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Original Article

# Understanding factors that facilitate the inclusion of pain education in undergraduate curricula: Perspectives from a UK survey

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## Abstract

**Background:** Studies in Europe, North America and Australasia suggest that one in five adults suffer from pain. There is increasing recognition that pain, particularly chronic pain, represents a global health burden. Many studies, including two national surveys exploring the content of undergraduate curricula for pain education, identify that documented pain education in curricula was limited and fragmentary.

**Methods:** The study design used a questionnaire which included an open text comment box for respondents to add 'further comments' as part of larger study previously published. The sample consisted of 19 UK universities that offered 108 undergraduate programmes in the following: dentistry, medicine, midwifery, nursing (adult, child, learning disabilities and mental health branches), occupational therapy (OT), pharmacy, physiotherapy and veterinary science. An inductive content analysis was performed, and the data were managed using NVivo 10 software for data management.

**Results:** A total of 57 participants across seven disciplines (dentistry, medicine, midwifery, nursing, pharmacy, physiotherapy and OT) completed the open text comment box (none were received from veterinary science). Analysis revealed two major themes of successes and challenges. Successes included expansion (extending coverage and/or increased student access), multidimensional curriculum content and diversity of teaching methods. Challenges included difficulties in identifying where pain is taught in the curriculum, biomedical versus biopsychosocial definitions of pain, perceived importance, time, resources and staff knowledge, and finally a diffusion of responsibility for pain education.

**Conclusion:** This study identifies new insights of the factors attributed to successful implementation of pain education in undergraduate education. Many of the challenges previously reported were also identified. This is one of the first studies to identify a broad range of approaches, for pain education, that could be deemed as 'successful' across a range of health disciplines.

## Keywords

Pain education, curriculum, health professional, interprofessional, teaching

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## Background

There is increasing recognition that pain, particularly chronic pain, represents a global health burden. Studies in Europe, North America and Australasia suggest that one in five adults suffer from pain.<sup>1-4</sup> The scale of this burden can be seen by the results of the Health Survey for England.<sup>5</sup> The findings revealed that 31% of men and 37% of women in the general population suffered chronic pain, which lasted for more than 3 months and was associated with an increased use of health services. This presented a challenge to employers as approximately 25% reporting that pain kept them from usual activities including work on at least 14 days in the last 3 months. Those experiencing chronic pain were five times more likely to visit their general practitioner or family doctor equating to about 5 million appointments per year.<sup>5</sup> The scale and impact of pain has resulted in calls for it to be promoted as a public health issue and requiring attention as a human right.<sup>6</sup> Ensuring health professionals receive education that permits them to deliver effective pain relief can be seen as a logical imperative, and yet, considerable evidence exists which suggests their educational preparation is inadequate.<sup>7,8</sup>

Two national surveys have explored undergraduate curricula for dentistry, medicine, midwifery, nursing, occupational therapy (OT), pharmacy, physiotherapy and, as a comparison, veterinary medicine. In Canada, programmes averaged 13 (pharmacy) to 41 hours (physiotherapy) of pain education in 10 major universities delivering 42 programmes.<sup>9</sup> A total of 19 universities were surveyed in the UK study that revealed that in 70 programmes, there was an average of 12 hours across disciplines. The range was 6.0 (midwifery) to 37.5 hours (physiotherapy), on average accounting for less than 1% of the curriculum.<sup>10</sup> In both surveys, most respondents described the pain content as mandatory but spread across several learning modules or units, which meant detailed content was difficult to identify. Further survey data of 117 American and Canadian Medical Schools similarly found that pain education documented in curricula was limited and fragmentary.<sup>11</sup> Academics may be facing several barriers in introducing and integrating pain content across programmes lasting 3–5 years.

The International Association for the Study of Pain (IASP) has developed discipline-specific and separate interprofessional pain education curricula,<sup>12</sup> and there are excellent examples of implementation from North America.<sup>13-15</sup> There is growing recognition of pain education that emphasizes interprofessional learning and the development of interprofessional competencies.<sup>16</sup> However, the reality remains that for most professions, pain is a neglected topic in the curriculum.

