Abstract of thesis entitled
“An evidence-based guideline on pain management for patients after total
joint arthroplasty”

Submitted by

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Introduction:
Patients received total joint arthroplasty (TJA) experience great pain, which lasted for months postoperatively. Pain interferes their activities of daily living and rehabilitation. Poor rehabilitation may lead to permanent disability, e.g. joint contracture, and increase readmission rate for complications and re-operation. Better pain control helps improve patients’ outcomes. Through patient education, patients receive knowledge on pain management and improve coping, hence lower pain level and improve quality of life.

Objectives:
The objectives of this proposed study are to review, analyze, and synthesize research evidence on education program on pain management in reducing pain and improve quality of life; to develop an evidence-based education program on pain management and an implementation and evaluation plan to reduce pain and improve quality of life of patients after TJA.
Methods:

A literature search was done in PubMed, PsycInfo and Cochrane Library for studies about patient education, pain management and postoperative pain. Relevant studies were assessed for eligibility and critically appraised. Recommendations were made based on the evidence from eligible studies, an evidence-based protocol was formulated based on the recommendations. Transferability, feasibility and cost-benefit ratio of the protocol were assessed. Communication plan and implementation plan were made before fully implementation.

Results:

Base on the evidence, patient education on pain management is effective in reducing postoperative pain. Seven studies were selected and evidence were extracted to formulate the recommendations in the evidence-based protocol.

The education program starts before surgery and is delivered by a registered nurse with a color printed leaflet in a 20-45 minutes of face-to-face education section, and is repeated after 1-2 days postoperatively. Contents of the education include (1) the use of assessment tools; (2) correct the myths and misconception about pain management; (3) the effects and side effects of commonly prescribed analgesics; (4) non-pharmacological pain relief methods; (5) postoperative physiological changes and coping skills. Follow up phone calls are used to reinforce pain coping skills. The visual analog scale is used to measure pain level and SF-36 is used to measure quality of life.
Conclusion:

Patient education is an effective way to enhance patients’ knowledge and self-management efficacy. This pain education can help patient manage postoperative pain and enhance patients’ outcomes. It should be promoted to other surgical units for better nursing care and improve patient outcomes.
An evidence-based guideline on pain management for patients after total joint arthroplasty

by

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A thesis submitted in partial fulfillment of the requirements for the Degree of Master of Nursing at the University of Hong Kong.

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Declaration

I declare that this thesis represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this University or to any other institution for a degree, diploma or other qualification.

Signed …………………………………………………………………………

Lau Sin Man
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An evidence-based guideline on pain management for patients after total joint arthroplasty

1.1 Background

Total joint arthroplasty (TJA) is a common orthopedic procedure all over the world, it includes total knee arthroplasty (TKA) and total hip arthroplasty (THA). Knee osteoarthritis (OA) is a common degenerative disease among the elderly and leads to a certain extent of disability. TKA is an indicated treatment for end-stage knee arthritis, the rate of primary TKA increased five times in Hong Kong over a twenty years’ period (Yuen, 2014). In Singapore, there is no increase in hip disease but three times increase in the number of THA (Singh, Krishna & De, 2010). With the increasing population of TJA, the aftercare of TJA should be focused.

Fast track rehabilitation, which is patient centered and encourage early mobilization, has been used worldwide to facilitate rehabilitation and markedly reduce the average in-patient length of stay (LOS). Evidence shows that it is safe for patient to be discharged home with LOS less than four days (Jorgensen and Kehlet, 2013). Adequate pain control allows faster rehabilitation (Herkowitz, Dirschl & Sohn, 2007) and better pain control would improve patient satisfaction with medical rehabilitation (Berges et al, 2006). Multimodal analgesia has been widely used. It is a combination of different analgesics, by combination of drugs with different mechanism to synergize the effects. The advantage is to use a lower dose to give a better result and with less side effects (Glowacki, 2015). Patient
education on pain may include patients’ role in pain management, dispel myths about pain management, options to control pain and teaching tool (Barnes, 2001).

1.2 Affirming the Need

The target setting is a leading hospital, where 1157 TKRs were done from 2000-2009 (Yan, Chui & Ng, 2011) and 512 primary THRs were done from 1998-2010 (Chan et al., 2016). The aging population contributes to the increase in TJA (Chan et al., 2016) (Yan, Chui & Ng (2011). Osteonecrosis is the most common cause to THA in both male and female. Alcoholism-induced osteonecrosis accounting for more than 50% of male patients, there is an increasing trend in alcoholism in Hong Kong and hence an increase in THA (Chan et al., 2016). Fast tract rehabilitation has been adopted. After TJA, patient is discharged to rehabilitation setting on postoperative day two or day three and is discharged home within a week from rehabilitation hospital. In the rehabilitation hospital, patient receives intensive physiotherapy and occupational therapy, most of the patient rates their pain more than 5 out of 10 during this stage which greatly affect their activities of daily living (ADL) and sleep quality.

At present, multimodal analgesia is used. Analgesia is given to patient by nurses around-the-clock during hospitalization. The effects or side effects of the painkiller are explained by nurse only when enquiry and is based on individual nurses’ knowledge and is inconsistence. Non-pharmacological pain management like applying cold pad and elevation of affected limb are done by physiotherapist or nurses. At the time of discharge, patients are prescribed with different types of
analgesics, but no routine explanations of the difference, the usage and the side effects of analgesics or the non-pharmacological pain management is given to patient. Chan et al. (2013) found that patient undergone TKA experienced moderate to severe pain during the first two weeks at home despite taking at least one opioid, patients were also affected by the opioid related side effects, they reported that information on non-pharmacological methods is inadequate and results show that patient had negative perception regarding analgesics use. Poor pain control inhibits patient’s mobility and rehabilitation, it may increase the risk of developing long term persisting pain.

A phone follow up of thirty post-TJA cases was conducted in the early 2015, around 35.3% of the patient concerned about wound and pain management. Despite there were different types of analgesic prescribed for home use, patients reported that they bought analgesic over the counter or they didn’t take the prescribed analgesic because of the side effects and afraid of addiction to that, which indicated that the pain relief is inadequate. Beside pharmacological intervention, patients are lack of non-pharmacological pain relief method, as those are performed by professional during hospitalization, once they are discharged home, they do not know how to manage and result in poor pain control. Some cases reported severe pain during follow up which is around six weeks post operation and some may even have joint contracture due to immobility after discharge, simply because patient did not want to move with the severe pain. To help patient going through the painful postoperative period at home, a structured education program on pain management is needed. By educating patients and their caregiver with pharmacological and non-pharmacological pain relief method,
a better pain control and quality of life will be achieved. There is a need to establish an evidence-base guideline so that the education program can be done in a systematic and effective way.

In searching the literature, there is no systemic review on pain education before discharge for this group of patient and there is no guideline on this issue for the current setting and in other hospital. There is good evidence from the literature that the preoperative education is effective in relieving postoperative pain but those didn’t address the pain level at home. In current situation, the preoperative education is mainly focused on the workflow of the whole TJA process and a brief introduction on pain medication, there is no continuity between preoperative education and postoperative care. Apparently the existing preoperative education regarding pain management is insufficient. By using good evidence from literature to set up an evidence-based education program for this group of patient can help patients to manage postoperative pain and have a better transition from hospital to home.

1.3 Clinical Questions

The clinical question is:

“What is the effect of a patient education program on pain management to reduce pain level and improve quality of life of patient after total joint arthroplasty?”
1.4 Objectives and Significance

1.4.1 Objectives
The objectives of this study are:

1. To review, analyze, and synthesize research evidence on education program on pain management in reducing pain and improve quality of life.
2. To develop an evidence-based education program on pain management to reduce pain and improve quality of life of patient after total joint arthroplasty.
3. To develop an implementation and evaluation plan for the proposed education program.

1.4.2 Significance
Nurses play an important role in patient education. In many aspects of patient education; e.g. management of insulin injection, asthma control, and dietary compliance for renal failure, etc., nurses get a very good success. Glowacki (2015) stated that patient received pain education results in lower level of distress, better patients’ outcomes. A better postoperative pain control would fasten recovery, increase patients’ quality of sleep, better mobility, increase quality of life and patient’s satisfaction (Innis, et al., 2004).

An evidence-based patient education on pain not only benefit to patient but also nurses. Evidence shows that there is a gap between nurses in saying and doing in postoperative pain management (Dihle, Bjølseth & Helseth, 2004). This may due to superficial and inadequate knowledge about pain and pain management,
approaches may differ amount nurses. With an evidence-based guideline, consistence of care can be reached, knowledge of nurses can be improved and communication with patient can be enhanced.

2.1 Search and Appraisal Strategies

2.1.1 Search engines and search strategy
The searching period was from September to November in 2015. Two electronic databases provided by Yu Chun Keung Medical Library of The University of Hong Kong were used for systemic search: PubMed (1970-2015) and PsycInfo (1978-2015), Cochrane Library was search for any systemic review on the research question. The search was limited to the publication in the year of 2000-2015. Titles and abstracts were screened for review. Those selected literatures were then reviewed in details; inclusion and exclusion criteria were used for further filtering. Remaining journals were critically appraised.

2.1.2 Search Keywords
Base on the research question, patient education and pain management is the main theme, there was no limitation to one type of target group, any group of patient with pain was included. The keywords used were: “total joint arthroplasty”, “patient education”, “nursing intervention”, “postoperative pain” and “pain management”. Different combinations of keywords were used in systemic search.
2.1.3 Selection criteria

Inclusion criteria were: (1) English language with full-text available; (2) Randomized controlled trial or quasi-experimental study; (3) Target group is above age of 18 and is experiencing pain; (4) Pain education as intervention; (5) At least one outcome measure is pain level.

Exclusion criteria were: (1) Study protocol without implementation; (2) Target group is not patients or is mentally incapable; (3) Ambulatory setting, rural setting or home base; (4) Education is not done by nurse; (5) Target group is medical professionals.

2.1.4 Appraisal Strategy

In assessing the quality of the selected studies, the SIGN checklist 2 for controlled trials from Scottish Intercollegiate Guidelines Network (2014) was used to measure the quality of the studies and based on the guideline, the level of evidence was graded. Full appraisal of each study was conducted which included study design, subjects’ characteristics, sample size, randomization, blinding, dropout rate, outcomes measure and effect size.

