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Targeting Older Patient's Pain within the Acute Care Setting: Development and Organisational Aspects of Health Innovations

Peter Summons
The University of Newcastle

Isabel Higgins
The University of Newcastle

Caroline Phelan
Hunter New England Health

Fiona Hodson
Hunter New England Health

Jeanene Douglas
Hunter New England Health

See next page for additional authors

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Authors

Peter Summons, Isabel Higgins, Caroline Phelan, Fiona Hodson, Jeanene Douglas, Linda Ritchard, Pauline Dobson, Deborah Bruce, and Glody Mabbott

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Summons, P.F[1]., Higgins, I[2]., Phelan, C[3]., Hodson, F[3]., Douglas, J[3]., Ritchards, L[3]., Dobson P[3]., Bruce, D[3]., Mabbott, G[3].

[1]School of Design, Communication and Information Technology
[2]School of Nursing & Midwifery
The University of Newcastle, NSW, Australia

[3]Hunter New England Health, NSW, Australia

Abstract

This paper reports on the facilitators and barriers to the development and implementation of a pilot study undertaken in collaboration by clinicians from an Australian Area Health Service and academics from The University of Newcastle. It includes a description of a computerised clinical chart audit tool that may be developed to automate audits in the future. The pilot study investigated the efficacy of an educational promotion, termed the "Targeting Pain" campaign, to facilitate the detection and management of pain in older patients in an acute care ward of a large tertiary hospital.

Keywords

Pain, Older Patient, Clinical Education, Innovation Diffusion, Clinical Audit..

INTRODUCTION

A pilot research study was funded by the Nursing and Midwifery Office (NAMO) of NSW Health to advance the professional development of clinical nurses and assist in increasing their research capacity. This pilot project was specifically oriented to the practices of pain detection in older patients, who were over 65 years of age, and concentrated on a small number of patients (N=20) in an acute care setting, a medical/surgical ward in a large tertiary referral hospital.

The project developed a new, evidence-based, pain assessment and management algorithm and associated pain assessment tools and resources specifically for use in pain management of the older person. These were presented to ward staff through a multi-disciplinary educational initiative, referred to as the "Targeting Pain" education campaign (Phelan et al, 2010). The project team comprised clinical nursing staff and research academics engaged in a partnership program between the Hunter and New England Area Health Service and The University of Newcastle. The Targeting Pain study evaluated a multidisciplinary education program, focused on the detection and treatment of pain in older patients in the ward. It was directed at ward staff (medical, nursing, and allied health staff on the acute care ward), patients and their visitors. Its aim was to evaluate whether a multidisciplinary education program, utilizing traditional in-service seminars and incorporating innovative visual aids to promote the educational campaign, improved the detection and management of pain in the older patients.

This paper discusses the barriers and the contributors to the success of the study, both to the development of the research and its implementation, and how these may be addressed in future clinical education initiatives. It includes a description of a computerised clinical chart audit tool that may be developed to automate audits in the future. A Study Background section provides the motivation for the study. The study methods and the tools developed and used in the study are then discussed in the Methods and Tools section in connection with the theoretical framework of Diffusion of Innovations (Rogers, 2003). A discussion of the facilitators and barriers to the research development and the implementation is then given. Finally, the paper presents its conclusions and insights for future research.

STUDY BACKGROUND

Epidemiological studies confirm that hospitalised patients continue to experience unacceptable levels of pain, no matter what their age, and that assessment of their pain by healthcare staff is rarely documented (Potter et al, 2003). Pain may hinder recovery and prolong hospitalization and is associated with depression, anxiety, cognitive impairment, decreased appetite, weight loss, as well as causing disturbances to sleep, gait, general

activity, mood and relationships with other people. (NICS, 2003; Chodosh et al, 2001). The barriers to effective detection of pain can stem from many sources, including the patient, clinical staff, and organisational practices. Attitudes of health staff and their knowledge and misconceptions about tolerance, addictions and the side effects of opioids have a significant impact on effective treatment (NICS, 2003). The literature indicates that nurses do not ask their patients about pain and that they also do not re-asses their patient's pain after analgesia has been given (Brown and McCormack 2005; Dihle et al, 2006; Bucknall et al, 2007). The literature indicates that health care professionals outside specialist pain services do not assess or document pain (NICS, 2003) and that this may be a contributor to poor pain management (Idval and Ehrenberg, 2002). Also, many health care organisations fail to make pain management part of their core business (Campbell et al, 2003; NICS, 2003).