There are many studies documenting the inadequate presence of pain in the undergraduate curricula, but there is no previous work and little understanding of the factors that facilitate successful inclusion or barriers to introducing pain education. The aims of this study were to

- Elucidate factors that facilitated the successful introduction of pain education into undergraduate pain curricula in UK universities;
- Identify the barriers that academics reported facing in introducing or delivering pain education in UK universities;
- To identify additional issues experienced by educators or teachers that were not included in the survey questions.

## Methods

This study was part of a larger UK survey on the pain content of undergraduate health profession education.<sup>10</sup> The study design used a questionnaire that included an open text comment box for respondents to add any further thoughts or information. The majority of respondents provided detailed comments that warranted further qualitative interpretation. The initial analysis, reported from the original study, employed a content analysis with a quantitative emphasis. Open text comments present a challenge for many researchers in terms of ignoring it or deciding to analyse, as well as the limited resources available for further analysis.<sup>17</sup> Yet, such analysis can make significant contributions such as improving maternity services<sup>18</sup> and identifying barriers to referral for palliative care.<sup>19</sup> Qualitative methods were most appropriate for pursuing the aims of this study and to gain insight into factors influencing the delivery of pain education.

## Ethics

The Psychiatry, Nursing and Midwifery Research Ethics Sub-committee, King's College London, granted ethical approval: ref PNM/08/09-11 for the overall study. At each study site, a local investigator was recruited who was responsible for managing local approval arrangements.

## Sample

A total of 11 regions of the United Kingdom were purposefully selected to include a variety of universities providing education to the widest range of disciplines, as well as represent all of the four countries in the United Kingdom. Academic staff (programme leaders and those involved in teaching pain management) from

universities in these regions were invited to participate, and the final sample consisted of 19 universities that offered 108 programmes in the following disciplines: dentistry; medicine; midwifery; nursing (adult, child, learning disabilities and mental health branches); OT; pharmacy; physiotherapy; and veterinary science. An investigator at each university recruited university staff involved in undergraduate education for each discipline, inviting them to complete the questionnaire. Each discipline, except veterinary science, included additional comments in the final section for further qualitative analysis.

### Analysis

An inductive content analysis was used to allow a rich understanding of the themes embedded in the responses to the open-ended questions. This technique can be used effectively in the survey approach while still ensuring rigorous and consistent coding.<sup>20</sup> The purpose was to reduce the content to provide a condensed but broad description of the data. An inductive approach is recommended where the data are fragmented, or there is little knowledge about the phenomenon under scrutiny, and it moves from the specific (the open text comments) to the general (sub-themes and themes). The text is read thoroughly and words or short statements identified which capture the meaning. These codes are then grouped into similar topics and finally collapsed into categories or themes. Final themes were agreed following inductive reviews by the principal (E.C.J.C.) and co-investigators (E.V.B. and M.B.).<sup>20,21</sup> While participants did not overtly state topics of success or barriers, these were identified as latent variables and were recognized as they became apparent from their tone and content. Latent variables are inferences (rather than observations) made from the text and represent evident or manifest content.<sup>22</sup> For example, a participant might write 'We have relatively little time to cover a massive variety of subjects' and the latent variable might be 'time constraints'. Manifest or evident content were further analysed and compared based on the sub-theme it occupied.<sup>20,23</sup> All authors had an opportunity to comment on the analysis. NVivo 10 software was used for data management.

### Validity and rigour

The notion of trustworthiness is used to evaluate the quality of qualitative research and requires consideration of credibility, dependability, confirmability and transferability.<sup>24</sup> In 2006, based on earlier work by Sandelowski,<sup>25</sup> Rolfe<sup>26</sup> suggested that the researcher should create a 'super' audit, where the rationale underpinning the research decisions along the way is

made explicit. Credibility was established by ensuring that those completing the open text comment box were either programme leaders or teaching pain management and would have an in-depth knowledge of the curriculum. The detailed process of data analysis, with a critical consideration of the development of themes and sub-themes by all the authors, contributed to dependability. Confirmability has been established as some of the findings have been reported by other studies. Finally, to facilitate transferability (the degree to which the results or findings can be transferred to other contexts) is evident, as a clear description of the context, participant selection, data collection and analysis has been provided.

