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Action Learning: An effective intervention to improve cancer related pain management

Author 1

Mohammed Ali Mohammed KASASBEH, PhD, MSc, BNS, RGN

Clinical Nurse Manager,

Medical Ward, Connolly Hospital Blanchardstown, Mill Road, Blanchardstown, Dublin 15

Tel: +353 1 646 5000

Email: kasasbehm@tcd.ie

Author 2

Catherine MCCABE, PhD, MSc, BNS, RGN

Assistant Professor

School of Nursing & Midwifery, Trinity College Dublin, 24 D'Olier Street, Dublin 2

Tel: +353 1 8963019

Email: camccabe@tcd.ie (corresponding author)

Author 3

Sheila PAYNE, PhD, MSc,

Professor

Faculty of Health and Medicine, Furness College, Lancaster University, Lancaster LA1 4YG, UK

Tel +44 (0)1524593701

Fax +44 (0)1524592401

Email: s.a.payne@lancaster.ac.uk

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Email of corresponding author: camccabe@tcd.ie

Abstract:

Purpose: To evaluate the efficacy of action learning for improving cancer related pain management in the acute healthcare settings. Despite the prevalent use of action learning in private, public, clinical and non-clinical settings, no studies were found in the literature that either examined cancer pain management or used action learning as an approach to improve patient care in acute healthcare settings.

Methods: An intervention pre – posttest design was adopted using an action learning programme (ALP) as the intervention. Healthcare professionals' knowledge, attitudes and practice were assessed and evaluated before and after the implementation of the six-month ALP. A pre and post audit and survey were conducted for data collection. The data were collected from the entire population of 170 healthcare professionals in one healthcare organisation.

Results: The management of cancer related pain improved significantly following the intervention. Significant improvement were also seen in healthcare professionals' knowledge, attitudes with improved cancer related pain management as a consequence of this.

Conclusion: Despite many organisational challenges to practice development and collaborative working in healthcare settings there is evidence that action learning can achieve positive outcomes for improving CRP and supporting collaborative working. Action learning needs to be considered as a strategy for achieving high quality standards.

Summary Statement

What does this paper contribute to the wider global clinical community?

1. This paper provides evidence that action learning is an effective way of improving the management of cancer related pain in acute care settings.
2. The findings of this study indicate that action learning can potentially be used to develop teamwork, collaborative working and learning, and a bottom up approach to improving patient services across healthcare organizations.
3. This paper demonstrates that action learning can be a flexible, cost effective, and successful intervention for supporting nurse led interprofessional collaboration and learning, practice development and subsequent improved patient care.

INTRODUCTION

Inadequate treatment of cancer related pain is a prevalent clinical problem in hospitalised patients and often results in significant negative physiological and psychological consequences (Solman *et al.* 2006, Fisch *et al.* 2012; Ripamondi *et al.* 2014; Reis-Pina 2015).

Lack of knowledge and negative attitudes towards appropriate pain management has resulted in poor practice and patients experiencing unnecessary pain (Messeri *et al.* 2008; Reis-Pina 2015). Healthcare professionals require sufficient knowledge to inform their practice, this is integral to ensuring effective, safe and acceptable pain management and the provision of optimal quality care to the cancer patient with pain. This article reports on an intervention study to determine whether action learning as a strategy can improve the management of cancer related pain on acute care wards in a large city teaching hospital.

BACKGROUND

Cancer related pain (CRP)

Pain has been identified as one of the most common symptoms in patients with cancer (Stromgren *et al.* 2006, McMillan *et al.* 2008, Stark *et al.* 2012). According to Hadjistavropoulos and Hadjistavropoulos (2008), cancer treatments, including surgical procedures, chemotherapy, radiotherapy, and multi-x-ray procedures, may cause discomfort in addition to the pain associated with the cancer and any other preexisting chronic conditions. Despite the availability of the WHO guidelines and the advancement of pain management modalities approximately half of patients with cancer continue to report that they experience pain even when receiving prescribed analgesia (Breivik *et al.* 2009). Recent studies suggest that this is due to under reporting, poor assessment and lack of analgesia. (Solman *et al.* 2006, Ripamondi *et al.* 2014; Fisch *et al.* 2012; Reis-Pina 2015).

Several studies indicate that knowledge deficits and inadequate pain assessment are the most important barriers for Health Service Providers (HCPs) in implementing effective pain management (Eftekhar *et al.* 2007, Xue *et al.* 2007, Zanolin *et al.* 2007, Messeri *et al.* 2008; Reis-Pina 2015). Misconceptions and negative attitudes among healthcare professionals in relation to pain management, particularly regarding the prescribing, administration and side effects of analgesics are also found to be barriers to effective pain management (Chung and Lui 2003, Manias 2003, Dihle *et al.* 2006). Additionally, many other studies report poor adherence to recommended documentation practices with regards to pain assessment and management (Chanvej *et al.* 2004, Ger *et al.* 2004, Jeba *et al.* 2009).