Ultimately, pain may hinder recovery and prolong treatment time; for example unrelieved pain is associated with depression, anxiety, cognitive impairment, decreased appetite, weight loss, and adversely affects sleep, gait, general activity, mood and relationships with other people (Chodosh et al, 2001). The International Association for the Study of Pain (IASP) argue that health professionals everywhere should assess older people for pain and that there is an urgent need for better professional education programs (IASP, 2006).

RESEARCH STUDY METHODS AND TOOLS

The pilot study followed an approach common to other studies that evaluate the implementation of evidence based practice (EBP) innovations (Titler, 2007):
    1. Select the topic
    2. Find and critique the Evidence
    3. Adapt the evidence for use in a specific practice environment
    4. Implement the EBP
    5. Evaluate the effects on patient care processes and outcomes

Evidence based algorithms of pain management and a new assessment tool were developed and modified for use on older patients in acute care within a medical/surgical ward of the John Hunter Hospital.

An educational intervention, consisting of an intensive educational series of in-service seminars, was provided to all ward staff. The educational content focused on a pain management algorithm and pain assessment tools specifically developed for the detection and management of pain in the older person in an acute care setting. Following the educational campaign, the pain assessment tools and pain algorithm were made available at all patient bedsides in the ward. The education campaign was supplemented and enhanced with promotional media (ward posters and staff badges).

An audit of patient's (>65years) notes (N=20) was conducted in the ward before and six weeks after the education campaign. A computerised tool was developed to record details from a patient's clinical chart at intervals pre-admission, at admission and within a 24 hour window after admission. It provided reports that were used to audit the progress of patients in terms of their pain assessment documentation by staff and the patient's medication and pain relief. The tool was specifically designed for use in the study and was later extended into a generalised pain audit tool as, even though there are computerised audit tools available, such as the Acute Postoperative Pain Drug Use Evaluation (APOP e-DUE) audit tool, there was no generic pain audit tool available for acute care wards. The extended generic tool forms a superset of the APOP tool but provides more detailed data capture and reporting.

Patients (N=20) were surveyed and interviewed (N=4) after the education campaign. A focus group of ward health staff (N=3) was conducted to discern their perceptions of the educational campaign and the implementation of the algorithms.

The use of visual aides, or reminders, to clinicians may have a greater impact on changing practice than traditional interventions such as education alone (Grimshaw et al, 2002). Many studies in the area use multifaceted programs with a number of interventions combined to produce the desired outcome of changing clinician's behaviour and improving care for patients. To enhance the awareness of pain as a priority issue, two visual tools were implemented as part of a study assessing pain management in the older person in the acute setting: staff badges and ward signage (a poster). This was based on a successful clinical educational campaign to promote clinical hand washing processes (Dept of Health, 2007) that used posters and *"It's OK to ask"* badges as promotional materials.

Visual Aides: - Ward Signage and Staff Badges

It has been demonstrated that posters placed at crucial points can assist to ensure that a targeted message can get through to clinical staff (WHO, 2006). Effective posters are large and bold. In a clinical area posters need to compete with their surroundings, by being eye-catching, using simple outlines and strong colours (V&A, 2010). As they are usually viewed from a distance, they must be easily understood. The poster was designed around

existing road safety signage utilised by NSW Police to increase awareness of one particular aspect of safety. In targeting one issue at a time, all resources and effort can be directed to achieve a clear goal of behaviour change in a specified time-frame. The poster was an adjunct to the education, pain assessment & management tools, as a static reminder. To have the greatest impact, the posters needed high visibility to be seen and acknowledged by staff, patients and visitors. The poster used is shown in Figure 1.

Signage corresponded to ones used in common police campaigns targeting social conditions such as speeding, drink-driving etc. The use of a familiar concept was based on the design principle of perceived affordance (Norman, 1988), identifying bad driving practices with the continuation of patient pain. It was hoped that there would be a positive transfer effect of the bad driving habits targeted by police campaigns, to the concept that pain taken seriously by the staff and that it was an undesirable thing that would be focused on. This was intended to reinforce in the mental models of staff, patients and also the patient's visitors, that pain was something that was important and that should not be tolerated.