### Results

Questionnaires were returned by 74 respondents (68.5%) and 57 (77.0%) entered comments into the open text box in the survey. Open text statements contained 4622 words and contributions were across seven disciplines: Dentistry, medicine, midwifery, nursing (which included adult, child, learning disabilities and mental health branches), pharmacy, physiotherapy and OT. The average comment section was 76.6 words.

Analysis revealed the two major themes of 'Successes' and 'Challenges', each with a range of sub-themes. The theme 'Successes' identified three sub-themes that included expansion (extending coverage and/or increased student access), curriculum content that was multidimensional and diversity of teaching methods. In contrast, the theme 'Challenges' included four sub-themes: an inability to identify where pain is taught in the curriculum, biomedical versus biopsychosocial definitions of pain, perceived importance, time, resources and staff knowledge and, finally, a diffusion of responsibility for pain education.

### Successes

The theme of successes encompassed three sub-themes that highlighted factors attributed to the successful integration of pain education into the undergraduate curricula. Expansion of the pain content, including pain in the learning assessment or widening access for more students, was seen as hallmarks of success:

The management of pain used to be an elective module for students completing the advanced diploma in adult nursing. In 2008, the module became compulsory to satisfy NMC [Nursing & Midwifery Council] requirements, but also because of the popularity of the module. (Nursing (adult) 26)

Students are asked to produce a group presentation looking at non-pharmacological approaches to the management of specific conditions. One topic we have used has been complementary therapy for chronic low back pain. For the assessment students have been asked to produce an evidence based information sheet for patients thinking of using complementary approaches for this condition. They also produce a commentary on the design and content of the leaflet. (Medicine 46)

In contrast to one of the challenges being an inability to identify where pain was taught, the successful curriculum made pain explicitly integrated, and there were examples of how pain was integrated throughout the curriculum, reflecting in a multidimensional perspective:

The formal content is designed to be specific to the physiotherapy management of neuro-musculoskeletal conditions. The material is evidence-based and multi-dimensional. It integrates evidence, policy and clinical guidelines from all appropriate sources. It does not use IASP guidelines specifically. (Physiotherapy 18)

In the culture lecture we mention perceptions of pain in culture bound syndromes and also that CAM (Complimentary and Alternative Medicine) is widely used (including NHS) to treat musculoskeletal pain. In the lecture on stress, pain is identified both as a stressor and as a symptom of stress. (Medicine 46)

The final sub-theme 'diversity of teaching methods' reflected an innovative array of approaches to teach pain. Examples included bringing a person experiencing pain (service user) into the classroom, the utilization of electronic media and problem-based learning (an active, learner-centred approach where students learn about a topic by working collaboratively to solve a particular issue or case study):

I also have a patient with persistent pain who I work closely with, to make sure that pain management is made real to the students and reflects the realities of practices. (Nursing (adult) 3)

The elective modules available involve 100hrs in total of student effort (this includes time for assignment completion and self directed WebCT [virtual learning environment] activities. Elective module meets IASP curriculum. (OT 20)

All year one, taught by lectures and clinicians on an applied basis and physiological basis through problem-based learning. (Physiotherapy 51)

## Challenges

Respondents had been asked in the questionnaire to identify where pain was taught, and clearly, it posed a

difficulty as many, across a range of disciplines, suggested they struggled to identify where pain was specifically taught. The reasons for pain being difficult to identify in the curriculum were most frequently attributed to an integrated curriculum where pain might be taught across a range of topic areas and an acknowledgement that pain education often took place informally in the clinical setting:

This is a difficult questionnaire to complete due to the nature of what we do pain management is taught and discussed in a range of modules. (Physiotherapy 57)

The table is difficult to fill in because the topics in the table are covered in an overlapping way through case based discussion. (Medicine 78)

I am unable to provide the number of hours as this is taught (formally) in the classroom but also (informally) within the clinical area. (Midwifery 13)

Different disciplines had different perspectives which altered the focus and content of pain teaching:

Within learning disabilities, distress is measured rather than pain. (Nursing (learning disability) 45)