2.2 Results

2.2.1 Search results

The literature search result was presented in the form of PRISMA 2009 Flow Diagram and shown in Appendix 1. Total forty-one full-text articles, thirty three articles from PubMed and eight articles from PsycInfo, were assessed for eligibility and finally six studies were included in quantitative synthesis.
2.2.2 Table of evidence

Information of the seven studies was summarized in a form of table of evidence. Data including the study type, patient characteristics, intervention given for treatment group and comparison group, length of follow up, outcome measures and effect size were documented. The table of evidence was attached in Appendix 2.

2.2.3 Summarize the appraisal results

According to SIGN (2014), the level of evidence of Syrjaia, et al. (2008) was graded as 1+; Utriyaprasit, et al. (2010), Lovell, et al. (2010) and Yildirim, et al. (2009) were graded as 1- and Grondin, et al. (2014), Chen, et al. (2013); Wong, et al. (2010) were graded as 2+. One study was rated as high quality (++) (Syrjaia, et al., 2008) and six were rated as acceptable (+) (Utriyaprasit, et al., 2010; Lovell, et al., 2010; Yildirim, et al., 2009; Grondin, et al., 2014; Chen, et al., 2013 and Wong, et al., 2010). The SIGN checklist for each individual paper was attached in Appendix 3.

In the study (Syrjaia, et al., 2008) rated as high quality, an appropriate and clearly focused question was addressed. The subjects were randomized to treatment group with well-defined randomization method, e.g. block randomization. In the study, subjects and investigators were kept ‘blind’ about treatment allocation; treatment and control groups were similar at the start of the trial; the only difference is the treatment under investigation and relevant outcomes were measured in a standard, valid and reliable way, for example the use of Brief Pain Inventory and The Barrier Questionnaire. Dropout rate is below 10% in treatment
group, while dropout rate is below 20% in control group but it didn’t mention about the use of intention to treat analysis. The study was conducted in more than one site. The calculation of sample size was mentioned and the level of significance was appropriate. It was certain that the effect was due to the study intervention.

Among the six studies rated as acceptable, the study questions were appropriate and clearly stated. Two studies clearly stated the randomization method (Utriyaprasit, et al., 2010; Lovell, et al., 2010), one did not mention (Yildirim, et al., 2009) and three were quasi-experimental study which is not applicable (Grondin, et al., 2014, Chen, et al., 2013 and Wong, et al., 2010). Concealment method was not mentioned in these six studies, blinding was inadequate in five studies (Utriyaprasit, et al., 2010; Lovell, et al., 2010; Yildirim, et al., 2009; Grondin, et al., 2014, Chen, et al., 2013) and single blinded was achieved in one study (Wong, et al., 2010). The treatment group and control groups were similar at the beginning and the difference between groups was the treatment under investigation. No dropout in two studies (Yildirim, et al., 2009; Chen, et al., 2013), attrition rate was below 10% in Grondin, et al. (2014) and Wong, et al. (2010). In Utriyaprasit, et al. (2010), the attrition rate is around 13.3-15%. The use of intention to treat analysis was not mentioned in four studies except Wong, et al. (2010). A relatively high dropout rate was seen in Lovell, et al. (2010), around 33.3-35%, the main reason was that the participants died or became too ill before the completion of the study; intention to treat analysis was used to reduce bias. Two studies (Lovell, et al., 2010; Wong, et al., 2010) were conducted in more than one site while the others were not. Five studies mentioned the calculation of
sample size and the level of significance was appropriate. It is certain that the effect was due to the study intervention. In one study (Wong, et al., 2010), the calculation of sample size was not mentioned, but the outcomes measure was based on valid measuring tools and with an appropriate level of significance, it is certain that the effect was due to the study intervention.

### 2.3 Summary and Synthesis

#### 2.3.1 Summary
From all the seven studies, education on pain management is an effective way to help patient manage pain and lower their pain level, decrease patient misconception about using analgesics and report their pain level and barrier to pain management (Yildirim, et al., 2009). With the help of family member or caregiver, non-pharmacological methods can be promoted and help patient to control their pain and anxiety (Grondin, et al., 2014). The education program is effective when conducted in several means, a booklet and verbal advice (Grondin, et al., 2014; Yildirim, et al., 2009), or combination of video with a booklet (Lovell, et al., 2010; Syrjaia, et al., 2008). It is effective in different kind of patient with pain, e.g. patient with TJA or traumatic fracture limb, patient received cardiac surgery, and patient with cancer pain. With the evidence in significantly reducing pain level after pain education, it should be included as standard care to patient experiencing pain.
Study design

Four were randomized controlled trial (RCT) (Utriyaprasit, et al., 2010; Lovell, et al., 2010; Yildirim, et al., 2009; Syrjaia, et al., 2008) and three were quasi-experimental study (Chen, et al., 2013; Grondin, et al., 2014; Wong, et al., 2010). All studies examined the effectiveness of a pain education on different aspects, e.g. pain level, satisfaction with pain management, barrier to pain management, anxiety, distress and quality of life, functional status and rehabilitation exercise performance.

Subjects’ characteristics

All participants were of age 18 or above, mean age was around 48-69, and were experiencing pain either from surgery (coronary artery bypass surgery, traumatic fracture limb and TJA) or secondary to a disease (cancer). They were able to read or understand the language (English, French, Thai and Chinese) used in the intervention.

Intervention and control

**Duration of the intervention**

To the intervention group, the time of giving intervention was not mentioned in three studies (Lovell, et al., 2010; Yildirim, et al., 2009; Syrjaia, et al., 2008). Utriyaprasit, et al. (2010) suggested postoperative day 8 or 9. Chen, et al., 2013 suggested once before surgery after hospitalization and repeat on postoperative day 1. Grondin, et al. (2014) suggested before surgery and on postoperative day 2. Wong, et al., 2010 suggested education to be done before surgery. Six studies provided pain education with 20-45 minutes of face-to-face sections and gave patient with printed materials (either a leaflet or a booklet) or videotape or
audiotape for home use (Chen, et al., 2013; Grondin, et al., 2014; Lovell, et al., 2010; Syrjaia, et al., 2008; Yildirim, et al., 2009). In Yildirim, et al. (2009), repeated education session was provided after three and seven days for around 5-15 minutes as required.

**Mode of delivery**

A face-to-face session was given by nurse in six studies (Chen, et al., 2013; Grondin, et al., 2014; Lovell, et al., 2010; Syrjaia, et al., 2008; Yildirim, et al., 2009; Wong, et al., 2010), the content of the materials was introduced to patient during the section, and patient was allowed to ask questions. The printed materials, which were color printed with diagram and pictures or the video were covered in the session to make sure that patient can understand the content and read all the information once, then the materials were given to patient for home use. In Uttriyaprasit, et al. (2010) the audiotape was given to patient for home use and patient was encouraged to listen to the tape for as many times as they felt necessary.

**Content of the education program**

Education session was to revise the contents of the materials with patient by nurse, also to deal with patients’ fear and false belief and related topics such as myth and misconceptions about pain and pain management were included. Patients were equipped with the knowledge of self-assessing pain level by using Visual Analogue Scale (VAS). Definition and cause of pain were covered in five studies (Chen, et al., 2013; Syrjaia, et al., 2008; Yildirim, et al., 2009; Wong, et al., 2010). Pharmacological methods such as the effects and side effects of the prescribed analgesic were told. One study (Lovell, et al., 2010) mentioned that the pain medication
management was based on the pain management ladder suggested by World Health Organization (WHO). Patient was suggested to take the medication according to the severity of pain and should be round the clock. Non-pharmacological methods of pain relief included as cold and hot compress, massage to painful area, elevation of the swollen legs, distraction, relaxation etc. In Utriyaprasit et al. (2010), discharge information about concrete information on physical sensations (e.g. energy level, incision site, muscle sensation and sleeping quality) and helpful behavioral instructions (e.g. moving in and out of bed, slowly adding more activities, and wearing loose clothing) were given to patient. In Chen, et al. (2013), postoperative rehabilitative exercise was told, skill-teaching session was done to make sure patient can perform movement correctly.

To the control group, usual care with no pain education is provided, only routine care by physician and nurses. In Syrjaia, et al. (2008), the control group was given with 15 minutes of video about nutrition training and 20 minutes to review the content with an oncology nurse.

Follow up
Phone follow up was done in one study, which was made three days after the intervention given (Syrjaia, et al., 2008). Follow up call was to reinforce patient with the training materials and was lasted about 10 minutes.

Outcomes
Outcomes were clearly stated in all studies. Pain intensity or pain level was either the primary or secondary outcome measure of all seven studies.
Four studies measured the barrier to treatment (Yildirim, et al., 2009, Lovell, et al., 2010; Syrjaia, et al., 2008; Wong, et al., 2010). Three studies measured the psychological distress, anxiety or depression (Utriyaprasit, et al., 2010; Lovell, et al., 2010; Grondin, et al., 2014). One study (Lovell, et al., 2010) measured the quality of life. Other outcome measures were conducted in different studies, analgesic use or morphine use in three studies (Lovell, et al., 2010; Syrjaia, et al., 2008; Wong, et al., 2010), symptoms frequency (Utriyaprasit, et al., 2010), functional status and rehabilitation exercise performance (Chen, et al., 2013).