Improving the management of CRP

The literature investigating the effect of educational programmes on CRP management by healthcare professionals' indicates that, in general, there was either no change in the knowledge, attitude or practice or the change was not significant (Young *et al.* 2010;

Zernikow *et al.* 2008; Howell *et al.* 2006; Seers *et al.* 2006). Education programmes in isolation have been criticised for being ineffective in bringing about a significant and/or sustained change in healthcare professionals' practice in relation to CRP (Howell *et al.* 2006; Seers *et al.* 2006). In contrast when practice initiatives are introduced in conjunction with an education programme, more positive effects in changing practice related to cancer pain management. However this approach may not be appropriate for every situation, and a standard education program or intervention will not have the same relevance and influence in every context. (Young *et al.* 2010). Therefore it is arguable that a structured, dynamic and evolutionary group process could potentially lead the healthcare professionals towards sustained practice improvement in relation to CRP. There is a need for an educational intervention that is based in clinical practice and develops on the premise that the learners develops 'questioning insights' based on direct day-to-day experiences at work, and identifies solutions that are realistic and relevant to different contexts (Pedler 1997, Revans 1998). Action learning meets this requirement as it is a continuous process of learning and reflection that takes place within the context of a clinically based action learning group (also known as action learning set). Members of the group meet regularly and work on real everyday issues or problems with the intention of getting things done in order to benefit both the organization, the professional and ultimately the patient (McGill and Brockbank 2004). The action learning group consists of a small group of people (6-8) that meets regularly to act as a resource for each other in order to learn from each other, identify common needs/goals and plan/implement solutions (Weinstein 1999). Marsick and O'Neil (1999) advocate that the overriding value guiding the action learning approach is a pragmatic focus on learning for the sake of more effective instrumental problem solving which, in the case of this study, is effective management of CRP in acute care settings. In this study an action learning programme (ALP) was used as an educational intervention for improving CRP management for healthcare professionals caring for people with cancer in medical and surgical wards. This study did not take place on specialized oncology wards, therefore, many of the staff (doctors and nurses) did not have specific oncology training/education.

One of the main advantages reported by Dilworth (1998) is that action learning builds a community of learners that allows a group of colleagues to transfer what they learn in the process of solving an urgent problem today to solving even more complex problems tomorrow. In this study, issues related to CRP management are discussed and addressed in the healthcare professionals' workplace using action learning ALPs which offers them an opportunity for professional development as the education is derived from their own setting (Raelin and Coghlan 2006). A common criticism of traditional education programmes is that transfer of knowledge to practice is limited or absent (Young *et al.* 2010, Bennett *et al.* 2011). Therefore, it is argued that learning gained through ALPs can be transferred to the workplace more successfully and can be used as a supportive tool to empower nurses in the current challenging healthcare contexts (Haith and Whittingham 2012).

Study Aims

1. Identify changes in healthcare professionals' knowledge and attitudes in relation to cancer-related pain management between before and after implementing the action learning programme.
2. Evaluate the effectiveness of action learning as an intervention to improve the management of CRP in acute care settings (done using audit tool).

Methods

Design

A pre - posttest research design was adopted using ALPs as the intervention for improving CRP management. Changes to healthcare professionals' knowledge, attitudes and practice before and after participation in a 6 month ALP were measured using the 'Knowledge and Attitudes Survey Regarding Pain' (KASRP) and an audit tool was used pre and post intervention to assess changes in CRP management practices.

Sample and Participants

All healthcare professionals (doctors, clinical nurse managers, registered nurses and pharmacists) involved in assessing, prescribing, administering, and evaluating analgesia to people with cancer pain were eligible to participate. One hundred and seventy questionnaires were distributed before and after the intervention to healthcare professionals working in two medical and two surgical wards. Posters were displayed on the wards advertising the study and inviting all eligible healthcare professionals to take part in the action learning ALPs.

Intervention – Action Learning Programme (ALP)

The six-month ALP was held at lunchtime (refreshments provided) in the seminar rooms on the medical and surgical wards of the study hospital. All ALP participants received detailed instruction and support prior to and during the programme. Of those who volunteered to participate in the ALP, 12 healthcare professionals were chosen representing a mix of doctors and nurses to participate in the action-learning programme (nurses and doctors). Informal information exchange meetings were subsequently arranged for the ALP participants to ensure that they understood the principles of taking part in the ALPs. Each of the participants also received an email link to a YouTube video identifying and describing action learning and main recommended ground rules of action learning ALPs.