Academics involved are interested in physiological mechanisms of pharmacological treatment of pain from a scientific point of view rather than a purely clinical management point of view. (Dentistry 1)

We might address psychological /emotional pain, but I don't think that's what you are interested in. (Nursing (mental health) 40)

Adding more content into an overcrowded curriculum was frequently mentioned as a challenge:

Already very crowded curriculum. (Medicine 9)

I feel I do not have enough time to cover all the issues I think are important. (Nursing (adult) 3)

There was a recognition that pain education often took place outside the curriculum, and this may have been during clinical placements or prior to commencing the programme. This resulted in a diffusion of responsibility:

The experience [of pain] students have in practice will vary based on the mix of placements they are allocated to. (Nursing (adult) 63)

Diverse nature of placement within OT practice, the content and amount of time given to this will differ for each individual. (OT 77)

The students covered much of the basics in their training. (Midwifery 30)

## Discussion

Our definition of 'successes' draws on the antithesis of the documented barriers. These are frequently reported and reflect sub-optimal pain education, that is, learning that focuses on the pathophysiology or basic science of pain mechanisms and uses didactic teaching methods. We define 'successes' to reflect recommendations such as those endorsed by IASP; multidimensional perspective on pain and incorporates experiential (student-led) learning opportunities (or non-didactic approaches). The following discussion highlights some of the implications of our findings and offers insights for continuing and further development.

### Successes

A number of factors appear to facilitate the incorporation of pain education into curricula. Participants suggested that having a team of people involved in teaching helped, although it is not clear whether this team needed to reflect a range of professional backgrounds. The need for a local champion, team or network of people influencing curriculum change has been a strong and recurrent theme from previous research on a variety of topics including family medicine, palliative care and paediatric nursing.<sup>27-29</sup> Also, respondents in this study felt that making visible the pain contribution within particular courses was seen as a key aspect of success; if this did not occur, there was a risk of disintegration of the teaching since trying to identify the impact and outputs of the pain education becomes problematic.

Broadening the approach to pain education from biomedical dominance to a more a bio-psycho-social approach was also seen by participants as an important indicator for success. There was a suggestion that pain curricula may not have kept in step with the advances in pain research and policy that attest the value of psychological and sociological education in relation to pain management. Murinson et al.<sup>30</sup> at John Hopkins developed an innovative course titled 'Pain and the Humanities' with the objective of enhancing affective, reflective and values-oriented awareness of pain in medical students. There is increasing emphasis on including the humanities into undergraduate education, and pain curricula offer an ideal opportunity for this.

Several participants noted that having key policy drivers or initiatives made an impact and provided an opportunity for change. For example, the Nursing and Midwifery Council's competency framework<sup>31</sup> provided the impetus for a pain module to become a compulsory

part of the nursing curriculum in one university. In another study, which interviewed palliative care consultants, publications by professional regulators, such as the General Medical Council,<sup>32</sup> provided a catalyst for them to capitalize on the re-organization of the curriculum.<sup>28</sup> Without these policy documents, participants felt that it was extremely difficult to introduce a new topic or enhance existing provision. Others have also emphasized the value of having pain education and curricula highlighted in guidelines and policies.<sup>33-35</sup>

Success also appeared to be linked to the creative use of a diversity of teaching methods in order to expand the opportunities for students to learn, for example, e-learning, case studies and patient simulated teaching. For example, there is growing evidence that when service users, who experience the care or condition being taught, challenge the assumptions students make, transformative learning can occur.<sup>36-38</sup> The principles of this approach could readily be applied and incorporated into pain education. Using a diversity of teaching methods was seen as an important and effective approach to adding an additional topic into an already crowded curriculum. There are a number of examples in the literature of such creative developments.<sup>39-41</sup> Active, student-led approaches to learning (in comparison to passive, teacher led approaches) may create greater opportunities to rehearse the skills needed for effective pain management including problem-solving, shared learning and team working, challenge misconceptions and critical appraisal.

### Challenges

We highlight contemporary challenges that we believe face the next iterations of pain curriculum development. These include interprofessional education (IPE), the diffusion of responsibility for pain education and the fragmented nature of the curriculum.

