curricular domain, the extracurricular domain, the faculty development domain and the healthcare simulation domain. The curricular domain pays attention to IPE within academic programs to warrant that all students have knowledge building and assessment experiences that concentrate on IPE. The extracurricular domain supports and enhances the academic environment by intentionally infusing interprofessional relationships throughout student organizations/societies and extracurricular activities. Thus, IPL does not necessarily have to be restricted to the lecture hall, clinic or lab; it must be entrenched in all components of a student's life. The faculty development domain pays attention to continuing

education about IPE. Blue, et al., [16] continues to assert that continuing education needs to be instituted within the appropriate faculty so that members of the faculty gain the knowledge, skills and values underlying interprofessional collaboration and thus begin to incorporate the tools to be able to successfully teach within an IPL program. When faculty take on interprofessional relationships in their educational work with students and with other aspect of their work such as research, clinical work and institutional duties, they further entrench IPL within the specific institutions culture [16]. The healthcare simulation domain sets in place institutional healthcare simulation experiences for the students, to provide student interdisciplinary collaboration, learning and assessment, and in addition to aid in faculty IPE development efforts. Investing in these types of resources, highlights an institutions desire to attain clinical effectiveness and patient safety. This recognizes a fundamental drive behind IPL-quality care of the patient.

To add on to the above model painted by Blue, et al. [16], in 2011, the Interprofessional Education Collaborative (IPEC), made up of a panel of experts from 6 different health care professions, published a paper that highlighted the central skills for interdisciplinary collaborative practice, the projected product of IPE. Aronoff, et al., [17] summarizes the four key competencies as

1. Values and ethics for interprofessional practice,
2. Roles and responsibilities,
3. Interprofessional communication and

4. Teams and teamwork.

In 2016, the IPEC expanded upon their previous report and now placed interprofessional collaboration as the central domain and enhanced the initial core competencies to progress the 'Triple Aim', a model created by the Institute for Healthcare Improvement to heighten health system performance. Again, Aronoff, et al., [17] condenses the 3 facets of the 'Triple Aim' as

1. Improving the patient experience of care (quality and satisfaction),
2. Improving the health of populations and
3. Reducing the per capita cost of healthcare.

Earnest and Brandt (2014) recommend interdisciplinary collaborative practice through IPE as an imperative evolution in clinical practice that will allow the "Triple Aim" to grow by heartening teamwork amongst healthcare workers. Thus, IPL is identified as a significant component in establishing the higher-end aim of interprofessional collaboration in the clinical setting which should result in achieving best patient-care results; clearly described through the 'Triple Aim' framework.

The IOM has asserted that patients benefit from safer and higher quality care when health care professionals work successfully in a team, communicate effectively and understand each other's skills and roles [14]. A review in 2008 by Reeves, et al., highlighted 6 studies evaluating the effectiveness of IPL in comparison to traditional education on the outcomes of patient care and professional

clinical practice. After synthesizing the data, the conclusion derived was that IPL was well received by the study participants; empowered both students and practitioners to gain both the knowledge and skills required for collaborative working and can expand upon the delivery of services and thus can weigh positively on patient care. In a systematic review in 2007 by Hammick, et al., [18] learners displayed positive reactions to IPL; a change in perceptions and attitudes and a significantly positive alteration in knowledge and skills essential for integrative team work. The key mechanisms for effective IPE that were identified in this review, included principles of adult learning and faculty development to aid with group facilitation. Educators in pharmacy, through another systematic review [19], investigated educational interventions in health professional education to advance learner outcomes related to interdisciplinary patient care. As in Hammick, et al., [18] work, students demonstrated positive measures surrounding attitude towards other professions and interprofessional teams. Therefore, although the above is merely a brief review of previous literature examining the advantages supporting IPL, it is evident that IPL has noticeable benefits to team work in the clinic and overall patient care, thus improving the quality of life including those patients who suffer from CP.