A key aspect of ensuring that the ALP functions well is the establishment of mutually agreed ground rules within the groups. Ground rules related to issues such as *commitment* and *attendance, confidentiality, equal share of time, speaking and listening* among participants which is supported by a facilitator who was a clinical nurse manager in this study. The role of the facilitator was to clarify the processes of learning to enable ALP participants to work together and to assist them in creating an environment within the ALP which is supportive as well as challenging and constructive (McGill and Beaty 2001).

As each action learning meeting started, the facilitator assisted participants in gaining confidence and commitment and acted as a resource by asking appropriate questions or suggesting appropriate references (Revans 1998). At each meeting, group participants were asked to identify a CRP management related topic or issue, which they had encountered during the course of their work based on their own clinical experience. The clinical situations represented the core element of the action learning ALPs where participants reflected on and learned from their own as well as their colleagues' experiences. During these discussions, participants provided examples of solutions and alternative plans as an answer to "what would you do if it was you?" Or "how would you manage if it happened to you again?" The recipient of the feedback was able to take note of the responses/suggestions and reflect on the acknowledged experiences of the group.

Each meeting lasted approximately 30 minutes and refreshments were provided as staff attended during their lunch break. At each meeting, various issues were raised and several actions taken throughout the 6 month duration of the action learning programme. Agreed actions also took place in the weeks after the ALP finished in order to ensure that all agreed actions were implemented. Records of each meeting were taken by the facilitator and at the conclusion of each meeting the ALP members thanked each other for their contribution to the discussion and assistance with finding solutions for issues related to CRP management and subsequent meetings were planned. The three main CRP management related topics raised by participants during the meetings were; assessment and documentation, inadequate knowledge, misconceptions related to drug side effects which influenced prescribing and administration practices; and poor communication. The main actions that emerged from the ALP are summarised in Table 1

ALP group members were drawn from those who volunteered to take part. Members were chosen by the researcher based on their clinical experience, profession and staff grade. As the study took place in one hospital, many of the participants knew each other professionally

and this gave a significant advantage to the ALP members as they were familiar with each other's role and had similar clinical experiences. This created an environment of trust and confidence, and lead to very positive relationships between participants.

The ALP was initially structured around two six-member groups; group A comprising three clinical nurse managers and three senior staff nurses and group B comprising four registrars and two senior house officers (group B). For the first two months of the six-month ALP, members of both group A and B met separately every 2-3 weeks, however, requests emerged from both groups to have an action learning ALP that included nurses and doctors together. Consequently group A and B were amalgamated into group C and continued to meet once every three to four weeks for the remaining four months of the programme. Commencing the programme with group A and B had two main advantages. Firstly, it afforded participants with similar status and backgrounds the opportunity to build confidence and commit to the programme as participants already knew each other. Secondly, this was considered to be a '*preparatory stage*' to the remaining four months of the programme where participants were more likely to raise topics at a higher level particularly where disparities between doctors and nurses views on effective CRP management were expected to arise. The main issues that were identified by the group C that negatively impacted on effective CRP management are outlined in table 1 along with agreed actions to overcome the issues and improve CRP management.

Overall the ALP comprised 12 action learning group meetings as follows: Each of group A (just nurses) and B (just doctors) had 4 separate meetings, group C (combination of nurses and doctors) had 3 meetings and a final concluding meeting at the end of the programme. All participants remained involved in the process with attendance at action learning meetings being high. Email communication summarizing the discussion and actions was provided by the action learning facilitator after each meeting and informal communication also occurred informally through direct contact with colleagues during normal daily interactions on the wards.

Put Table 1 here: Clinical, communication and organizational issues addressed during the action learning ALPs.

Instrumentation

In order to identify changes in healthcare professionals' knowledge and attitudes in relation to CRP management participants were surveyed before and after implementing the ALP using the 'Knowledge and Attitudes Survey Regarding Pain' (KASRP) questionnaire. This measured the level of knowledge, attitudes and practice of healthcare professionals with regard to CRP management. The KASRP is a 40-item questionnaire, developed by Ferrell and McCaffery (1987; http://prc.coh.org/res_inst.asp). The instrument comprises three sections. The first consists of 22 True or False statements, the second 14 multiple choice questions and the third 2 case vignettes with 2 questions of each, a total of 40 items. The reliability of the KASRP was established by its original authors (Ferrell and McCaffery 2008) through test-retest reliability ($r > .80$) by repeated testing of a class comprising 60 nurses (Ferrell and McCaffery 2008).