Effect size

Pain intensity was measured with different assessment tools with different effect size, but all seven studies resulted in significant reduction in pain intensity with significance ranging from $p<0.001$ to $p<0.05$. Although all the studies obtained significant results, statistically significant does not mean clinical significant. In interpreting the effectiveness of treatment given, it is important to consider the clinical importance of treatment outcomes, that is whether the changes are important or meaningful to patient. The IMMPACT recommendations (Dworkin R.H., 2008) suggested that a 10-20% decrease in pain intensity is considered as minimally important; an equal to or more than 30% decrease is considered as moderately important; an equal to or more than 50% is considered as substantial improvement when using a 0-10 numerical rating scale. A decrease in 1 point in BPI is considered as minimally important. With this reference, it is easier to compare the effectiveness of pain treatment.
Brief pain inventory was used in two studies. In Lovell, et al. (2010), it was measured in 0-10 scale, a reduction of 1.17 in average pain level in the patient group receiving standard care with booklet and video, also a reduction of 1.12 in worse pain was seen in this group which the effect is minimally to moderate important effect to patient. In Syrjaia, et al. (2008), a reduction of 0.81 in pain level was recorded which is a minimally important effect to patient. Cardiac Surgery Symptom Inventory was used in Utriyaprasit, et al. (2010), a subscale of shoulder, back or neck pain/discomfort was measured by VAS and resulted in a reduction of 2.17 in pain level, which provided a nearly moderate important effect to patient. McGill Pain Questionnaire and numeric rating scale in Yildirim, et al. (2009), there was a reduction of present pain level of 4.169 and 5.041 at 2 weeks and 4 weeks respectively, which the effect is moderate important to substantial effect to patient. The Journal Quotidien de Douleur (0-10) was used in Grondin, et al. (2014); it clearly stated that there was an improvement of 47% among experimental group at post-operative day 2 and an improvement of 46% at post-operative day 4, which also provided a moderate important to substantial effect to patient. In Chen, et al. (2013), the effect sizes are 2.3- 4.9 with NRS, which showed a moderate important to substantial effects to patient. In Wong, et al. (2010), the reduction of pain level was around 10%, which showed a minimally important effect to patient.

Four studies measured the barriers to treatment using The Barrier Questionnaire (24 items, 0-5). Two studies showed no difference in barrier
to treatment amount groups (Yildirim, et al., 2009, Lovell, et al., 2010). In
the study by Syrjaia, et al. (2008), significant improvement in fewer
barriers to treatment, a reduction of 0.32, $p<0.001$. In Wong et al. (2010),
it used the Modified Pain Barrier scale (0-35), it showed a significant
effect with reduction of 3.04, $p<0.003$.

Three studies consider about the psychological impact to patient.
Psychological distress, anxiety and depression didn’t shown significant
difference in two studies (Utriyaprasit, et al., 2010; Lovell, et al., 2010).
One study showed 16% improvement in anxiety level by using The French
version of the State-Trait Anxiety Inventory, and $p=0.041$ (Grondin, et al.,
2014).

One study measured the influence on quality of life but it did not show any
difference (Lovell, et al., 2010). Functional status and rehabilitation
exercise performance were measured in Chen, et al. (2013), which showed
no difference.

To conclude, there is enough evidence in supporting the proposed innovation. The
primary objective of this study is to reduce pain level of patient underwent TJA,
evidence from studies with a larger reduction in pain level were selected to
establish the protocol. The effects of pain reduction from evidence showed that
there was minimally to substantial change in all seven studies. According to the
effect size and the clinical significant, a greater reduction in pain level was
achieved in Yildirim, et al. (2009), Grondin, et al. (2014), Utriyaprasit, et al.,

2.3.2 Synthesis

Mode of delivery

Based on these five studies (Yildirim, et al., 2009; Grondin, et al., 2014; Utriyaprasit, et al., 2010; Chen, et al., 2013; Syrjaia, et al., 2008), pain education can be started before surgery with a face-to-face interview of 30-45 minutes and accompany with printed material, as from the evidence showing that interventions including a repeated section of education during the postoperative period resulted in a greater reduction of pain level (Chen, et al., 2013; Grondin, et al., 2014; Yildirim, et al., 2009). The repeated section can be 2-8 days after surgery which last for around 5-15 minutes, with a brief revision on the content of education materials.

Content of the education intervention

The educational material can be a color printed leaflet or booklet (Chen, et al., 2013; Yildirim, et al., 2009; Grondin, et al., 2014; Syrjaia, et al., 2008). Teaching on how to perform self-assessment on pain level with simple tools, e.g. VAS or NRS can be introduced (Yildirim, et al., 2009; Grondin, et al., 2014; Syrjaia, et al., 2008). Pharmacological methods, such as the effects of different analgesic and their side effects should be included (Chen, et al., 2013; Grondin, et al., 2014; Syrjaia, et al., 2008; Yildirim, et al., 2009). The misconception about pain
medication and fears should be addressed within the educational class (Grondin, et al., 2014; Syrjaia, et al., 2008; Yildirim, et al., 2009). As stated in these five studies, non-pharmacological methods with example and instructions should be introduced, e.g. cold and hot compress, relaxation exercise, massage, elevation of affected limbs. As suggested in Utriyaprasit, et al. (2010) and Chen, et al. (2013), concrete information about postoperative physiological changes and coping skills, e.g. pain from incisions line and movement, wearing loose pants and ways to get out of bed, how to walks with aids, would help patient to cope with postoperative pain.

**Follow up and assessment**

Phone follow up after 3 days onward would be appropriate (Syrjaia, et al., 2008). The assessment of pain level would be VAS or NRS (Yildirim, et al., 2009; Grondin, et al., 2014; Syrjaia, et al., 2008), and the assessment of quality of life would be SF-36 (Utriyaprasit, et al., 2010).

These evidences support the innovation to be applied on patient with postoperative pain to help lower their pain level and improve their quality of life. The details of implementation potential bases on transferability, feasibility and cost-benefit ratio, and clinical guideline will be discussed in the next chapter.
3.1 Target setting and target audience

The target setting is a rehabilitation hospital under the HA in HKWC. The rehabilitation hospital consists of a day rehabilitation center and two in-patient wards, both of them serve adult patients. The day rehabilitation center serve patients for pre-operative assessment, post hospitalization care including wound management, rehabilitation exercise and doctor clinics. There are doctors in charge from different specialties, a registered nurse (RN) and several physiotherapists (PT) and occupational therapists (OT) operating the center. The in-patient wards receive patient transferred from large regional acute hospitals. Patients are from different specialties, for example medical, orthopedics and traumatology (O&T) and neurosurgery. There is a mixture of cases, some patients need post-operative care and rehabilitation exercise, some need career training and some need prosthesis training. Majority of the patient are from O&T, they received surgery for fracture bones or TJA, they experience pain with different levels, and need to take multiple analgesics. The two wards are managed by a Ward Manager (WM) and a Nursing Specialist (NS). For those who need orthopedics care would admit to the General ward (GW), which consists of a Advance Practice Nurse (APN), a Nursing officer (NO), 10 RNs and 6 enrolled nurses (EN).

The target audience would be patients who receive TJA and age is mostly above 50. Those patients visit the day rehabilitation center for assessments by PT and OT before operation and are admitted to the in-patient ward after operation, they may need further training after discharge and visit the day rehabilitation center again.
3.2 Transferability

3.2.1 Fit in the proposed setting
The proposed innovation fits in the target setting. As the pain education should start before surgery and repeated after surgery (Gillaspie, 2010). The target setting can accommodate this as the pain education can be delivered by the RN in the day rehabilitation center when patient comes for pre-operative assessment and the education can be repeated in the in-patient ward after patient received surgery.

3.2.2 Philosophy of care
The core value of HA is “patient-centered care”, and the vision is “to provide high-quality services to cure patients and prevent them to be readmitted again. The health care providers act as a supporting role not only to treat their disease but support them with information, encouragement and motivation”. The targeted rehabilitation hospital has similar mission: “restoring to health, self-reliance and economic independence of people with physical disability arising from illness or injury”. The philosophy of care is consistent with the philosophy of the care underlying the innovation. The innovation aims at enhancing patient care through better pain management and hence to improve patients’ quality of life. This is a way to help patient restore normal function and cope with daily activities even with some degrees of disability. It closely meets the mission value of HA and the targeted rehabilitation hospital.
3.2.3 Similarity of the target population

The participants of the seven reviewed studies are adult with the mean age 48-69. Those patients were all suffered from pain. In three studies, the participants were having cancer and suffered from cancer pain (Lovell, et al., 2010; Yildirim, et al., 2009; Syrjaia, et al., 2008). In the other four studies, the participants experienced surgical pain (Utriyaprasit, et al., 2010; Chen, et al., 2013; Grondin, et al., 2014; Wong, et al., 2010) which three among the four studies were describing O&T patient. It is compatible to the target audience. The target audiences are those O&T patient receiving TJA, age are mostly above 50 and most importantly they suffer from pain. The only difference between reviewed studies and target audience is the race. The reviewed studies included a variety of participants who are from Australia (Lovell, et al., 2010), Canada (Grondin, et al., 2014), USA (Syrjala, et al. 2008), Turkey (Yildirim, et al., 2009), Thailand (Utriyaprasit, et al., 2010), Taipei (Chen, et al., 2013) and Hong Kong (Wong, et al., 2010), in which two of them are Chinese. Although the studied participants had different race and ethnicity, all studies produced positive results. It shows that the proposed innovation can be directly transferred to be used in the target audience. The demographics in the target setting are fairly constant as the patients who need TJA are elderly and it didn’t change much in the past.

3.2.4 Number of clients benefit from the innovation

There is sufficiently large number of patient benefit from the innovation. Based on clinical observation, there were more than 200 cases of TJA done in 2014 in HKWC, and the number is in increasing trend. By launching the innovation, more and more patient will be benefit from it.
3.2.5 Skill sets needed for the innovation

The innovation requires nurses to equip with teaching skills and communicating skills. As the target setting is a rehabilitation hospital which prepares patient to return to the community, many different kinds of patient educations have been carried out, e.g. Osteoporosis education, Fall prevention education, Diabetic mellitus education. Nurses in the target setting are experience in patient education. To conclude, the transferability is very high.

3.3 Feasibility

3.3.1 Staffing

The innovation is a nursing practice. Patient education is a kind of nurses’ duty, nurses are equipped with such a skill during training. In the current setting, nurses have to gain approval from the ward manager to initiate a new practice, there is freedom to terminated if it is considered undesirable.