Staff badges with a logo of "Pain? – Let me know" emphasized the theme that staff were concerned about patient pain and that patients should communicate their pain to staff. The badges were intended to personalize the theme of the educational intervention campaign for individual ward staff. The badges initially used for the Targeting Pain campaign are shown in Figure 1. These badges have been re-designed by Bachelor of Design students who participated in a competition judged by all hospital staff.
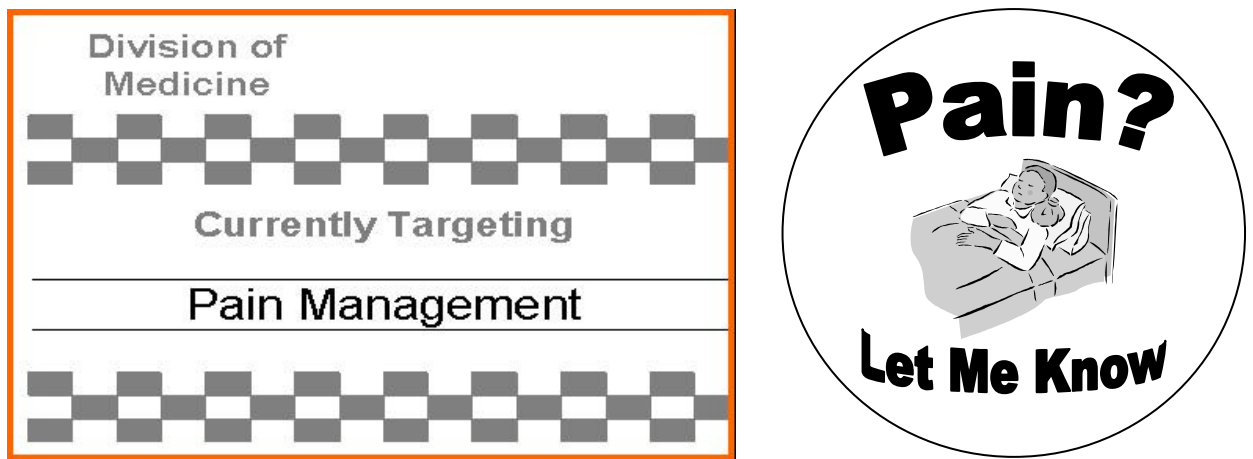

Figure 1 – Ward Signage and Staff Badges

IT Resources: The Clinical Chart Audit Tool

A computerised audit tool, comprising Visual Basic for Application (VBA) programs and a Microsoft Access database, was developed and used to record patient histories, medications and treatments. These were stored in a Microsoft Access database for comparison and reporting of one of the study's objectives: to evaluate the extent of practice change using a pre and post audit survey and to help quantitative evaluation of the research question "Will multidisciplinary pain education improve the detection and management of pain in older people?" Whilst the innovation being assessed was the education campaign, the tool provided an easy means of reporting and also enabled benchmarking of patient medication to evaluate changes in pharmacological pain management strategies. The tool provided an interface for a registered nurse to enter data from a patient's clinical record into the Microsoft Access database. The VBA programs interacted with the database to provide reports and comparisons on patient data.

The clinical chart audit included data regarding the patient's:
• Demographic details (patient's age, gender);
• Past (Pre-Admission) medical history;
• Admission/Presenting medical details (their initial diagnosis and the reason for their admission);
• Ongoing medical history within a 24-hour window of the chart being used in the audit.

The audit tool was used to record details of the patient's pre-admission, admission and ongoing medical history from the hardcopy data of the patient's clinical chart. It included specific details such as: whether a pain assessment had been documented; whether analgesics had been given and, if so, their nature and type; whether there was documented evidence of nurse initiated/non pharmacological strategies for pain relief; the efficacy of

analgesia and/or non pharmacological approaches used; and whether any complications were documented in relation to unrelieved pain. Some example screens for data entry are shown in Figure 2 and screens recording staff documentation of pain assessment for a patient's admission and ongoing medical history are shown in Figure 3 (a similar screen was used to record any documentation of a patient's pre-admission pain assessment).