Data collection

Survey: The KASRP questionnaires were self-administered and returned anonymously to collection boxes that were provided on the participating wards.

In order to evaluate the effectiveness of action learning as an intervention to improve the management of CRP in acute care settings a pre and post audit was conducted. A modified version of the validated tool by The Kansas Foundation for Medical Care (KFMC 2006) was used to conduct the audit which included documentation of pain assessment, evaluation and prescribing. Information was recorded from the medical and nursing notes of fifteen cancer patients' who were inpatients on the medical and nursing wards before the ALP and again on 15 different patients after the ALP.

The tool comprises 10 sections with a total of 22 items. Each of section 2, 5, 6, 7, 8, 9, and 10 has only one item. Sections 1, 3 and 4 comprised different numbers of items. The first section had four items that focus on patient's screening for pain on admission, from the nursing notes in the previous 24 hours, the nursing care plan and medical team progress notes. Section two comprised one item asking about the availability of pain related care plan. Section three comprised 9 items on the comprehensive assessment of pain when the pain is identified, in accordance with Joint Commission on Accreditation of Healthcare Organizations (JCAHO, 2000). Section four comprised 2 items including nurses' and doctors' documentation and descriptions of pain. Section five asked whether the patient received the appropriate pain treatment according to the WHO analgesia ladder. Section six asked if orders for analgesia were received within 24 hours of identification of the pain. Section seven asks if the care plan includes pharmacological interventions. Section eight examines if the effectiveness of administered analgesia was evaluated (WHO 2015). Section nine elicited whether a follow-up evaluation included prescribed medication for increasing a dose or changing administration routes (WHO 2015). The final section asked if medication was adjusted or the route/dose was changed if breakthrough analgesia was given frequently. The audit elicited data on healthcare professionals' monitoring, documentation, assessment and evaluation practices of CRP which provided evidence related to Healthcare professionals' decision-making processes on prescribing and administering adequate analgesia. The maximum achievable score from the audit was 22; equivalent to a 100%. Each 'yes' was scored '1' and each 'no' was scored '0'. Charts were accessed by the researcher through gatekeepers (an administrator, patients discharge officer, the wards clinical nurse managers and the palliative care nurse specialist).

Ethical approval for this study was obtained from the local hospital research ethics committee and also the Faculty of Health Sciences Research Ethics Committee in the College following written application.

Data Analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS, version 19) SPSS. Descriptive statistics were used in order to obtain frequencies and nominal data. These data were derived from the KASRP and the audit before and after the ALP. An independent samples t-test was used in this study to compare mean scores on the KASRP and the audit tool before and after the ALP. One-way analysis of variance (ANOVA) was used to establish the relationship between the knowledge/attitude scores and the healthcare professionals' demographics.

Internal consistency of the KASRP for this study was measured using Cronbach's alpha was > 0.71 . The internal consistency reliability of the audit tool for this study, using Cronbach's alpha was >0.87 .

Results

Knowledge and Attitudes: Ninety questionnaires were completed and returned prior to the ALP, yielding a response rate of 52.9%. Demographic details are provided in table 2.

Put Table 2 here: Demographic details

The overall total scores from the two phases of the KASRP analysis did not show any significant difference between the groups of healthcare professionals in terms of job title.

There was, however, a significant difference in the KASRP scores in relation to education programme attendance, with those who had attended a course yielding higher scores ($p = .03$).

The results of ANOVA revealed a significant difference between the groups with regards to the level of experience and education ($p < .001$), ($p = .003$) respectively (table 3). Healthcare professionals with a master's degree or certificate qualification scored higher than those with a degree or diploma qualification.

Put Table 3 here: Difference between groups with regard to experience and education

Healthcare professionals' knowledge and attitudes to CRP management, numerous deficits were identified before the ALP. However, the results revealed significant improvement in healthcare professionals' knowledge and attitudes after the ALP ($p < 0.001$). The total mean score of the KASRP increased from 22.37 (60.5%) in the pre intervention phase to 26.01 (70.3%) in the post intervention phase (table 4). According to the independent-samples t-test, there was a significant difference in scores for the pre intervention phase ($M = 22.37$, $SD = 5.06$) and post intervention phase ($M = 26.01$, $SD = 3.88$; $t(161.2) = 5.22$, $p < 0.001$, two-tailed). The magnitude of the difference in the means (mean difference = 3.65, 95% CI: 2.27 to 5.03) demonstrated a large effect (eta squared = .14) (table 4).