Nurses are placed in the day rehabilitation center and also the in-patient ward, as long as there is nursing staff, patient education can be provided. There is a patient education list in the rehabilitation hospital, nurses have the autonomy to amend the list. Time arrangement is needed, as patient’s exercising schedule is very tight. Beside patients’ schedule, some nurses may be reluctant to change current practice or to accept new things. They may view the innovation as an increase of workload and oppose the establishment.
3.3.2 Administrative support
In recent years, nursing has established its professionalism. Under HA, nursing consultant (NC) has been established for several years. NC carries out researches and support subordinate to conduct nursing researches and provide expert opinion in their specialty. In HKWC, a research committee has been established for two years to cultivate a climate to conduct nursing research, aim at improving patient outcomes and standard of nursing care. The administration supports the use of evidence-base practice (EBP). There are several EBP guidelines being used, e.g. EBP on bowel management and EBP on peripherally inserted central catheter management. The innovation is driven from patient needs with an evidence of a small-scale survey. Both the staff and administrators agreed that the innovation is beneficial to patient and should be tested. The major resistance may be the busy working environment, nurses may worry about the working hours and extra workload from the innovation.

3.3.3 Supports from other departments
In rehabilitation setting, multidisciplinary approach has been used and proved to be the best approach, different departments cooperate well with each other. Information is shared among different parties so that there is no overlapping. The potential friction may be the crushing of patient education and the schedule of other therapy time.

3.3.4 Staff’s knowledge
Nurses are trained with the skills of patient education, but they may not be familiar with the content of pain management program, and some nurses may
have misconception about pain medication and may not have enough knowledge on non-pharmacological pain relief methods. Nurses may not be easily released to learn about and implement the innovation during working hours.

3.3.5 Equipment and facilities

The patient education needs paper for education materials or assessment tools, printers, computers, and some stationary are already available. Venue like conference room is available to provide a quiet environment.

3.3.6 Measuring tools

There are appropriate measuring tools for clinical evaluation, for example, VAS for pain level and Chinese (Hong Kong) SF-36 Health Survey for quality of life.

3.3.7 Timeframes

The timeframes for implementing and evaluating the innovation is about 10 months, which is a reasonable duration. The first month will be the preparation period. Staff education, document and equipment will be prepared within the first months. The pilot test will last for about 8 weeks that include implementation and refining of the protocol. Full-scale intervention will be about 6 months, after that, a review of 4 weeks and result presentation will be done at the end.
3.4 Cost-Benefit Ratio

3.4.1 Potential benefit to patients

In the postoperative period, patients suffer from moderate to severe pain, which interfere their rehabilitation process. For patient underwent TJA, early mobilization can prevent joint stiffness which may lead to long term disability and immobility. Delayed mobilization may lead to surgical related complications, for example, deep vein thrombosis and ileus (Glowacki, 2015). With the implementation of the innovation, patient can manage pain better, with a lower pain level, patient would better cope with rehabilitation like walking and coping of ADL, and is easier to restore their normal bodily function and return to their social life. If the innovation is not being used, patient may continue to suffer from severe postoperative pain and the unrelieved acute pain may result in chronic pain (Chan et al., 2013). Chronic pain is associated with reduced mobility, loss of strength, disturbed sleep, altered immunity and prone to disease. Patients with chronic pain are four times more likely to suffer from depression and anxiety (Brennan, Carr & Cousins, 2007).

3.4.2 Potential benefit to the organization

With the implementation of the innovation, the organization can benefit from cutting down the bed occupancy rate and lower the health care cost. Patient with lower pain level would have a faster rehabilitation and hence shorter length of stay (Gillaspie, 2010). Better mobility would lower the chance of joint stiffness and disability, a better health can lower the chance of readmission and further operation, consequently increase quality of care and patient satisfaction.
3.4.3 Potential benefit to nurse

With the implementation of the pain education program, nursing knowledge and attitudes toward pain may improve, nurses are able to understand more about the nature of pain complaints (Abdalrahim et al., 2011). This can improve the nurse-patient relationship and better patient’s outcomes, leading to an increase in nurses’ job satisfaction and morale.

3.4.4 Potential risk to patients during implementation

There is relatively low risk to patient during the implementation of the innovation. No special treatment or device to be put on patient. Patient only needs to attend an around 30 minutes of pain education class and a 20 minutes repeated section.

3.4.5 Potential cost

In implementing the innovation, materials like paper, printer, ink, computer, stationary, nurses and a room for education are needed. In calculating the salary cost per hour for different post, mean pay was used. In estimating the cost, assume that there will be 200 cases per year which is based on the number of cases admitted in 2014. The total set up cost is $24137 and the total running cost per year is $91206. The details of set up cost and running cost per year of the innovation are listed in two tables and attached in Appendix 4. One important cost which cannot be shown in the table is staff morale. This is an additional workload to the nurses, some nurses may not want to bear this additional work and leading to low morale or absenteeism.
To conclude, it is worth to run the innovation. Although there is time and money spent on the program, patient’s well-being is our main concern. As stated in the “mission, vision, value” of HA, patient-centered care is the core value, we have to cure patients and prevent them to readmit again. Bases on this, we have to provide a high quality of care to prevent patient suffer from complication.

3.5 Evidence-based practice guideline

The development of the EBP guideline was based on the seven reviewed studies. Evidence was extracted from the reviewed studies. Information about subject characteristics, mode of delivery, contents of the education program, follow up method and tools used for evaluation were extracted from the studies and integrated into the EBP guideline. The recommendations and the EBP guideline are attached in Appendix 5. The grade of recommendations is based on the grading system by the Scottish Intercollegiate Guidelines Network (SIGN) as listed in Appendix 6.

The implementation plan will be discussed in the next chapter. The communication plan, plan for pilot study and evaluation will be covered. Finally, the basis for implementation will be defined.
4.1 Communication Plan

4.1.1 Identification of the stakeholders

Stakeholders are those individuals or groups that are affected by or can influence the implementation of a project either promote or hinder the success (Ellen, F. M., Kathleen, W. M., Lynn, G. B., et al., 2011). In this innovation, the stakeholders will be administrators, medical officer, nurses, clerical staff, and health care assistance (HCA).

Administrators

Administrators included the Chief of Service (COS) and Department Operations Manager (DOM) of the three Sandy Bay hospitals. The innovation proposal should pass to the DOM by ward manager (WM) and then pass to the COS for approval. COS and DOM govern the manpower and resources, approval from them to get extra resources to set up and run the program is crucial. Ongoing reports and evaluations should send to them for review and approval for long run.

Medical officer

Doctors in the TJA team can act as an information provider, they can check the information delivered in the education program and provide expert opinion that is related, for example the nature of surgical related pain and the common side effects of different kinds of analgesic. They can provide a list of commonly prescribed analgesics and update the drug list from time to time so that the information given to patient is up-to-dated.
Nurses

As this innovation is a nursing intervention, nurse is the most influential group. They conduct, monitor and collect data of the program. They are the one to contact patient directly and collaborate with other disciplines. The support or against from nurses will determine the success or failure of the program.

Clerical staff and health care assistance (HCA)

Clerical staff and HCA are in a supportive role; they assist in helping nurses to carry out the innovation. Clerical staff helps to format and make copies of the pamphlet, input and export data, also to purchase materials needed. HCAs help to gather patient to the conference room for education, and help nurses to demonstrate non-pharmacological pain relief methods and coping skill if necessary.

4.1.2 Communication plan

A working group composite of ward manager (WM), a nursing officer (NO) and two registered nurses (RN) will be formed. The working group is responsible to formulate the guideline and discusses with administrative personnel in formal meeting. During the meeting, WM will be responsible to present the proposal to DOM and COS, details will be discussed in order to gain approval and support. The proposal will be refined if necessary.

Before implementation, meeting with all nurses to promote the use of EBP and to introduce the new guideline will be held in order to promote the innovation in depth, more importantly is the aim and objective of the innovation. It is very clear
that the philosophy of the innovation is consistent with the core value of the rehabilitation hospital. Inspire nurses with the core value, to provide a high quality of nursing care and to improve patient outcome. Worries and concern from nurses will be addressed, for example the balance of working hours and rest time, official release and extra manpower will be provided to maintain the quality of existing care. Several identical sections will be held to cover all nurses. Times log before hand over duty will be chosen as this is the less busy period. During the meeting, the content of pain management program, pharmacological knowledge, and non-pharmacological method will be introduced. Misconception about pain medication will be discussed. Workshop on non-pharmacological methods will be held, target audience will be nurses and HCA, and the working group will provide hands on practice to all nurses, so that all staffs involved in the program will have enough knowledge and confidence to conduct the program.

The working group will meet with physiotherapist (PT) and occupational therapist (OT) in the TJA team, aiming to introduce the new education program. Some coordination of education information in different discipline will be made, so that there will be no overlapping of contents. Discussion with PT and OT about the appropriate time to administer the program will be carried out hence there will be no crushing of therapy time.

In sustaining the program, the working group will train up three more RN for monitoring and troubleshooting. Their role is to monitor the compliance and the consistency among nurses, and to provide helping hands when some of the nurses encounter problems. They are required to book the venue and borrow the
equipment that is needed for each patient education section. An online forum by email will be established, all nursing staff will be included to get updated information. This facilitates the sharing of successful cases or problems encountered during implementation. The working group will check the email and give response every two days or anytime in needed. The program will be revised after the pilot test; the appropriateness of the education content, patient responses and comment from patient and nurses will be assessed. The program will be revised yearly when it is set as routine, the working group will meet with the team doctors quarterly to update the commonly used analgesics list and discuss about some of the special cases they met during follow up.

4.2 Pilot study plan

A pilot study is to be done before the implementation of a full-scale intervention to determine the feasibility of the proposed change (Melnyk, B. M. & Fineout-Overholt, E., 2005). The pilot test will last for about eight weeks in total. The first six weeks will be the implementation and to get feedback from patient. Nurses’ feedback will be collected in the seventh week. In the last week, conclusion and review of the program will be done. Refining of the clinical guideline will be done based on the result of the pilot test.

4.2.1 Recruitment and implementation

The nurse in day rehabilitation center will do recruitment of target patient when patients come for pre-operative assessment. There are around three cases to be admitted to the rehabilitation center every week. Total around twenty to thirty
patients will be recruited for pilot test. The pilot test will use the elements of the guideline and implement. Beside the primary and secondary outcomes of the innovation, other aspects about nurses and patient will be measured.

4.2.2 Feedback from nurses
At the end of the trial, the working group will distribute questionnaire to all nurses to assess their confidence in using the new guideline, their comment on the usefulness of the education program, time length of the program, the appropriateness of the venue and assessment tools. Nurse’s compliance will be assessed by direct observation and record of patient participation. Nurses are encouraged to express their opinion about the new guideline and any suggestion to improve the quality of the program at the end of the questionnaire.