The audit tool was used to record the histories of 20 patient's charts but, unfortunately, there was no automated history system and the clinical charts contained only manually entered data. The audits were conducted by two members of the research team who interpreted the clinical chart data and entered it into the audit tool.
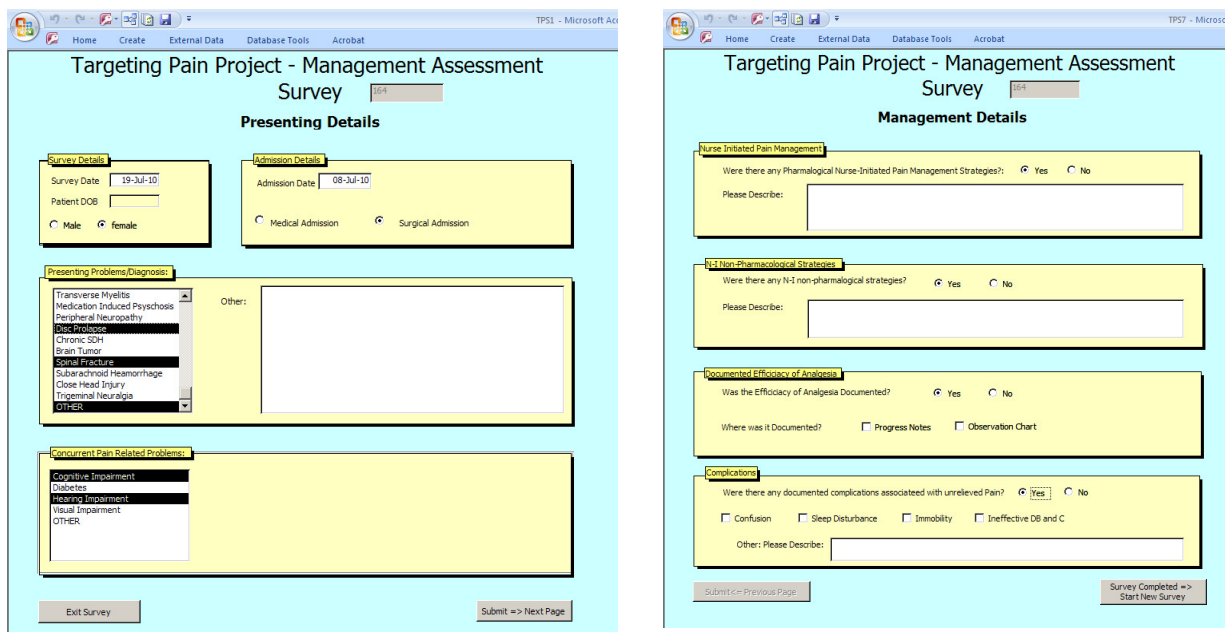

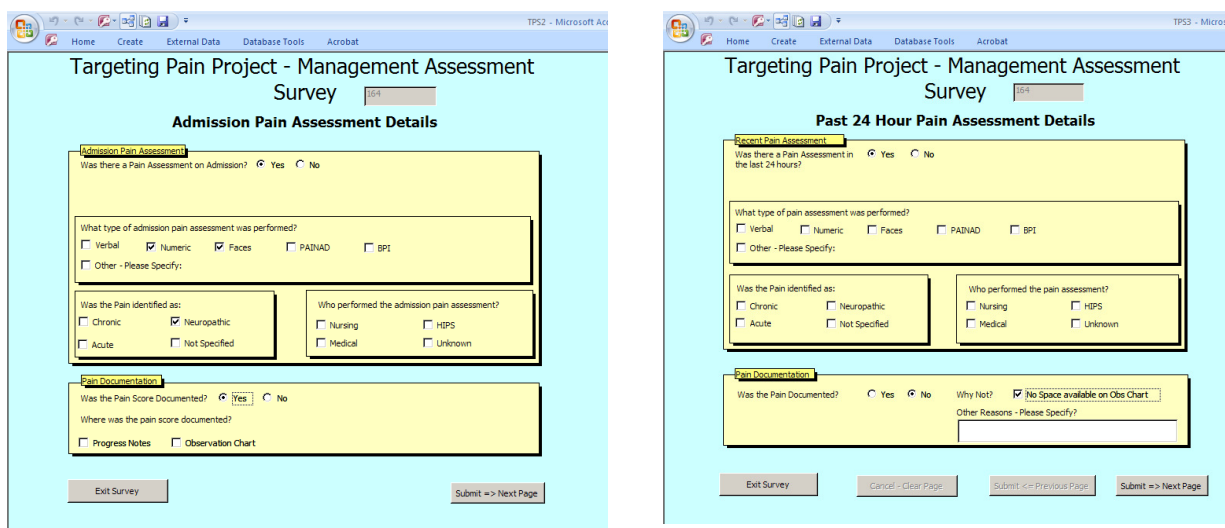Figure 2 – Example Data Entry Screens for Patient Details and Staff Management Interventions

Figure 3 – Example Screens indicating Documentation of Patient Pain Assessment by Staff

A VBA program in the audit tool, used in data entry of patient medications, was also developed to provide a facility for conversion and benchmarking of patient medication dosages to morphine equivalent doses. Patients receiving opioids commonly have their daily dose calculated to an equivalent oral morphine dose as this functions in a similar way as the US dollar or the Euro, as a common "currency" because it is a well-understood benchmark. This provided an easy mechanism for benchmarking as the manual clinical data from the charts contained many different medications that would need extensive interpretation and standardisation if the staff entering the manual chart data into the automated audit tool had to interpret these medications and then calculate equivalent dosages. Figure 4 shows example screens used by the clinicians performing the audit to enter the chart