There is a major drive towards IPE in undergraduate or pre-licensure programmes, which provides 'learning where students come together to learn with, from and about each other'.<sup>42</sup> There is growing evidence that IPE and learning are linked to positive patient and care provider outcomes as collaborative practice skills and attitudes are improved.<sup>43</sup> IPE can be time-consuming, and it has been found to require the effective co-ordination of defined outcomes and complex resources through the commitment of educators to the process.<sup>44</sup> With the recent publication of the IASP Interprofessional Pain Curriculum Outline, clearly defined objectives have been provided.<sup>12</sup> Furthermore, the recent development of interprofessional pain core competencies, for pre-licensure health-care professionals, has been another important contribution.<sup>16</sup> These competencies can be a catalyst

for developing and improving curricula to equip health-care professionals with the ability to effectively respond to a person in pain.

The final challenge relates to a diffusion of responsibility for the pain curriculum outside the formal taught component. This is where pain is taught in clinical practice, but there is little clarity in terms of content, organization and parity across individual experiences. The Institute of Medicine's report on pain in the United States calls for a mandatory improvement in pain education in medical school that is not devolved to clinical practice.<sup>2</sup> There is an over reliance on pain being taught in the clinical practice area, which is currently diffused in terms of accountability. A related concern is the reliance on external teaching staff that may not have an overview of the curriculum and the students experience; potentially jeopardizing opportunities to build on previous learning and extend breadth and depth of pain knowledge. The importance of having a coordinated overview of an integrated curriculum design cannot be overemphasized. The challenge is to couple the formal classroom curriculum with the richness of clinical exposure to enhance learning, developing a tangible partnership. It also provides an opportunity for aligning the educational objectives of the classroom, with the competencies of providing pain care.

In some cases, pain was seen as an additional topic to place in an overcrowded curriculum. This is a familiar theme in previous research exploring the perceptions of faculty staff and introducing change in the medical and nursing curricula. Ury et al.<sup>45</sup> conducted a needs assessment for palliative care curricula with key stakeholders who described the curriculum as too full, and there were existing 'turf wars' where staff were competing to introduce their subject. Other studies have demonstrated similar issues for teaching topics related to palliative care,<sup>28</sup> family medicine,<sup>27</sup> sleep disorder<sup>46</sup> and sexual health and orientation.<sup>47</sup> The perception of pain as an additional, rather than core topic, is a well-defined barrier to successful curriculum change.

### *Strengths and limitations*

Inviting 'comment', in the form of a free response, ensured respondents did not have to conform to previously identified topics. This approach reduced the likelihood of bias or the researchers' agenda creeping in. Many of the participants in this study were already interested in and often responsible for the pain curriculum. This may have given a more positive slant to the findings. An open text box for comments did not permit any of the issues to be explored, which may have limited the richness and quality of the data. Further research in this area is warranted. Finally, the sample

was limited to 11 university regions and 19 universities although a substantial number of health-care programmes (n=108) were included from eight disciplines.

## **Conclusion**

This study identifies many of the challenges previously recognized by those attempting to integrate pain education in undergraduate education. Understanding factors attributed to successful implementation is less reported, and this is one of the first studies to identify a broad range of approaches which could be deemed as 'successful' across a range of health disciplines. Harnessing policies promoting pain education, including local pain champions, creating a team and using a bio-psycho-social approach were all seen as factors to promote success. Academic and clinical staff have a shared responsibility for educating undergraduates around pain management, and strengthening this partnership can contribute to developing the pain curriculum.