4.2.3 Feedback from patients
Questionnaire is used to assess patient’s satisfaction about the workflow of the process, length of the program, environment, use of assessment tools and the usefulness of the contents of the education program. At the end of the questionnaire, patients are encouraged to give comment and suggestion on the program. During the phone follow up of patient after discharge, patients will be asked whether they have used the education materials and their perception of the usefulness of the program. The reduction of pain level and improvement of quality of life will be assessed to provide objective data in determine the success of the guideline. Dropout rate will be calculated through record of patient participation.
4.2.4 Feedback from doctors
Those recruited patients will follow up in out-patient clinic and meet the team doctors after discharged from hospital. The working group will meet with the team doctors to get information about patients with complications.

4.2.5 Refining the clinical guideline
The working group will analyze the data collected from the pilot study and evaluate the results. Amendment of the guideline will be made if necessary. After refining the clinical guideline, the working group will meet with stakeholders to update the progress. All nurses will be informed with the updated details and the date of full implementation through the online forum, and then full implementation will be started.

4.3 Evaluation plan

4.3.1 Identifying outcomes to be achieved

1) Patient outcomes
The main objective of the new guideline is to improve patient outcomes through EBP. The primary outcome would be the decrease in pain level and the secondary outcome would be the improvement in quality of life after TJA.

2) Health care provider outcomes
Some of the health care providers who do not believed in EBP need to be exposed to real-case scenarios in which results in better outcomes than conventional practices (Melnyk, B. M. & Fineout-Overholt, E., 2005). The level of satisfaction
among nurses is used to measure the impact of new EBP on nurses. This provides a ground evidence to promote other evidence-based patient education guideline.

3) System outcomes
The total number of patient participated in the EBP guideline, the dropout rate and the running cost will be measured to evaluate the effectiveness of the program.

4.3.2 Nature of clients to be involved
The target patient of the program are all patient who aged over 18 and are on the list of TJA who able to perform out-of-bed activities. For those patient with cognitive impairment and develop delirium after surgery will be excluded (Grondin et al., 2014; Chen et al., 2013).

4.3.3 Sample size calculation
In estimating the sample size, primary outcome was used and it was measured by visual analog scale (VAS). With reference to the literature (Chen et al., 2013), the standard deviation of VAS is 9.97 and the effect size is 3. By using the sample size generator by Lenth (2006-9), one-sampled t test was used, a sample size of 89 with power of 0.8 and significant level of 0.05 was obtained. With the consideration of attrition rate of 5%, a sample size of 93 patients is needed.

4.3.4 Data collection and data analysis
The implementation period will be about a year, all subjects will receive the intervention. Patient outcomes will be measured before the intervention, post-treatment scores will be obtained before discharge from hospital and at follow up
in out-patient clinic. Dependent t-test will be used to compare the difference before and after the intervention at two different data collection time. Nurses’ satisfaction will be collected before and after the implementation of the intervention. Dependent t-test will be used with significant level of 0.05.

1) Patient outcomes
There are two main patient outcomes, one is the pain level and the other one is the quality of life. Patient’s pain level is measured by VAS (Appendix 7) which is a continuous scale comprised of a horizontal line with 10cm in length, respondent is asked to place a line perpendicular to the VAS line at the point that represents their pain level. A higher score indicates greater pain intensity, 0-0.4cm is considered as no pain; 0.5-4.4cm is consider as mild pain; 4.5-7.4cm is consider as moderate pain and 7.5-10cm is considered as severe pain (Hawker et al., 2011).

Chinese (HK) SF-36 Health survey (Appendix 8) will be used to measure patient’s functional status and well-being. It consists of 36 questions to measure functional health and well-being. It measures eight health domains: physical functioning, role-physical, bodily pain, general health, vitality, social functioning, role-emotional and mental health. T-score metric (with a mean of 50 and a standard deviation of 10) is used for the health domain scales (Quality Metric, 2011).

2) Health care provider outcome
A questionnaire (Appendix 9) will be used to assess the level of satisfaction among nurses. The questionnaire composes of 10 questions which assess the level
of satisfaction about the overall program, working committee and self-development and morale. A 5-point Likert score is used, ranging from 1 (strongly disagree) to 5 (strongly agree), total score from 10-50 and a higher score represent a higher satisfaction level. Suggestions for improvement in pain education program and comments are welcomed at the end of the questionnaire. A score higher than 30 will be considered as satisfactory.

3) System outcome
The total number of participation is recorded. A patient who does not use the pain management method after discharge will be counted as dropped out. The cost of the program will be calculated by the working committee and will be reviewed half yearly.

4.4 Basis for implementation
The main outcomes of the proposed program are to reduce the pain level and improve quality of life of patient underwent TJA. As the minimum clinically important difference (MCID) of VAS is 1.37cm (Hawker et al., 2011), a reduction of means VAS score of 1.37 and statistically significant is considered as effective. In measuring improvement of quality of life, an effect larger than 12% of baseline score can be attained and detected as MCID (Angst, Aeschlimann & Stucki, 2001). With this reference, an improvement of 12% from baseline score will be considered as effective.

The satisfaction level of nurses is an issue to determine the effectiveness of the
program. The mean score of the questionnaire above 30 will be considered as effective. Patient participation is a key determinant of the proposed program, a dropout rate of less than 20% will be considered as effective. The running cost of the program is estimated about $91000 a year, majority is the non-material cost of nurses’ salary (as shown in Appendix 4). The need of holding meeting with senior nurse may diminish gradually if the program runs smoothly, so the total cost can be lower from time to time. The cost of the program can be maintained at less than $90000 a year will be considered as effective.

5 Conclusion

This is a start of a patient improvement project. With sufficient evidence from seven critically appraised studies, an evidence-based guideline on pain management for patient after TJA is developed. The implementation potential was assessed bases on transferability, feasibility and cost-benefit ratio. After all the consideration, it is believed that the guideline can be imposed on the target setting. With the guideline, patient receives nursing education on pain management, they can be benefit from better postoperative pain control, resulting a better quality of life.
Appendix 1 PRISMA 2009 Flow Diagram

Records identified through PubMed searching (n = 2425)

Additional records identified through PsycInfo (n = 1298)

Records after duplicates removed (n = 3859)

Records screened (n = 1342)

Records excluded (n = 1309)

Full-text articles assessed for eligibility (n = 41)

Studies included in qualitative synthesis (n = 0)

Studies included in quantitative synthesis (meta-analysis) (n = 7)

Full-text articles excluded, Reasons: Pilot study; Target group is not adult; Studies conducted before year 2000; Interventions are conducted through web/App base or telephone; involving self hypnosis (n = 34)
## Appendix 2 Table of evidence