medication and have it transformed into a standardised morphine equivalent. The first screen in the figure indicates an example of the selection of a medication, its dosage and administration route as recorded in the hardcopy of the patient's clinical chart. The second screen in Figure 4 shows the recorded medication entered into the audit tool.
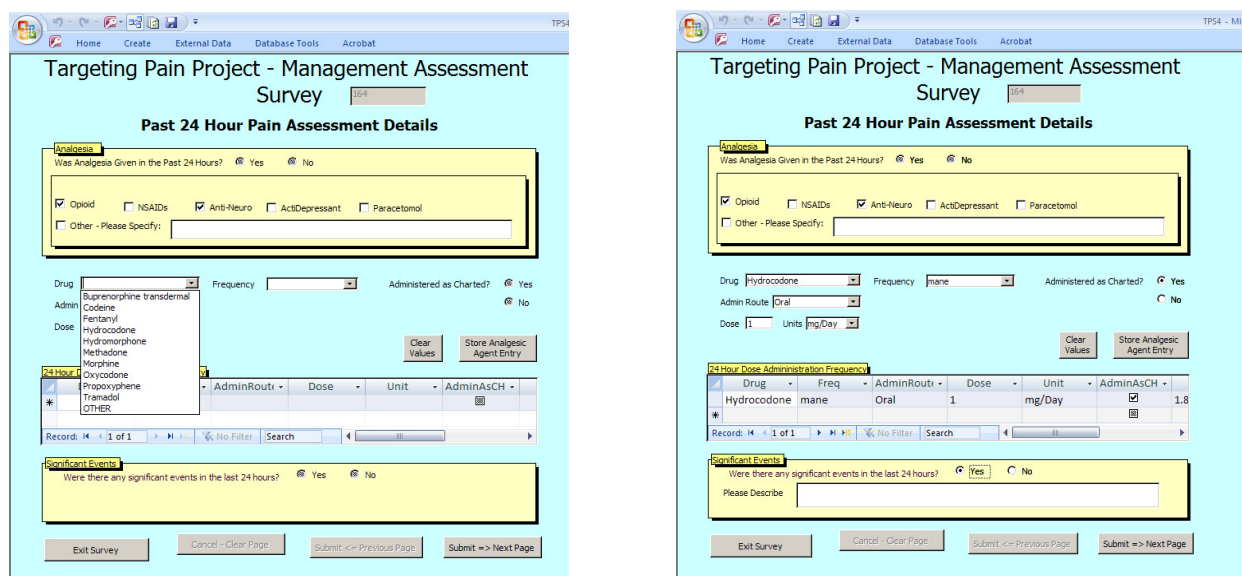

Figure 4: Example Screens for the Recording Medications and their standardised Morphine Equivalents

FACILITATORS AND BARRIERS TO DEVELOPMENT AND IMPLEMENTATION

The Diffusion of Innovation (DOI) framework (Rogers, 2003) was proposed by Everett Rogers in 1983. Roger's diffusion model has been used as a basic framework for the facilitating factors and barriers influencing change and acceptance in many clinical settings (Dooks, 2001; Sanson-Fisher, 2004; Titler, 2007; Wilcox, 2009). Diffusion is "*the process by which an innovation is communicated through certain channels over time among the members of a social system*" (Rogers, ibid, pp35). Rogers indicated five factors that would partly determine whether adoption or diffusion of a new activity will occur: relative advantage, compatibility, complexity, trialability, and observability. In relation to the adoption of new products, Rogers estimated that these five factors determine between 50-87% of the variation of the adoption of new products.

Relative advantage is the degree to which the innovation is perceived by a group of users as being better than the existing idea of method that it supersedes, measured in terms what matters to those users. *Compatibility* is the degree to which an innovation is perceived as being consistent with the values, needs and past experiences of the adopters. *Complexity* is the degree to which the innovation is perceived to be difficult to understand. *Trialability* is the degree to which the innovation may be trialled and modified. *Observability* is the degree to which the results are observable to others.

The higher the perceived relative advantage and the compatibility of the innovation, then the more likely it will be for the group to adopt it and the more rapid its adoption will be. Sanson-Fisher (2004) indicates that "*to increase the probability of adoption, the innovation must address an issue that clinicians or others perceive to be a problem*". The poor practice of pain documentation and management is well recorded in the literature. The provision of a new assessment tool and algorithm were promoted as beneficial as there was no existing pain management algorithm or assessment tool for older patients, especially those with dementia. The new assessment contained a visual assessment tool routinely used for children that would be beneficial for pain assessment in older patients who may not be able to self-report their pain. The new assessment algorithm also contained a tool for the Pain Assessment in Advanced Dementia (PAINAD). These were incorporated with the patient's bedside clinical chart.

The literature indicates mixed uptake to clinical practice guidelines (Goossens et al, 2008) by different ward staff professional groups (specialists, clinicians and nurses). Sanson-Fisher (2004) also warns also that "*if a proposed change alters the balance of power between or within professional groups in a 'negative way' the innovation may not be implemented*". It was decided to encourage participation of all health staff on the ward in the Targeting Pain study and in the development of the research method and resources.