Put table 4 here

Post intervention, re-audit of healthcare professionals' assessment and documentation practices regarding CRP management showed that the total mean score increased from 7.27 (33%) in the pre intervention phase to 16.1 (73%) in the post intervention phase (table 5).

Put table 5 here: Pre and post audit scores

Differences between healthcare professionals' documentation practices pertaining to CRP management before and after the ALP were analysed using an independent-samples t-test. Results showed improved documentation practices after the intervention which were highly significant ($p < 0.001$). The magnitude of the difference in the means showed a very large effect (eta squared = .70). Sub group analysis using an independent samples t-test showed that both doctors and nurses scored significantly better after the ALP compared with beforehand. The doctors' mean score increased from 1.67 before to 4.10 after the ALP

($p < 0.001$). Likewise, the nurses' mean score increased from 5.6 before to 12 after the ALP ($p < 0.001$). The magnitude of the difference in the means demonstrated a large effect for both doctors and nurses (Tables 6).

Put table 6 here: Audit independent samples T test; nurses/nurse managers and doctors scores.

Discussion

The findings of this study indicate that action learning is effective for improving cancer related pain management in acute medical and surgical healthcare settings. The results show significant effectiveness of the ALP on the healthcare professionals' knowledge and attitudes in the acute healthcare settings with a subsequent improvement in CRP management. The study revealed a significant increase of the overall mean scores of healthcare professionals' documentation from 33% before to 73% ($p < .001$) after the ALP. The audit identified prevalent deficits pre intervention in healthcare professionals' documentation practices in the assessment and monitoring of CRP and although gaps remained, post intervention, the findings revealed that there was a significant improvement of healthcare professionals' documentation scores of CRP.

Widespread deficits in healthcare professionals' assessment of CRP were evident in this study. Respondents were not successful in giving the correct pain score on the pain assessment scale according to the subjective and objective indicators in the case vignettes. Prevalent misconceptions were also evident regarding the untoward effects of opioid administration. In addition, erroneous beliefs and gaps in the healthcare professionals' knowledge were identified regarding the likelihood of respiratory depression and opioid addiction. Congruent with findings reported by Matthews and Malcolm (2007) and Yildirim *et al.* (2008), almost 37% erroneously did not believe that respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.

This study revealed that many advantages of the ALPs in terms of their feasibility. These included its practical nature, cost effectiveness, the requirement of minimal resources and time, and a convenient and achievable approach. All groups met in a room located on the ward; meetings took place at lunchtime with refreshments provided; participants set the agenda and agreed solutions/actions to problems that were identified, therefore, there were no additional costs, other than refreshments, to this practice initiative.

Action learning is seen as one of the most effective means to develop management and leadership skills (Dilworth 1998, Weinstein 1999, Marquardt 2004). Haith and Whittingham (2012) place great emphasis on using action learning ALPs as a supportive means to empower healthcare professionals in today's challenging healthcare settings, and also in clinical learning and educational environments (Haith and Whittingham 2012). This study supports Fulmer and Wagner (1999) findings in that ALP's deliver a learning experience that is concerned with the organisation's and learners' development with the participants solving actual real life problems, and the feedback the participants receive, in terms of colleagues and also improvements in the management of CRP fosters this development. However, although improvements were seen post intervention in this study, it is clear that continuous interprofessional staff education and development needs to be supported in order to maintain high standards of practice. In order to ensure that this remains high on the agenda and support remains consistent, it should be contained within the organisations quality improvement strategy.

According to Mumford (1991), the process of action learning empowers participants by encouraging them to take charge of their own problems. In this study, healthcare professionals were the actors who took ownership not only in identifying their own concerns surrounding CRP management but also addressing these issues and finding solutions for it through their participation in the ALP. In this study healthcare professionals identified problems and solutions related to improving CRP management which were perceived as clinically important to them. This was achieved through the process of action learning in a

convenient environment and also parameters were established by each group in relation to mutual respect, trust and confidential issues. The respect and guidance of the facilitator facilitated open interprofessional discussions without the influence of any professional or organisational boundaries. This view is supported in a study by Rivas and Murray (2010) where participants of an ALP were found to utilise teamwork and mutual respect skills during the group meetings and also during implementation of agreed solutions and actions towards improving practice in their workplace.

Raelin (1997) emphasises that action learning ALPs are used by people working within complex organisations, addressing multi-layered situations with no obvious, easily applied solutions. Despite the different disciplines among healthcare professionals in this study, the issue of CRP management was viewed as a professional issue with an interprofessional clinical focus. The fact that the action learning ALPs involved participants from different disciplines resulted in breaking down any complicated issue that was related to CRP management or assessment. The fact that CRP management was a central issue to the workplace of all healthcare professionals from different disciplines created a collaborative space where all members had the same task but with different ways of finding a solution depending on each of the members' backgrounds.