<table>
<thead>
<tr>
<th>Bibliographic citation</th>
<th>Study type</th>
<th>Patient characteristics</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Length of follow up</th>
<th>Outcome measures</th>
<th>Effect size</th>
</tr>
</thead>
</table>
| Utriyaprasit K. et al. (2010) | RCT 1- | - Aged ≥18  
- First CABG surgery within the last 8-9 days  
- Mentally competent  
- Literate in the Thai language  
- Mean age 63 | - Cardiac Home information program (CHIP) and usual cardiac teaching and discharge instructions as in the control group  
- FU call at 4 weeks (n=51) | - Usual cardiac information (n=52) | 12 months | (1) Symptoms frequency  
- SI (1-7)  
(2) Physical functioning and distress  
- SIP  
(3) Psychological distress  
- POMS (5 points scale) | (1) At 2 weeks: Not significant  
- Shoulders, back or neck pain/discomfort:  
  $t = -2.17, p = 0.008$ At 4 weeks  
- Lack of appetite:  
  $t = -2.81, p = 0.006$  
- Others’ not significant  
(2) At 2 weeks: Statistically not significant  
At 4 weeks:  
Total physical functioning  
$t = -2.93, p = 0.05$  
(3) Not statistically significant |
- Patient with advanced cancer  
- Pain score ≥2 of 10 in last week  
- English proficiency  
- A life expectancy of more than one month  
- Receiving cancer treatment at participating hospitals  
- Mean age 62 | 1) Standard care plus a booklet (B)  
2) Standard care plus a video (V)  
3) Standard care plus a booklet and a video (B+V) | - Standard care (SC), no pain education additional to that routinely provided by nurses or physicians | 42 months | Outcomes measured at week 2 and 4  
(1) Barrier to adequate analgesia  
- BQ (27-items, 0-5)  
(2) Pain  
- BPI (Average and worse pain 0-10)  
(3) Pain management  
- PMI (analgesia used, 0-4)  
- Adequacy of analgesia, PMI-BPI)  
(4) Quality of life  
- Uniscale for Global Quality of life  
(5) Anxiety and depression  
- HADS | (1) No significant differences  
(2) Average pain:  
SC vs. B+V:  
1.17 (0.17, 2.17), p=0.0214  
-Marginal difference SC vs. B; SC vs. V  
Worse pain:  
SC vs. B+V:  
-1.12, (0.00, -2.23), p=0.05  
No difference SC vs. B or SC vs. V  
(3) Reduction in use of opioids  
-B: reduction of 14%  
-V: reduction of 2.5%  
-B+V: reduction 3.5%  
Between intervention groups: no significant  
(4) No significant difference between groups  
(5) Not significant |
Yildirim K.Y. et al. (2009) | RCT | 1- | Aged ≥18 | Pain education Program ~ 30 mins | Standard care | 8 weeks | (1) Pain intensity |  
| | | - Diagnosed with cancer | - The education session was repeated after 3 and 7 days as required and was ~5-15 mins duration. | | | (1) & (2) |  
| | | - Experiencing pain related to cancer, cancer therapy, or illness and currently taking at least second-step analgesic treatment for pain according to WHO | | | At week 2 |  
| | | - With life expectancy of at least 3 months | | | - Present pain: -4.169, p<0.001 |  
| | | - No brain metastasis | | | - Least pain: -2.663, p<0.05 |  
| | | - Able to communicate verbally | | | Satisfaction: 2.436, p<0.05 |  
| | | Mean age 48 | | | At week 4 |  
| | | | | | - Present pain: -5.041, p<0.001 |  
| | | Pain intensity | | | - Least pain: -2.651, p<0.05 |  
| | | MPQ (1-5) | | | Satisfaction: 3.790, p<0.01 |  
| | | - means of NRS | | | At week 8 |  
| | | (2) Satisfaction with pain treatment | | | - Present pain: -4.781, p<0.001 |  
| | | - means of an 11-point NRS (0-10) | | | - Least pain: -3.128, p<0.01 |  
| | | (3) Patient-related barriers to cancer pain management | | | Satisfaction: 4.787, p<0.001 |  
| | | BQ-r (17 items with 2 subscale, 0-5) | | | No significant difference of worse pain between groups |  
| | | Outcomes (1), (2) were measured at the end of week 2,4 and 8 | | | (3) No significant difference |
- Cancer diagnosis with disease-related persistent pain  
- Life expectancy of at least six months  
- Can read and write English  
- **Mean age 55** | - A 30-45 mins training included:  
- A 15 mins videotape about pain training and a handbook reiterated the video is given  
- Follow up phone call after 72 hours  
(n=48) | - A 15 mins video about nutrition training with printed materials  
- An about 20 mins to review the content with an oncology nurse  
- Follow up phone call after 72 hours  
(n=45) | 6 months | Primary:  
(1) Barriers to treatment  
- BQ (24 items, 0-5)  
(2) Pain level  
- BPI (0-10)  
(3) More likely to take prescribed opioids  
- Daily morphine equivalent dose  
Secondary:  
(4) Patient would communicate their pain level more directly to their physicians and nurses  
- self report 0-10 scale | (1) -0.32(±0.09) p<0.001  
(2) -0.81(±0.36) p=0.03  
(3) Increase over time  
(1.1,2.0,3.1, for month 1,3, and 6 respectively) p=0.001  
(4) Gap between physician:  
- 0.92(±0.44), p=0.04  
Gap between nurses:  
- 1.56(±0.47), p=0.001 |
| Grondin F. et al. (2014) | Quasi-experimental | - Aged ≥55  
- On the waiting list for elective hip replacement surgery  
- Able to speak and read French  
- Accompanied by a family member during hospital stay  
- **Mean age 69** | Patient and family-centered education intervention  
Phase 1 (Before surgery):  
- Teaching activities with a booklet ~20mins  
Phase 2 (post-op day 2)  
- Strengthen pain relief strategies  
- Verification of the patient’s pain relief objective  
(n=16) | Usual care (n=17) | 6 months | Primary:  
(1) Pain level after surgery  
- JQDD (0-10)  
Secondary:  
(2) Anxiety level of patient and their families  
- IASTA Y1 & Y2 (4 point Likert scale)  
(3) Use of positive pain coping strategies  
- CSQ (4 point Likert scale) (Post-op day 2 & 4) | (1) Post-op Day 2:  
EG Less intense in pain than CG 5.14 vs 2.75; Mann Whitney: p=0.001  
Improvement of 47% among EG  
Post-op Day 4: 4.00 vs 2.17; Mann Whitney: p=0.010  
Improvement of 46% among EG  
(2) On patients: EG were less anxious than CG (37.00 vs 29.50; Mann Whitney: p=0.041)  
EG show a 16% improvement  
On families:  
No significant improvement  
(3) EG participants used fewer negative pain coping strategies than CG participants.  
-Lower use of ignoring pain intensity (p=0.001) and catastrophizing (p=0.001) |
| Chen S.R. et al. (2013) | Quasi-experimental 2+ | - Having received TKR for the first time
- Aged ≥18
- Exhibiting ambulation and the ability to perform out-of-bed activities preoperatively
- free of postoperative complication
- **Mean age 69** | After hospitalization and before surgery:
- One-on-one health instruction using the educational CD and pamphlets by two trained senior nurse
- Education to patient and family members
Repeated one day after surgery (n=42) | Usual care without education (n=50) | 12 months | (1) Pain level
- NRS (0-10)
(2) Functional status
- subscale from Multidimensional Functional Assessment Questionnaire (0-18)
(3) Rehabilitation exercise performance
-exercise checklist | (1) Worse pain:
(Day 1) $t = 2.427$, $p = 0.017$
(Day 2) $t = 4.958$, $p = 0.000$
(Day 3) $t = 3.510$, $p = 0.001$
Average pain:
(Day 1) $t = 2.894$, $p = 0.005$
(Day 2) $t = 2.829$, $p = 0.006$
(Day 3) not significant
Current pain:
(Day 1) $t = 2.461$, $p = 0.016$
(Day 2) $t = 2.300$, $p = 0.024$
(Day 3) not significant | (2) not significant
(3) only significant in straight leg raise $t = -4.754$, $p = 0.000$

- Ambulatory before injury
- A traumatic limb fracture and undergoing surgery
- No history of chronic pain or cognitive or mental illness
- **Mean age 54** | - Cognitive behavioral approach educational intervention before surgery
~ 30 mins
- Standard care | - Standard care | 9 months | (1) Pain level
- VAS (0-100)
(2) Pain barrier
- Modified Pain Barrier Scale (0-35) | (1) Between subject effect: $F(1.123) = 9.46$, $p = 0.003$
Interaction effect: $F(3, 121) = 4.17$, $p = 0.008$
(2) $t = -3.04$, $p = 0.003$ |
BPI = Brief Pain Inventory
BQ = Barrier Questionnaire
BQ-r = Barrier Questionnaire-Revised
CABG = Coronary Artery Bypass Grafts
CG= control group
CSQ = The Coping Strategies Questionnaire
EG= experimental group
HADS = Hospital Anxiety and Depression Scale
IASTA Y1 & Y2= The French version of the State-Trait Anxiety Inventory
JQDD = The Journal Quotidien de Douleur (daily pain diary)
MPQ= McGill Pain Questionnaire
NRS = Numeric Rating Scale
POMS = Profile of Mood State
PMI = Pain Management Index
SI = Cardiac Surgery Symptom Inventory
SIP = Sickness Impact Profile (three subscales: ambulation, mobility and body care ad movement and the total physical functioning was used)
TENS= Transcutaneous electrical nerve stimulation
VAS= Visual analogue scale
WHO = World Health Organization

## SIGN Methodology Checklist 2: Controlled Trials

**Study identification** *(Include author, title, year of publication, journal title, pages)*
Recovery after coronary artery bypass surgery: effect of an audiotape information programme
Utripyaprasit K., Moore S. M., Chaiser P.
Journal of Advanced Nursing 66 (8), 1747-1759, 2010

<table>
<thead>
<tr>
<th>Guideline topic: Patient educational program on pain</th>
<th>Key Question No: 1</th>
<th>Reviewer:</th>
</tr>
</thead>
</table>

**Before** completing this checklist, consider:
1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+
2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question □ 2. Other reason □ (please specify):

### SECTION 1: INTERNAL VALIDITY

*In a well conducted RCT study...*

<table>
<thead>
<tr>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can't say □ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.1 The study addresses an appropriate and clearly focused question.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can't say □ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2 The assignment of subjects to treatment groups is randomised.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can't say □ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3 An adequate concealment method is used.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can't say □ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.4 Subjects and investigators are kept ‘blind’ about treatment allocation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can’t say ☒ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.5 The treatment and control groups are similar at the start of the trial.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑ Can’t say ☒ No □</td>
</tr>
</tbody>
</table>
The only difference between groups is the treatment under investigation. Yes ☑

All relevant outcomes are measured in a standard, valid and reliable way. Yes ☑

What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? Treatment group: 13.3% Control group: 15%

All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). Yes ☑

Where the study is carried out at more than one site, results are comparable for all sites. Yes ☑

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

How well was the study done to minimise bias? Code as follows:
- High quality (++)
- Acceptable (+)
- Unacceptable – reject

Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? The calculation of sample size is mentioned and the level of significant is appropriated. It is certain that the effect is due to the study intervention.

Are the results of this study directly applicable to the patient group targeted by this guideline? Yes. The information program significantly lower the postoperative pain after discharge and improve patient well being.

Notes. Summarise the authors' conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

Thai CHIP in a form of audiotape improved physical functioning and surgical pain after discharge and had a greatest increase between week 2 & 4. In this study, there was no effect on psychological distress. As a preparatory information can help patient to cope with postoperative pain and improve wellness. It is worthwhile to provide such an intervention to target group.

Limitation: One large urban hospital, limited the generalizability. Likely to represent male experience because o small no. of females. The instruments is translated into Thai, there may be cultural difference.
Methodology Checklist 2: Controlled Trials

Study identification  *(Include author, title, year of publication, journal title, pages)*

Patient training in cancer pain management using integrated print and video materials: a multisite randomized controlled trial

Syrjala K.L. et al.
Pain 135(1-2), 175-186, 2008

<table>
<thead>
<tr>
<th>Guideline topic: Patient educational program on pain</th>
<th>Key Question No: 1</th>
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</thead>
</table>

**Before** completing this checklist, consider:

1. Is the paper a *randomised controlled trial* or a *controlled clinical trial*?  
   If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a *controlled clinical trial* questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question □  2. Other reason □ (please specify):

**SECTION 1: INTERNAL VALIDITY**

*In a well conducted RCT study…*  

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1.1 | The study addresses an appropriate and clearly focused question. ¹ | Yes ☑  
Can’t say □  
No □ |
| 1.2 | The assignment of subjects to treatment groups is randomised. ¹ | Yes ☑  
Can’t say □  
No □ |
| 1.3 | An adequate concealment method is used. ¹ | Yes □  
Can’t say ☑  
No □ |
| 1.4 | Subjects and investigators are kept ‘blind’ about treatment allocation. ¹ | Yes ☑  
Can’t say □  
No □ |
| 1.5 | The treatment and control groups are similar at the start of the trial. ¹ | Yes ☑  
Can’t say □  
No □ |
| 1.6 | The only difference between groups is the treatment under investigation. ¹ | Yes ☑  
Can’t say □  
No □ |
| 1.7 | All relevant outcomes are measured in a standard, valid and reliable way.† | Yes ☑ | No ☐ | Can't say ☐ |
| 1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?† | Treatment group: 6.52%  
Control group: 18.6% |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).† | Yes ☐ | No ☐ | Can't say ☑ |
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites.† | Yes ☑ | No ☐ | Can't say ☐ |

**SECTION 2: OVERALL ASSESSMENT OF THE STUDY**

| 2.1 | How well was the study done to minimise bias?  
*Code as follows:* | High quality (++): ☑  
Acceptable (+): ☐  
Unacceptable – reject: ☐ |

| 2.2 | Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? | The calculation of sample size is mentioned and the level of significant is appropriated. It is certain that the effect is due to the study intervention. |

| 2.3 | Are the results of this study directly applicable to the patient group targeted by this guideline? | Yes, because the intervention is effective to lower pain and it can be applied to target group who experienced pain. |

| 2.4 | **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. | The study included integrated video, printed materials and training content.  
Patient training can improves communication. Reinforcement and follow up might help to maintain the effectiveness of training. Pain and barriers can be reduced with educational efforts. The study was conducted in multisite clinic which provide a wider diversity of participants.  
Limitation: Some contamination may be contributed by slight, not significant improvement on all outcomes in the control group. |
### Methodology Checklist 2: Controlled Trials

#### Study identification
*Include author, title, year of publication, journal title, pages*

Effects of pain education program on pain intensity, pain treatment satisfaction, and barriers in Turkish cancer patients

Yildirim Y.K. et al.