The more simple the innovation then the more quickly it will be adopted by the group, especially for clinical procedures. However Sanson-Fisher (2004) cites *complexity* as a possible reason for the lack of quick adoption

of preventative activities, such as treating hazardous alcohol consumption and smoking. One of the factors involved is the lack of accuracy of the patient's self-report of their activities – a factor that also exists in the under-reporting of pain by older patients because of changes in physiology, impaired cognition, or cultural reasons (APS 2005; AGS 2002; Green et al 2003).

The selection of a small pilot setting was in accordance with improving the perceived acceptance of *trialability*. Roger indicated that this factor could improve the intended user's confidence in the innovation by increasing their perceptions that the evidence is correct and that the implementation of the innovation was logistically feasible. Sanson-Fisher (2004) indicated that a limited trial allows clinicians to "*explore the implementation of the procedure, its acceptability to patients, and the potential outcomes*"

Roger's *observability* factor indicates that, the more likely potential users of an innovation are to observe its results, the more likely they are to adopt it. In-service dissemination of the results of the study was carried out in the ward where the Targeting Pain project was implemented. Peer-to-Peer communication is also a vital communication channel and so presentations were given at seminars and workshops. These strategies enhanced awareness and interest around pain in the older person and resulted in greater interest and attendance at dedicated nursing workshops within the Area Health Service. However, as Sanson-Fisher (2004) points out "*Interpersonal communication is usually more effective when there is a high degree of professional resemblance between the individual attempting to introduce the innovation and the recipient. This may partly explain why clinical audits undertaken by medical practitioners are more likely to lead to adoption of a new practice than those performed by allied health staff.*" This may reinforce the literature indications that the uptake of innovations such as clinical guidelines different professional groups may require different motivations for each group.

Roger's DOI model describes five categories of adopters of innovations: innovators, early adopters, early majority, late majority and laggards. Nurses are classed as active learners and medical clinicians such as doctors and specialists are classed as reflective learners (Goosens et al, 2008). Nurses with an activist learner style enjoy new experiences but may also easily lose interest. Nurses are more likely to be in Roger's innovator or early uptake category and medical staff more likely to range between early and late majority, or even laggards depending upon the perceived measures of the five quality factors of the innovation. Goosens's (ibid) study showed that one of the most important factors for medical doctors to adopt a new guideline is the strength of its peer-review and scientific evidence such as journal publication, while the most important factors for nurses to adopt a new guideline was that it was interesting and also relevant to their work – uninteresting guidelines were found hard to implement.

The innovators for the project were mainly nurses from the specialised acute pain team of the hospital, nursing academic who were experts in the area of pain and older people and also ward staff who elected to be involved and participated as ward champion involved in the development team for the resources and implementation method chosen for the educational initiatives in the Targeting Pain project.

The activist learner style of nurses might easily have result in early interest in a research project but also a perception of research as a once-off project, with the outcome being the measurement of the immediate results without consideration of future consequences. However, hospital nursing staff involved in the project showed ongoing interest in it and also in the possibility of future implementation in other wards.

Despite extensive promotion of the education program, only 25% of nursing and allied health staff attended the education program and many Medical Officers (MO) said they were unaware of the project. This may relate to the style of learning and the importance or priority attached to pain assessment by some of the professional groups. It may also be attributed to the relative importance assigned to in-services as a means of education for new initiatives. In addition, the part-time status of the health care workforce and turnover of resident Medical Officers (MOs) may have impacted communication about the study.

The efficient use of bedside decision support aides, the assessment algorithm and assessment tool printed on the back of the patient's bedside clinical chart, proved successful initially. However administration staff inadvertently re-ordered old clinical chart forms that did not include the new algorithm or pain assessment tools. This indicates the necessity to not only consider the clinical picture when new clinical processes are trialled, but to also take into account their ongoing support in the organisation from an administrative perspective. The existing policies and procedures must be examined to ensure that any change that will occur due to the initiative will be sustained and that the old policies are not re-introduced.

At the time of the study, the organisation was experiencing difficulties with recruitment of nurses. The inability to release staff escalated workloads and delayed project timelines. Also, shifting organisational priorities and staffing problems meant that the project lead was shared. This impacted on inter-communication and project timelines significantly. The clinical workloads and priorities of care meant that it was difficult for all of the team to meet regularly. Limited communication was achieved by e-mail messages and using shared network drives to

store working documentation, however the hospital firewall policy meant that not all team members had access rights to these.