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## **References**

1. Breivik H, Collett B, Vetafridda V, et al. Survey of chronic pain in Europe: prevalence, impact on daily life, and treatment. *Eur J Pain* 2006; 10(4): 287–333.
2. Institute of Medicine. *Relieving pain in America: a blueprint for transforming prevention, care, education, and research* (Institute of Medicine (US) Committee on

- Advancing Pain Research, Care, and Education). Washington, DC: National Academies Press (US), 2011.
3. Eriksen J, Jensen MK, Sjøgren P, et al. Epidemiology of chronic non-malignant pain in Denmark. *Pain* 2003; 106(3): 221–228.
  4. Blyth FM, March LM, Barnabic AJM, et al. Chronic pain in Australia: a prevalence study. *Pain* 2001; 89(2–3): 127–134.
  5. Bridges S. *Chronic pain. Health Survey England 2011*. London: Health and Social Care Information Centre, <http://www.hscic.gov.uk/catalogue/PUB09300/HSE2011-Ch9-Chronic-Pain.pdf>
  6. Brennan F, Carr DB and Cousins M. Pain management: a fundamental human right. *Anesth Analg* 2007; 105(1): 205–221.
  7. Visentin M, Trentin L, de Marco R, et al. Knowledge and attitudes of Italian medical staff towards the approach and treatment of patients in pain. *J Pain Symptom Manage* 2001; 22(5): 925–930.
  8. Zanolin ME, Visentin M, Trentin L, et al. A questionnaire to evaluate the knowledge and attitudes of health care providers on pain. *J Pain Symptom Manage* 2007; 33(6): 727–736.
  9. Watt-Watson J, McGillion M, Hunter J, et al. A survey of prelicensure pain curricula in health science faculties in Canadian universities. *Pain Res Manag* 2009; 14(6): 439–444.
  10. Briggs EV, Carr ECJ and Whittaker MS. Survey of undergraduate pain curricula for healthcare professionals in the United Kingdom. *Eur J Pain* 2011; 15(8): 789–795.
  11. Mezei L and Murinson BB. Pain education in North American medical schools. *J Pain* 2011; 12(12): 1199–1208.
  12. International Association for the Study of Pain. Inter-professional pain curricula outline, 2012, <http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2057>
  13. Watt-Watson J, Carr E and McGillion M. Moving the pain education agenda forward: innovative models. *Pain Res Manag* 2011; 16(6): 400–401.
  14. Murinson BB, Nenortas E, Mayer RS, et al. A new program in pain medicine for medical students: integrating core curriculum knowledge with emotional and reflective development. *Pain Med* 2011; 12(2): 186–195.
  15. Rochman DL, Sheehan MJ and Kulich RJ. Evaluation of a pain curriculum for occupational therapists: experiences from a master's-level graduate program over six years. *Disabil Rehabil* 2013; 35(22): 1933–1940.
  16. Fishman SM, Young HM, Lucas Arwood E, et al. Core competencies for pain management: results of an inter-professional consensus summit. *Pain Med* 2013; 14(7): 971–981.
  17. O'Cathain A and Thomas KJ. 'Any other comments?' Open questions on questionnaires – a bane or a bonus to research? *BMC Med Res Methodol* 2004; 4: 25.
  18. McKinnon LC, Prosser SJ and Miller YD. What women want: qualitative analysis of consumer evaluations of maternity care in Queensland, Australia. *BMC Pregnancy Childbirth* 2014; 14(1): 366.
  19. Twamley K, Craig F, Kelly P, et al. Underlying barriers to referral to paediatric palliative care services: knowledge and attitudes of health care professionals in a paediatric tertiary care centre in the United Kingdom. *J Child Health Care* 2014; 18(1): 19–30.
  20. Miles MB and Huberman AM. *Qualitative data analysis: an expanded sourcebook*. Thousand Oaks: SAGE Publications, 1994.
  21. Elo S and Kyngas H. The qualitative content analysis process. *J Adv Nurs* 2008; 62(1): 107–115.
  22. Weber R. *Basic content analysis* (SAGE university press paper series on quantitative applications in the social science, series no 007-49). Newbury Park, CA: SAGE, 1990, p. 74
  23. Mason J. *Qualitative researching*. London: SAGE Publications, 2002, pp. 56–72.
  24. Lincoln Y and Guba E. *Naturalistic inquiry*. Beverly Hills, CA: SAGE Publications, 1985.
  25. Sandelowski M. Rigor or rigor mortis: the problem of rigor in qualitative research revisited. *J Adv Nurs* 1993; 16(2): 1–8.
  26. Rolfé GJ. Validity, trustworthiness and rigour: quality and the idea of qualitative research. *J Adv Nurs* 2006; 53(3): 304–310.
  27. Sleight DA and Reznich CB. Implementation of curriculum by family medicine fellows: what factors help and what factors hinder? *Fam Med* 2006; 38(4): 270–274.
  28. Gibbins J, McCourbrie R, Maher J, et al. Incorporating palliative care into undergraduate curricula: lessons for curriculum development. *Med Educ* 2009; 43: 776–783.
  29. Hawkins-Walsh E, Crowley A, Mazurek Melnyk B, et al. Improving health-care quality through an AAFP National Nursing Education Collaborative to strengthen PNP curriculum in mental/behavioral health and EBP: lessons learned from academic faculty and clinical preceptors. *J Prof Nurs* 2011; 27(1): 8–10.
  30. Murinson BB, Agarwal AK and Haythornthwaite JA. Cognitive expertise, emotional development, and reflective capacity: clinical skills for improved pain care. *J Pain* 2008; 9(11): 975–983.
  31. Nursing and Midwifery Council. *Standards of proficiency for pre-registration nurse education*. London: Nursing and Midwifery Council, 2010.
  32. General Medical Council. *Tomorrow's doctors*. 2nd ed. London: General Medical Council, 2009.
  33. Keefe G and Wharrad HJ. Using e-learning to enhance nursing students' pain management education. *Nurs Educ Today* 2012; 32(8): e66–e72.
  34. National Institute of Clinical Excellence (NICE). *Patient experience in adult NHS services: improving the experience of care for people using adult NHS services issued*. NICE Clinical Guidelines, no. 138, 2012, <http://www.nice.org.uk/guidance/CG138>
  35. Murinson BB, Gordin V, Flynn S, et al.; Medical Education Sub-committee of the American Academy of Pain. Recommendations for a new curriculum in pain medicine for medical students: towards a career distinguished by competence and compassion. *Pain Med* 2013; 14(3): 345–350.