Limitations

Two main limitations prompt cautious interpretation of study findings. Firstly, as there was no oncology facility on the study site, only a limited number of patients with cancer were admitted to the medical and surgical wards during the one week period for each audit. During that period, all charts of patients with a cancer diagnosis were sampled for each of the two audits yielding a sample size of only 15. This precluded the researcher from making inferences about the whole population of cancer patients. The second limitation in this study was that none of the pharmacists chose to respond to the survey at any of the phases nor to participate in the programme owing to severe staff shortages, maternity and sick leave. Due

to their vital role in evaluating analgesics prescribing, which is an essential element of CRP management, pharmacists participation in the study would have strengthened the findings and added flavor to the outcomes.

Conclusion

ALPs can be a very cost effective, efficient and collegial means of effectively improving the management of CRP management in acute care settings. Healthcare organisations need to adopt action learning approaches as a key strategy in improving services for all services users and also for improving the working/learning environment for employees. Although this would be a new organisational initiative, and would require staff support and training, the results of this study suggest that it would be very beneficial for staff and service development. Organisations also need to assist healthcare professionals in creating a culture for identifying and adapting local interdisciplinary collaborative strategies for improving patient services in their workplace.

The outcomes of this study are consistent with many others that reported positive outcomes from using action learning at individual, team and organisational levels. The positive outcomes from this study have implications that extended beyond the individuals and the team to the entire organisation. Collaborative approaches, problem solving strategies, confidence and empowerment gained through ALPs can contribute in team building and interprofessional working.

Implementing an action-learning programme in the acute healthcare setting is a far more cost-effective means of education as opposed to traditional education programmes requiring study leave and financial backing. As evident in this study, action learning can be an important vehicle for transforming an organisation's culture by helping to break down silos, create synergy, and encourage collaboration (Dilworth 1998, Weinstein 1999). Learning

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organisations have significant competitive advantages because they learn more quickly how to capture knowledge and convert it into products, services, and profits (Weinstein 1999, Marquardt 2004).

Organisational success is dependent on developing, improving, establishing and increasing the knowledge of people to be the best. One of the major roles that should be performed by organisations is employee development. Collaboratively solving problems and learning are essential along with facilitating time to reflect on what works well in organisations. Action learning encompasses all of these characteristics, learning, reflecting and problem solving.

This study has highlighted the benefits of interprofessional teamwork within healthcare settings in contributing to effective and successful improvements in patient care and service delivery (Moroney and Knowles 2006, Government of Ireland 2008). Furthermore, McCabe (2010) highlights the importance of skilful and positive interpersonal communication in addition to efficient organisational communication systems in order for healthcare managers to develop, implement, and evaluate strategies for the efficient and economical success of organisational goals. Therefore, organisations must assist healthcare professionals in creating a culture for identifying and adapting local interdisciplinary collaborative strategies such as action learning, in their workplace.

Relevance to Clinical Practice

Current evidence suggests that education programs developed specifically to help healthcare professionals develop their knowledge and practice in relation to cancer related pain are not effective. In this study, action learning ALPs proved very effective in improving the management of cancer related pain by healthcare professionals. The process was collaborative, outcomes translated directly into practice with immediate effect for patients with CRP and it was a flexible, cost effective intervention for supporting interprofessional working and learning.

Contributions

Study design: MK, CMcC, SP; Data collection and analysis: MK; Manuscript preparation: MK, CMcC.

Conflict of interest

The author(s) declare that they have no conflict of interest.

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Table 1 Identified issues during the action learning sets with examples of actions taken