<table>
<thead>
<tr>
<th>Guideline topic: Patient patient education on pain</th>
<th>Key Question No: 1</th>
<th>Reviewer:</th>
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**Before** completing this checklist, consider:

1. Is the paper a *randomised controlled trial* or a *controlled clinical trial*? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a *controlled clinical trial* questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

**Reason for rejection:**
1. Paper not relevant to key question □
2. Other reason □ (please specify):

#### SECTION 1: INTERNAL VALIDITY

*In a well conducted RCT study…*

<table>
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<th>Does this study do it?</th>
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</thead>
<tbody>
<tr>
<td>Yes ☑</td>
</tr>
<tr>
<td>Can’t say ☐</td>
</tr>
<tr>
<td>No ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 The study addresses an appropriate and clearly focused question. 1</td>
<td>Yes ☑</td>
</tr>
<tr>
<td>1.2 The assignment of subjects to treatment groups is randomised. 1</td>
<td>Yes ☑</td>
</tr>
<tr>
<td>1.3 An adequate concealment method is used. 1</td>
<td>Yes ☑</td>
</tr>
<tr>
<td>1.4 Subjects and investigators are kept ‘blind’ about treatment allocation. 1</td>
<td>Yes ☑</td>
</tr>
<tr>
<td>1.5 The treatment and control groups are similar at the start of the trial. 1</td>
<td>Yes ☑</td>
</tr>
<tr>
<td>1.6 The only difference between groups is the treatment under investigation. 1</td>
<td>Yes ☑</td>
</tr>
</tbody>
</table>
1.7 | All relevant outcomes are measured in a standard, valid and reliable way.\(^1\) | Yes ☑ | No ☐ | Can’t say □
|---|---|---|---|---|
1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?\(^1\) | No dropout. |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis).\(^1\) | Yes ☑ | No ☐ | Can’t say □ | Does not apply □
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites.\(^1\) | Yes ☐ | No ☑ | Can’t say □ | Does not apply □

### SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1 | How well was the study done to minimise bias?  
*Code as follows:*\(^1\) | High quality (++)(□)  
Acceptable (+)(☑)  
Unacceptable – reject 0 □ |
| --- | --- | --- | --- |
2.2 | Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? | The calculation of sample size is mentioned and the level of significant is appropriated. It is certain that the effect is due to the study intervention. |
2.3 | Are the results of this study directly applicable to the patient group targeted by this guideline? | Yes, because the intervention is effective to lower pain and it can be applied to target group who experienced pain. |
2.4 | **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. | Pain education intervention is effective to lower patient’s pain, increase their satisfaction with pain treatment.  
Limitation: its generalizability is limited because it is conducted in a single institution and relatively small sample size. |
Methodology Checklist 2: Controlled Trials

Study identification  *(Include author, title, year of publication, journal title, pages)*
A randomized controlled trial of a standardized educational intervention for patients with cancer pain

Guideline topic: Patient educational program on pain 

<table>
<thead>
<tr>
<th>Key Question</th>
<th>Reviewer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>No: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Before** completing this checklist, consider:

1. Is the paper a *randomised controlled trial* or a *controlled clinical trial*?  
   If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a *controlled clinical trial* questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+  
2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question 2. Other reason

(please specify):

**SECTION 1: INTERNAL VALIDITY**

*In a well conducted RCT study…*  

<table>
<thead>
<tr>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☑  Can’t say ☐  No ☐</td>
</tr>
</tbody>
</table>

1.1 The study addresses an appropriate and clearly focused question.  
1.2 The assignment of subjects to treatment groups is randomised.  
1.3 An adequate concealment method is used.  
1.4 Subjects and investigators are kept ‘blind’ about treatment allocation.  
1.5 The treatment and control groups are similar at the start of the trial.  
1.6 The only difference between groups is the treatment under investigation.
1.7 All relevant outcomes are measured in a standard, valid and reliable way. Yes ☑ No ☐ Can’t say ☐

1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed?

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dropout Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard group</td>
<td>38.89%</td>
</tr>
<tr>
<td>Video only</td>
<td>35.29%</td>
</tr>
<tr>
<td>Booklet only</td>
<td>33.33%</td>
</tr>
<tr>
<td>Video &amp; Booklet</td>
<td>34.43%</td>
</tr>
</tbody>
</table>

1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). Yes ☑ Can’t say ☐ No ☐ Does not apply ☐

1.10 Where the study is carried out at more than one site, results are comparable for all sites. Yes ☑ Can’t say ☐ No ☐ Does not apply ☐

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1 How well was the study done to minimise bias? Code as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>++</td>
<td>High quality</td>
</tr>
<tr>
<td>+</td>
<td>Acceptable</td>
</tr>
<tr>
<td>–</td>
<td>Unacceptable – reject</td>
</tr>
</tbody>
</table>

2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? The calculation of sample size is mentioned and the level of significant is appropriated. It is certain that the effect is due to the study intervention.

2.3 Are the results of this study directly applicable to the patient group targeted by this guideline? Yes. The patient of the study was the same as the target group and both having similar experiences.

2.4 Notes. Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

The study included a wide diversity of participants, which increase the generalizability. Results showing that the combination of video and booklet is the most effective. Limitation: Blinding is not applied and it may introduce bias. The high attrition rate is due to high mortality rate of participants.
Methodology Checklist 2: Controlled Trials

Study identification  *(Include author, title, year of publication, journal title, pages)*
Intervention focused on the patient and family for better postoperative pain relief
Grondin F., Bourgault P., Bolduc N.
Pain Management Nursing, 15(1), 76-86, March 2014

<table>
<thead>
<tr>
<th>Guideline topic: Patient educational program on pain</th>
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<th>Reviewer:</th>
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1. Is the paper a *randomised controlled trial* or a *controlled clinical trial*? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a *controlled clinical trial* questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question ☐ 2. Other reason ☐ (please specify):

**SECTION 1: INTERNAL VALIDITY**

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<tr>
<th>In a well conducted RCT study…</th>
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<tbody>
<tr>
<td>1.1 The study addresses an appropriate and clearly focused question.</td>
<td>Yes ☑ Can’t say ☐ No ☐</td>
</tr>
<tr>
<td>1.2 The assignment of subjects to treatment groups is randomised.</td>
<td>Yes ☐ Can’t say ☐ No ☐</td>
</tr>
<tr>
<td>1.3 An adequate concealment method is used.</td>
<td>Yes ☐ Can’t say ☐ No ☐</td>
</tr>
<tr>
<td>1.4 Subjects and investigators are kept ‘blind’ about treatment allocation.</td>
<td>Yes ☑ Can’t say ☐ No ☐</td>
</tr>
<tr>
<td>1.5 The treatment and control groups are similar at the start of the trial.</td>
<td>Yes ☑ Can’t say ☐ No ☐</td>
</tr>
<tr>
<td>1.6 The only difference between groups is the treatment under investigation.</td>
<td>Yes ☑ Can’t say ☐ No ☐</td>
</tr>
</tbody>
</table>
1.7 All relevant outcomes are measured in a standard, valid and reliable way. Yes ☑ No ☐ Can’t say ☐

1.8 What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? Treatment group: 0% Control group: 5.88%

1.9 All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). Yes ☐ Can’t say ☐ No ☑ Does not apply ☐

1.10 Where the study is carried out at more than one site, results are comparable for all sites. Yes ☐ Can’t say ☐ No ☑ Does not apply ☐

SECTION 2: OVERALL ASSESSMENT OF THE STUDY

2.1 How well was the study done to minimise bias? Code as follows:
- High quality (++) ☐
- Acceptable (+) ☑
- Unacceptable – reject 0 ☐

2.2 Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? The calculation of sample size is mentioned and the level of significant is appropriated. It is certain that the effect is due to the study intervention.

2.3 Are the results of this study directly applicable to the patient group targeted by this guideline? Yes. The patient of the study is the same and shares similar characteristic. They both have similar experiences.

2.4 Notes. Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

Patients benefit more when health professionals and family members work together.

Limitation: Lack of randomization that limited the generalization.
### Methodology Checklist 2: Controlled Trials

#### Study identification (Include author, title, year of publication, journal title, pages)

The effect of educational intervention on the pain and rehabilitation performance of patients who undergo a total knee replacement

Chen S.R., Chen C.S., Lin P.C.