A number of significant barriers must be overcome to successfully implement and sustain a culture of IPE [1]. Leadership at the highest level is needed for a culture change to be successful. The successful implementation of IPL, according to Schmitt, et al., [20]

“requires leadership at all levels in both academic and practice settings”. Academic heads need to be optimally informed and supportive to provide the required resources and mechanisms for recognizing IPE’s value [16]. Within the clinic, numerous types of clinical leadership are critical to joining IPL with interprofessional practice [20]. Thus, linking the theory with practice is an essential component to IPL. Schmitt, et al., [20] continue to assert that the accessibility and availability of clinical sites is critical for student IPL. As with Blue, et al. [16], focus on continuing education within the faculty, Schmitt, et al., [20] also suggests that clinical faculty development and the preparation of current clinic practitioners in the paradigm of IPL is key to effective student learning and therefore, as a result, improving patient healthcare outcomes. Therefore, it is clear, that instituting healthcare IPL within an academic organization, necessitates a battery of interventions on both macro and micro levels within the establishment so that all staff have a common understanding of IPE. Furthermore, by faculty members sharing similar knowledge and ideals around this model of education, these educators will hopefully, in a successful manner, direct students to effectively adopt this type of learning and ultimately instill interdisciplinary clinical pain management practice post qualification in the workforce.

Alterations in physical classroom space, bidding for curriculum hours, and coordination of schedules can be difficult [1]. Ideally, students should be introduced to IPE early with learning activities that build on competencies. Curriculum design is an

iterative process necessitating modifications of complexity in patient cases and also the challenges of integrating clinical content to meet the needs of all levels of learners [1]. Perceived variances in hierarchy, power status, and unequal participation rates among specific health professions have also been described as challenges [21]. However, IPE can provide an opportunity to transform the way students are socialized by improving the understanding and respect of each other’s unique roles and responsibilities within a pain management team. Ultimately, involvement of clinicians in curriculum development, whether in undergraduate or graduate level, can promote real world interdisciplinary pain clinical care with a patient-centered approach.

McMurtry, et al., [22] assert that, as authors, they are intrigued at how IPL takes place through “interprofessional teamwork and collaboration, whether amongst health professionals who are managing patients’ health issues or students working through complex patient scenarios”. McMurtry, et al., [22] go on to state that IPL cannot be separated from the actual social, physical and organizational environments in which it develops such as within the specific university department setting. Thus, practitioners who are taught to collaborate successfully in one situation, may not work as well in another context with another group of individuals and relationships, tools and technologies and organizational structures [22]. For example, a style of collaboration concerning patients with CP may not necessarily work for patients with another condition. Even more, interdisciplinary management of patients

with a specific CP pathology may not work in the same manner as patients with a different CP pathology, or with patients coming from a different social context. Therefore, importantly, it is crucial to recognize that IPL cannot be assumed to be an entity that is gained by isolated individuals and then easily transferred to other social or medical contexts. The setting, technologies and dynamics in which the IPL knowledge is acquired, molds the way students and clinicians may relate on interprofessional levels socio-material theories of IPL. Through embracing a socio-material outlook on learning, students are ultimately considered and assessed within the larger social systems and structures in which they play a role [7].

Interdisciplinary collaboration occurs when learners/practitioners/patients/clients/families, and communities create and sustain working relationships that enable optimal health outcomes. Interprofessional collaborative practice occurs when numerous healthcare workers from different professional backgrounds work together with patients, families, and communities to provide the ultimate quality of care [1]. Interprofessional core competencies build on modern educational theory and practice to bring together all health professions with shared language, vision, and goals [1]. These competencies are important for positive outcomes, including those aimed for in quality pain care.

Socio-material theorists have recommended that different assessment modalities, such as participatory assessment, may correlate better with the learning process in IPL groups

and thus provide a better mechanism of incorporating the above elements involved in learning [23,7]. However, Oates, [7] states they as well as many other educators, in attempting an assortment of assessment tools in trying to more concisely capture the components defined with the socio-material theory of learning, have encountered numerous problems. Variability of feedback given to students by different academic staff from different professions must also be taken into account with regards to student assessment [24]. Strudwick, et al., [24] assessed feedback given to students in an IPL program that incorporated 20 members of staff from different health and social care programs. The aim of the study was to create a standardized marking sheet and assessment tool through Participatory Action Research (PAR), that would allow the course lecturers, to offer more consistent feedback for the students. Strudwick, et al., [24], found that the net result of creating a more focused and standardized assessment tool amongst the different lecturers from different disciplines, produced much improved feedback for the students as well as an increase in active engagement for both staff and students' participation during the feedback process. Therefore, it is worth noting that both the actual assessment and feedback for students within an IPL program, are both critical to the overall efficacy of such a program. The above further highlights present and future challenges and trials for both undergraduate and graduate programs that may adopt an IDE framework. However, notably, examining outcomes of IDE can be quite challenging. Large disparities regarding methods, theory, and context persist, and most studies focus on

short-term results [1]. The differences of contexts, assortment of interventions, and methodological limitations makes it demanding to draw generalizable conclusions about key variables and efficiency of IDE [25,5]. Assessment should ideally link to clinical practice, but there is a scarcity of contextually and synthesized literature regarding outcomes, particularly for pain management [21].