CRP management related issue	Actions taken
<i>Clinical issues</i>	
Underestimating untreated CRP	<ul style="list-style-type: none"> • Held collaborative ward meetings utilising examples from the literature to increase healthcare professionals' awareness of implications/complications of untreated pain
Pharmacological knowledge deficit	<ul style="list-style-type: none"> • Commenced continuous ward-based short educational sessions during hand over time. • Devised and displayed a poster of the World Health Organisation (WHO) Pain Analgesic Ladder' in the ward clinical room. • Pharmacological education leaflets made available in staff tea room with international and national references.
The primacy given to terminal care over the management of CRP in patients with different stages of the disease.	<ul style="list-style-type: none"> • Team consultants were invited to participate in correcting this misconception at interdisciplinary level. <p>Ward nurse managers to:</p> <ul style="list-style-type: none"> • Highlight the fact that pain management is an important core key to palliative care, according to national and international guidelines. • Increased awareness of the high prevalence of pain amongst advanced stages of cancer using recent international references/examples/case studies • Team registrars gave short presentations during hand over times raising awareness that a palliative approach to care should be practised by all healthcare professionals and is not just the remit of the specialist palliative care team.
Significant fear of opioid addiction among doctors inhibit prescribing leading to fear of prescribing and reluctance to administer strong analgesia. Reluctance to prescribe (doctors) and administer opioids (nurses)	<ul style="list-style-type: none"> • Education provision for doctors on the safe use and side effects of opioids through a medical registrar volunteer who has completed pain management course. • Ongoing presentations of recent scenarios and case studies with feedback. • Literature discussion and made available in staff room • Devise a laminated poster of international guidelines for safe and effective use of most frequently used opioids for display in staff tea room and seminar room.
Lack of clarity around patients' perception and judgment of pain versus healthcare professionals' judgment Lack of defined roles and responsibilities among healthcare professionals.	<ul style="list-style-type: none"> • Awareness raising on the issue of CRP management through teamwork • Highlighted the importance of documenting pain subjectively according to the pain assessment tools utilised.
<i>Miscommunications issues</i>	

Ineffective nursing handover	<ul style="list-style-type: none"> • Highlighting CRP management issues on the daily print out in nursing hand over sheet. • Weekly allocation of a staff nurse as a pain management representative. • The representative nurse will liaise with medical team to feed-back related challenges/issues of the week. • The Representative Nurse disseminates findings of any related audit results. • Representative Nurse keeps ward managers and team registrars updated of any latest issues/developments.
Ineffective medical handover with regard to management out of hours.	<ul style="list-style-type: none"> • Increase awareness of the importance of proper hand over among doctors. • Continuous updates and dialogue between teams/consultants with recent issues. • Introducing medical teams' members to the nurse representative on each ward. • Participant Registrars of the action learning sets act as representatives of all other medical and surgical teams on the current issue. • Ensure junior doctors escalate the level of care to senior doctors when dealing with clinical challenges regarding CRP management to ensure safety and mitigate risks.
The gap in multidisciplinary communication.	<ul style="list-style-type: none"> • Introducing a weekly multidisciplinary round including team consultant/registers and ward manager to discuss feedback and reflect on any positive or negative incidences. • Raise awareness of the critical importance of effective communication and teamwork so as to avoid adverse effects and sentinel events. • Post call handover is performed at registrar level or a senior doctor. • Avoiding peak time of the shift to handover. • Involving team consultants in monthly meetings in order to update them on issues pertaining to CRP management.
Ineffective documentation of pain assessment.	<p>Raise awareness amongst healthcare professionals that inadequate communication and documentation can be a major risk to patient safety</p> <ul style="list-style-type: none"> • Performing frequent ward level audits on documentation practices with frequent updates on results of audits carried out by ward managers to all staff. • Literature review; international documentation practices standards
Untimely and lack of referral criteria to palliative care team.	<ul style="list-style-type: none"> • Highlight the importance of early and prompt referrals to palliative care among team consultants and registrars. • Ensure referral forms are in accessible locations at ward level. • Holding meetings of teams' registrars with palliative care team in order to discuss any commonly raised issues.
Changing patient's location on the ward in the middle of the shift resulting in care taken over by different medical or nursing team (i.e. transferring the dying patient to a single room).	<ul style="list-style-type: none"> • Emphasising the importance of proper handover and continuity of care. • Allocating same nurse/s with cancer patient during the week and even when ward level (internal) transfer has been performed during the shift. • Provide reliable references on best practice and pain management as a vital part of palliative care guidelines.
Organisational issues	

<p>Inappropriate place/size for pain assessment tool (NRS) on patient's observations sheet.</p>	<ul style="list-style-type: none"> • Raise awareness among staff of the inappropriate size of the pain assessment tool on current documentation. • Discussing this issue with practice development and emphasising the need to re design/resize the tool. • Suggesting replacing or moving assessment tool to front page of instead of back page. • A resource folder of the recent WHO guidelines on pain management was developed and made available in the seminar rooms on wards
<p>Issues of competency, lack of experience and misconceptions regarding opioids among junior doctors and nurses in relation to CRP management.</p>	<ul style="list-style-type: none"> • Frequent registrar-led education sessions for junior doctors on CRP management. • Allocating senior nursing staff with adequate experience to the particular patient • Registrars from each team delivered short, introductory education sessions to other doctors regarding the physiology and theories of pain including the nature, origin, transmission of pain, and differences between acute, chronic and breakthrough pain
<p>Staff shortages</p>	<ul style="list-style-type: none"> • Management appreciating the time consuming procedure of administering opioids requiring 2 registered nurses.
<p>Lack of awareness on behalf of the majority of healthcare professionals of the facility to contact the local hospice during 'out of hours' periods to get expert advice on any CRP management related enquiry.</p>	<ul style="list-style-type: none"> • Devised a one page laminated poster with guidelines of when and how to contact hospice during 'out of hours' periods. • Emphasised the need for contacting the hospice during out of service hours as a part of effective pain management protocol.