36. Rhodes C. User involvement in health and social care education: a concept analysis. *Nurse Educ Today* 2012; 32: 185–189.
37. Southgate A. Confounding expectations: reflection on simulation with learning disability service users. *Int Pract Dev J* 2013; 3(1): 1–8, [http://www.fons.org/Resources/Documents/Journal/Vol3No1/IDPJ\\_0301\\_08.pdf](http://www.fons.org/Resources/Documents/Journal/Vol3No1/IDPJ_0301_08.pdf)
38. Bollard M, Lahiff J and Parkes N. Involving people with learning disabilities in nurse education: towards an inclusive approach. *Nurse Educ Today* 2012; 32: 173–177.
39. Lanning LC and Dahig BA. A strategy for incorporating palliative care and end-of-life instruction into physician assistant education. *J Physician Assist Educ* 2010; 21(4): 41–46.
40. Lax L, Watt-Watson J, Lui M, et al. Innovation and design of a web-based pain education interprofessional resource. *Pain Res Manag* 2011; 16(6): 427–432.
41. Puljak L and Sapunar D. Web-based elective courses for medical students: an example in pain. *Pain Med* 2011; 12(6): 854–863.
42. Centre for the Advancement of Interprofessional Education (CAIPE). *Defining IPE*. London: CAIPE, 2002, <http://www.caipe.org.uk/about-us/defining-ipe>
43. Suter E, Arndt J, Arthur N, et al. Role understanding and effective communication as core competencies for collaborative practice. *J Interprof Care* 2009; 23(1): 41–51.
44. Thistlewaite J. Interprofessional education: a review of context, learning and the research agenda. *Med Educ* 2012; 46: 58–70.
45. Ury WA, Reznich CB and Weber CM. A needs assessment for a palliative care curriculum. *J Pain Symptom Manage* 2000; 20(6): 408–416.
46. Mindell JA, Bartle A, Wahab NA, et al. Sleep education in medical school curriculum: a glimpse across countries. *Sleep Med* 2011; 12(9): 928–931.
47. Tamas RL, Miller KH, Martin LJ, et al. Addressing patient sexual orientation in the undergraduate medical education curriculum. *Acad Psychiatry* 2010; 34(5): 342–345.