In addition to the potential barriers, outlined above, around potential difficulties in ways to assess IPL, Buring, et al., [15] describes various other challenges that might arise regarding IPL. Buring, et al., [15] asserts that barricades into implementing IPL may be met at various levels of the organization including the administration, faculty members and students. Curran, et al., [26] completed a study of various Canadian schools and found that the main barriers against IPE were scheduling (synchronizing classes amongst the different health care professional students), firm curriculum, “turf battles” and lack of perceived worth in IPE. Unlike in Hammick’s, review [18], which was described earlier in this paper, student attitudinal differences may have a negative influence on the actual execution of an IPE program. In addition to the students, the sentimental variances of health professionals and faculty members may also counteract a positive application of IPE [27]. Finally, limited resources and commitment can negatively impact the implementation of IPE [27]. It is worth paying attention to Aronoff, et al., [17] research completed in 2017 which provides one example of a way in which to counteract some of the potential challenges described

above. This investigation found that online evidence-based practice (EBP) learning modules, in an interprofessional context, were efficient in developing EBP knowledge and skills for healthcare professional scholars. Through utilizing the same online courses, students from different disciplines at different stages of their specific programs, displayed consistent knowledge and empowered students to fully take part in an IPL activity that was evidence-based. In addition, students suggested that these modules were valued and beneficial [17]. Therefore, as healthcare changes, it is critical that administrators and faculty members in various programs understand, appreciate and thus facilitate the need for changing the educational system and training of professionals [15].

This paper has attempted to provide greater transparency around the reality underlying IDE and interdisciplinary healthcare as a result. It is important to identify potential gaps in the IDE educational model and to eventually promote improvements in the curriculum of such training. The aim is for students from different disciplines, whether undergraduate or graduate level, to be able to take individual and collective health needs into consideration to eventually identify measures that increase patient care and patient quality of life. The IOM states that education should not take place in a “vacuum” [15].

Learners, together, should be able to learn to gain knowledge about themselves, about others and about different healthcare professions to produce sustainable and

effective interdisciplinary healthcare management [4]. Clearly, educational efforts need to correlate with practice requirements as healthcare delivery is quickly moving in the direction of a more integrative model [20]. Hence, practice leaders need to consciously be aware of their responsibility in assisting educators in better preparing students for the truths of clinical practice. The provision of opportunities for student collaboration, when learning about managing patients with CP, is key to the learning experience to develop an understanding of the perspective of various professions and to build an environment of mutual respect [1]. IPE requires active learner participation. Although most IPE is focused on prelicensure students, literature is emerging in post graduate clinical education [1].

Educational systems and institutions, in turn, are required to start painting a new picture in the manner in which student knowledge is built; one that perhaps adopts an IPL paradigm.

Conclusion

This review has attempted to outline IDE through the lens of a critical analysis; exploring the advantages of IDE and potential challenges that might arise through using this model of education. There is evident scope for future research to investigate the efficacy of

various IDE models within different programs as well as identify the most valid and reliable assessment measures for such curricula. With specific reference to CP management, are rigorous IPE studies [i.e., those using randomized controlled trial (RCTs), controlled before and after (CBA) or interrupted time series (ITS) designs with rigorous randomization actions, better allocation concealment, larger sample sizes, and more appropriate control groups] are needed to provide better evidence of the impact of IPE on professional practice and healthcare outcomes [8]. Regardless of the delivery method, successful outcomes from an IPE experience require an interactive element that is authentic and customized [18]. Various forms of simulation and web-based resources are being developed to enhance learning and encourage interactive reflection. A significant goal and challenge, in the present and certainly in the future, “is working toward creating continuing education programs that contribute to an interprofessional curricular continuum from pre-licensure through lifelong practice” [20]. Importantly, as Gordon, et al., [1] suggests, IPE is not a substitute for education specific to each profession, and a reason to lose individual professional individuality. However, interdisciplinary education should be instituted to help understand each other’s responsibilities and contributions to work together in a real-world practice setting.

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