During a four week period in the study ward, the posters were displayed, and the badges were worn by more than 20 of the nursing staff. They were not worn by medical and allied health staff. Patient interviews revealed that both patients and visitors had noticed the 'Pain – Let me Know' Badges. The badges allowed for open pain dialogue, with one patient commenting "*it sort of allows you to talk about pain*". Participants attending the Staff Focus Group at the completion of the study period thought that the badges were useful. One of the staff commented "*…we got the badge and we were told to be more on the lookout for patient's pain. And that's what I did.*"

"A poster must be noticed in order to do its work" (V&A, 2010). Infection Control and Occupational Health & Safety rules restricted the size and placement of signage that was achievable during the study. Posters were only able to be displayed in one designated covered box near the entrance to the ward area. These A3 size boxes normally house infection control messages. A similar study on Hand Washing found that the behaviour of one third of participating staff was unaffected by posters (Dept of Health, 2007), however the size and location of the poster in the Targeting Pain project impacted significantly on its visibility and hence on its effectiveness as none of the staff attending the post implementation focus group could recall the posters.

Several suggestions were offered by the staff for alternative approaches to the education process and improved signage opportunities. One possibility is to use screen-savers to replace the posters as in similar studies (V&A, 2010). Computer wallpaper backgrounds could highlight the various Targeting focuses and set to change monthly or weekly to reflect a focus on specific clinical aspects.

While this study found that limited signage is not a useful tool to highlight an education message, staff badges were found to be noticed by patients, visitors and staff, which enabled an increase focus on pain management during the study period.

The literature identifies factors such as lack of; time, adequate funding or resources, interest in research, organisational and research support, knowledge, skills and rewards (Darbyshire, 2008; Roxburgh, 2006; Tsai, 2000). These were factors that may have impinged on this project also; however the results of the study indicated that the initiative had a positive effect on patient outcomes. Fifty per cent of the patients surveyed received information about pain management. Seventy per cent of patients were satisfied with their pain management at after the initiative. The Targeting Pain study resulted in staff practice change and the results (Phelan et al, 2010) are shown in Figure 5.
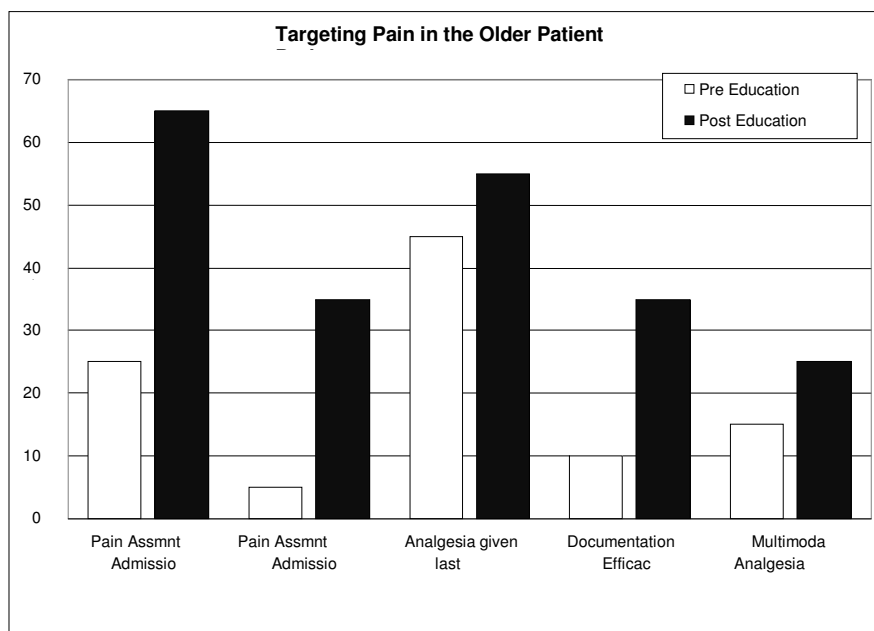

Figure 5 – Results of Staff Practice Change from the Targeting Pain Initiative

The study found that the educational initiative had a positive influence on patient's pain management and its documentation by staff. There was an increase in:
- staff pain assessment, in particular by nurses, recorded in progress notes and the observations charts (where space was provided on the clinical observation chart);

- the use of analgesics, in particular paracetamol, and also its efficacy was documented on the clinical charts.

However, there was no change in non pharmacological approaches to pain management for the older person, or in documentation related to pain in Medical or Allied Health notes. Older people have strategies that they use to manage their pain, such as distraction by listening to the radio or watching TV that were not available to all in the ward. The lack of change in non pharmacological approaches to pain management could be attributed to hospital policies restricting the use of some of a patient's normal non pharmacological pain relief mechanisms, such as heat packs, and also the lack of attendance at the education program by these groups)..