Table 2: Demographic details

	Pre (n=90)	Post (n=74)
Level of Education:		
Certificate	4.4% (n=4)	5.4% (n=4)
Diploma	12.2% (n=11)	10.8% (n=8)
Degree	63.3% (n=57)	67.6% (n=50)
Postgraduate Diploma	18.9% (n=17)	14.9% (n=11)
Masters Degree	1.1% (n=1)	1.4% (n=1)
Years of Nursing Experience:		
<3 years	10.0% (n=9)	10.8% (n=8)
3-7 years	22.2% (n=20)	29.7% (n=22)
8-12 years	32.2% (n=29)	29.7% (n=22)
>12 years	35.6% (n=32)	29.7% (n=22)
Title/Grade:		
Doctor	28.9% (n=26)	29.7% (n=22)
Nurse Manager	6.7% (n=6)	8.1% (n=6)
Staff Nurse	64.4% (n=58)	62.2% (n=46)
Pain management Education		
Attended course	11.1% (n=10)	10.8% (n=8)
Did not attend course	88.9% (n=80)	89.2% (n=66)

Table 3 Difference between groups with regard to experience and education

Years of experience	df	Mean Square	F	Sig. (p value)
Between groups	3	138.3	6.3	<i>p</i> <.001
Within groups	160	22.0		
Total	163			
Level of education	df	Mean Square	F	Sig. (p value)
Between groups	4	94.5	4.2	.003
Within groups	159	22.3		
Total	163			

Table 4: KASRP scores against pre and post phases

KASRP items against pre and post phases	F	Sig	t	df	Sig (2-tailed)	MD	95% CI
Equal Variances assumed	8.493	.004	5.083	162	.000	.364685	2.23018 to 5.06351
Equal variances not assumed			5.215	161.223	.000	3.64685	2.26598 to 5.02771

Table 5: Pre and post audit scores

Audit Item	pre	Post
	Percentage % and (n)	Percentage % and (n)
1. Patient screened for pain using appropriate tool on:		
• Admission	60.0% (9)	73.3% (11)
• During nursing notes –last 24 hrs	53.3% (8)	73.3% (11)
• Nursing care plan	66.7% (10)	60.0% (9)
• Medical team progress notes	20% (3)	60.0% (9)
2. There is a care plan related to pain management	73.3% (11)	100% (15)
3. If pain indicated in screening process,		

<p>comprehensive pain assessment that includes evaluation of:</p> <ul style="list-style-type: none"> • Pain intensity • Type of onset • Location • Radiation • Duration • Quality • Frequency • Aggravating and relieving factors • Emotional response 	<p>66.7% (10)</p> <p>13.3% (2)</p> <p>33.3% (5)</p> <p>6.7% (1)</p> <p>6.7% (1)</p> <p>6.7% (1)</p> <p>6.7% (1)</p> <p>6.7% (1)</p> <p>6.7% (1)</p>	<p>100% (15)</p> <p>93.3% (14)</p> <p>93.3% (14)</p> <p>86.7% (13)</p> <p>66.7% (10)</p> <p>13.3% (2)</p> <p>20.0% (3)</p> <p>53.3% (8)</p> <p>60.0% (9)</p>
<p>4. Documented descriptions of pain other than objective ratings for the previous 24 hrs. If present specify in both:</p> <ul style="list-style-type: none"> • Physicians' progress notes • Nursing notes 	<p>46.7% (7)</p> <p>46.7% (7)</p>	<p>73.3% (11)</p> <p>80.0% (12)</p>
<p>5. If pain present, patient received pain treatment appropriate for cause, type and intensity based on WHO Three-step analgesia ladder.</p>	<p>40.0% (6)</p>	<p>86.7% (13)</p>

Table 6. Audit independent samples T test; nurses/nurse managers and doctors scores.

Audit scores	T value	P. (2-tailed)	mean difference	95% Confidence Interval of the difference	eta squared	magnitude of the difference in the means (eta squared)
Total	8.04	<0.001	8.80	6.56 to 11.04	0.70	Large
Doctors	-5.01	<0.001	-2.40	-3.39 to -1.41	0.47	Large
Nurses	-8.4	<0.001	-6.40	-7.96 to -4.84	0.72	Large