DISCUSSION

One of the suggestions by staff was for alternative approaches to the education program, including the use of self directed learning packages and education days, rather than ward in-services. The literature and the Targeting Pain study results support that different professional groups have different priorities and mechanisms for acceptance. While it is difficult to say from the literature that any one intervention is better than another, it certainly can be established that traditional education programs only have only a minor effect on outcomes (Grol and Grimshaw, 2003; Paley et al, 2007). It is imperative that, when planning any new health initiative, that the most effective and accepted mechanisms for each group of health professionals need to be identified and that the use of traditional organisational education methods, such as formal in-services, may not be the most effective way of disseminating new knowledge. It needs to be remembered that alternative communication paths may have resource and financial restrictions or overheads. Involvement from all professional clinical groups is therefore an important factor in promoting ownership and acceptance of a new innovation.

Involvement in the development of new initiatives must be extended to administrative staff to ensure that any existing policies and procedures that may be affected by an innovation can be maintained and will not be inadvertently re-introduced. This has advantages in knowledge retention as administrative staff are usually employed for a longer-term than rotating or casual clinical staff and so the group knowledge of the central theme will be sustained. Pre-recorded CD's or DVD's of the educational material and instructional videos for the tools could be prepared and utilised by administrative staff for clinical staff inductions, or refresher training.

The use of Change Champions was seen as a positive motivator for the implementation of the project and also for the ongoing interest of ward personnel. However, the turnover of staff involved in the project setting indicates that the recruitment process may need to be extended throughout the implementation of a larger project to account for part time workers and planned roster changes. It is also important that consideration be given to the time release of key staff from clinical workload to facilitate project completion within a reasonable timeframe.

Personalised tokens, such as the staff pain badges, proved popular as a reinforcer of the educational theme. Involvement of personnel in the development of such resources can be a way of advertising the educational campaign. For instance, the staff pain badges were redesigned to a more appealing theme through a competition involving university undergraduate design students and the competition involved the attention of the entire hospital staff who acted as judges on the designs.

The manual nature of the clinical charts hampered efficient capture of data by the audit tool. If electronic bedside charts became available in the future then a fully automated audit would be possible. This is a project that is currently being worked on for residential care settings where automated patient care systems are in operation. This is not likely to occur in the near future in acute care settings due to the costs involved in the infrastructure and maintenance. However, the computerised audit tool developed for the study and generalised to a wider range of acute care pain monitoring, provided an easy method of benchmarking and reporting patient pain management. The audit tool was redesigned to be a generic pain audit tool for acute care settings. The redesigned tool is written in Visual Basic .NET 2008 with a Microsoft SQL Server 2005 backend database.

CONCLUSIONS AND FUTURE RESEARCH

This paper has indicated the factors that may influence the acceptance of an educational innovation in older patient's pain assessment and management in an acute care setting. In this study we found that limited signage is not a useful tool to highlight an education message. Badges were noted by patients, visitors and staff, which enabled an increase focus on pain management during the study period. Several suggestions were also offered by the staff for alternative approaches to the education process replacing or in addition to the traditional in-service seminars.

Unrecognised and untreated pain in older people is a widespread and serious problem in the health community, both in the acute care and in residential care settings. The barriers to the effective detection of pain in the older person stem from the older person themselves, the health care workers and the health care organisation. Education campaigns designed to promote effective detection, treatment and ongoing management of pain in the older person need to consider all of these aspects.

With Australia's increasingly older population, effective treatment of pain is imperative as it can reduce length of stay in hospitals and the adverse events of hospitalisation, such as falls and functional decline associated with immobility. The development of effective pain management guidelines for staff, that are capable of being standardised for efficient implementation and dissemination across health organisations, coupled with effective staff education, assessment and ongoing training for all levels of staff, is one way of achieving this. The development and implementation of a automated clinical chart audit tool was shown to enable easy standardisation of medications for benchmarking and auditing ward practice.

The study found that different health care workers, such as different professional groups and different levels of expertise of staff, may play different roles, have different goals and need different levels of direction and explanation from pain management guidelines. The most effective and accepted mechanisms for each group of health professionals need to be considered when implementing any new initiative. This may be extended to an investigation of whether different situations, such as the acute and the residential care setting may need different pain management practices and guidelines; that different patient populations, such as older people, have different requirements and desired outcomes for pain management; and that different levels of health care professionals need different educational interventions. The first step on such a multi-goal study is currently being prepared as an ARC Linkage Grant to extend the Targeting Pain project to cover a larger number of acute care settings, in metropolitan and regional hospitals, both nationally and internationally.

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