#### Before completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+

2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

#### Reason for rejection:

1. Paper not relevant to key question □  2. Other reason □ (please specify):

#### SECTION 1: INTERNAL VALIDITY

**In a well conducted RCT study...**

<table>
<thead>
<tr>
<th></th>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The study addresses an appropriate and clearly focused question.¹</td>
</tr>
<tr>
<td>1.2</td>
<td>The assignment of subjects to treatment groups is randomised.¹</td>
</tr>
<tr>
<td>1.3</td>
<td>An adequate concealment method is used.¹</td>
</tr>
<tr>
<td>1.4</td>
<td>Subjects and investigators are kept ‘blind’ about treatment allocation.¹</td>
</tr>
<tr>
<td>1.5</td>
<td>The treatment and control groups are similar at the start of the trial.¹</td>
</tr>
<tr>
<td>1.6</td>
<td>The only difference between groups is the treatment under investigation.¹</td>
</tr>
</tbody>
</table>
### SECTION 2: OVERALL ASSESSMENT OF THE STUDY

| 2.1 | How well was the study done to minimise bias?  
*Code as follows:* | High quality (++)$\square$  
Acceptable (+)$\checkmark$  
Unacceptable – reject 0 $\square$
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.2</strong></td>
<td>Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention?</td>
</tr>
<tr>
<td><strong>2.3</strong></td>
<td>Are the results of this study directly applicable to the patient group targeted by this guideline?</td>
</tr>
</tbody>
</table>
| **2.4** | **Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above. | The additional educational section to postoperative period significantly helps to improve the pain level when compare to single educational section before surgery.  
Limitation: Lack of randomization that limited the generalization. More women then men participants in this study. |
Methodology Checklist 2: Controlled Trials

Study identification  (*Include author, title, year of publication, journal title, pages*)
The effect of educational intervention on pain beliefs and postoperative pain relief among Chinese patients with fractured limbs
Wong E., Chan S., Chair S.Y.

### Guideline topic: Patient educational program on pain

### Key Question No: 1

### Reviewer:

#### Before completing this checklist, consider:

1. Is the paper a **randomised controlled trial** or a **controlled clinical trial**? If in doubt, check the study design algorithm available from SIGN and make sure you have the correct checklist. If it is a **controlled clinical trial** questions 1.2, 1.3, and 1.4 are not relevant, and the study cannot be rated higher than 1+
2. Is the paper relevant to key question? Analyse using PICO (Patient or Population Intervention Comparison Outcome). IF NO REJECT (give reason below). IF YES complete the checklist.

Reason for rejection: 1. Paper not relevant to key question □ 2. Other reason □ (please specify):

### SECTION 1: INTERNAL VALIDITY

<table>
<thead>
<tr>
<th>In a well conducted RCT study…</th>
<th>Does this study do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 The study addresses an appropriate and clearly focused question.¹</td>
<td>Yes ☑ Can't say □ No □</td>
</tr>
<tr>
<td>1.2 The assignment of subjects to treatment groups is randomised.¹</td>
<td>Yes ☑ Can't say □ No □</td>
</tr>
<tr>
<td>1.3 An adequate concealment method is used.¹</td>
<td>Yes ☑ Can't say □ No □</td>
</tr>
<tr>
<td>1.4 Subjects and investigators are kept ‘blind’ about treatment allocation.¹</td>
<td>Yes ☑ Can’t say □ No □</td>
</tr>
<tr>
<td>1.5 The treatment and control groups are similar at the start of the trial.¹</td>
<td>Yes ☑ Can’t say □ No □</td>
</tr>
<tr>
<td>1.6 The only difference between groups is the treatment under investigation.¹</td>
<td>Yes ☑ Can’t say □ No □</td>
</tr>
<tr>
<td>1.7</td>
<td>All relevant outcomes are measured in a standard, valid and reliable way.</td>
</tr>
</tbody>
</table>
| 1.8 | What percentage of the individuals or clusters recruited into each treatment arm of the study dropped out before the study was completed? | Treatment group: 3.3%  
Control group: 3.2% |
| 1.9 | All the subjects are analysed in the groups to which they were randomly allocated (often referred to as intention to treat analysis). | Yes ☑ No □ Can’t say □  
Does not apply □ |
| 1.10 | Where the study is carried out at more than one site, results are comparable for all sites. | Yes ☑ No □ Can’t say □  
Does not apply □ |

**SECTION 2: OVERALL ASSESSMENT OF THE STUDY**

| 2.1 | How well was the study done to minimise bias?  
*Code as follows:* | High quality (++))☑  
Acceptable (+)☑  
Unacceptable – reject 0 □ |
| 2.2 | Taking into account clinical considerations, your evaluation of the methodology used, and the statistical power of the study, are you certain that the overall effect is due to the study intervention? | The calculation of sample size is not mentioned but the same size was large enough, total 125. The level of significant was appropriated. It is certain that the effect is due to the study intervention. |
| 2.3 | Are the results of this study directly applicable to the patient group targeted by this guideline? | Yes, the target population are similar. |

**Notes.** Summarise the authors’ conclusions. Add any comments on your own assessment of the study, and the extent to which it answers your question and mention any areas of uncertainty raised above.

The participants in the study were Chinese which culture and beliefs are similar to the target population. The reduction in pain level may result from changes in cognitive factors and behavioral factors, also the amount of analgesic used.

Limitation: it is a quasi-experimental study which limited the generalization. It may not be able to apply to non-Chinese ethnic.
## Appendix 4  Set up cost and running cost per year

### Set up cost

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Estimated cost (HKD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WM, NS, APN, NO</td>
<td>Meeting for preparation ($336/hour), total 10 hours with 4 person</td>
<td>$13440</td>
</tr>
<tr>
<td>2 RN</td>
<td>Meeting for preparation ($217/hour), total 10 hours</td>
<td>$4340</td>
</tr>
<tr>
<td>8 RN</td>
<td>Working hours for 1 hour training section ($217/hour)</td>
<td>$1736</td>
</tr>
<tr>
<td>6 EN</td>
<td>Working hours for 1 hour training section (163/hour)</td>
<td>$978</td>
</tr>
<tr>
<td>Clerk</td>
<td>Working hours for pamphlet preparation ($70/hour), 10 hours</td>
<td>$700</td>
</tr>
<tr>
<td>Material cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pamphlet</td>
<td>200 Color printed copies ($10/copy)</td>
<td>$2000</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>200 copies in black and white ($2/copy)</td>
<td>$400</td>
</tr>
<tr>
<td>License fee of Chinese (HK) SF-36</td>
<td></td>
<td>$543</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>$24137</strong></td>
</tr>
</tbody>
</table>

### Running Cost per year

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Estimated cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM, NS, APN, NO</td>
<td>Meeting for on-going process and evaluation ($336/hour), total 30 hours</td>
<td>$40320</td>
</tr>
<tr>
<td>2 RN</td>
<td>Meeting for on-going process and evaluation ($217/hour), total 30 hours</td>
<td>$13020</td>
</tr>
<tr>
<td>RN in day rehabilitation center</td>
<td>Pre-operative education 30 minutes for each case, total 200 cases</td>
<td>$21700</td>
</tr>
<tr>
<td>RN/EN in in-patient ward</td>
<td>Post-operative repeated section with 20 minutes each, total 200 cases (assume 100 cases by RN and 100 cases by EN)</td>
<td>$12666</td>
</tr>
<tr>
<td>Clerk</td>
<td>Data entry, 50 hours</td>
<td>$3500</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>$91206</strong></td>
</tr>
</tbody>
</table>
Appendix 5  Evidence base guideline

Title:
An evidence-based guideline on pain management for patients after total joint arthroplasty.

Background:
Patient underwent TJA experience great pain postoperatively. The existing pain education before operation is insufficient and there is no structured postoperative pain education for patient before discharge. Consensus for pre-operative and postoperative pain education is not achieved. As a result, there is a need to establish a protocol for nurses to educate this group of patient, so that patient can better cope with postoperative pain and facilitate patient return to their normal life.

Aim:
Reduce pain level and improve quality of life of patient underwent TJA.

Objectives:
1. Summarized the clinical evidence for pain education for patient underwent TJA.
2. Formulate teaching process and materials for nurses to provide pain education based on the best evidence available.
3. Increase the efficiency and effectiveness of pain education by aligning the pre-operative and post-operative pain education.

Intended users:
The target users will be the registered or enrolled nurses working in rehabilitation day center and rehabilitation ward who care patients underwent TJA.
Target group:
Patients who are going to perform TJA attending the rehabilitation day center and admitted to rehabilitation ward.

Recommendations:

1) Patients who are going to receive surgery and is ambulatory is selected. (Grade of recommendation: B)

Patients who are on the list of operation (Grondin et al., 2014; Chen et al., 2013)(2+) and are is ambulatory and able to perform out-of-bed activities are selected (Chen et al., 2013).

2) Education should start before surgery and repeated after 1-2 days postoperatively. (Grade of recommendation: B)

Two studies suggested that patient education should start before surgery (Grondin et al., 2014; Chen et al., 2013)(2+). Repeated section was done in three studies (Grondin et al., 2014; Chen et al., 2013; Yildirim et al., 2009) (2+, 2+, 1+).

3) A 20-45 minutes face-to-face pain educational intervention to patient with or without career preoperatively and a 5-15 minutes repeated section postoperatively. A leaflet printed in color will be given to patient after the section. (Grade of recommendation: A)

Four studies provided pain education accompany with printed materials either in a form of pamphlet (Chen et al., 2013) (2+) or booklet (Yildrium et al., 2009; Syrjala et al., 2008; Grondin et al., 2014) (1-, 1+, 2+). The duration of the education ranging from around 20 minutes (Grondin et al., 2014) (2+), 25 minutes (Chen et al., 2013)(2+) to 30-45 minutes (Yildrium
et al., 2009; Syrjala et al., 2008) (1+, 1+), repeated section is about 5-15 minutes (Yildrium et al., 2009).

4) **Content of the education include:** 1) **The use of assessment tools;** 2) **Correct the myths and misconceptions about pain management;** 3) **The effects and side effects of commonly prescribed analgesics;** 4) **Non-pharmacological pain relief methods;** 5) **Postoperative physiological changes and coping skills. (Grade of recommendation: A)**

Three studies taught patient how to assess pain with tools like the visual analog scale (VAS) or Numeric rating scale (NRS) (Yildrium et al., 2009; Grondin et al., 2014; Chen et al., 2013) (1-, 2+, 2+).

Correct the myths and misconceptions about pain management, e.g. addiction, drugs dependence, tolerance were mentioned in two studies (Yildrium et al., 2009; Grondin et al., 2014) (1-, 2+).

The effects and side effects of commonly prescribed analgesics were mentioned in two studies (Yildrium et al., 2009; Syrjala et al., 2008) (1-, 1+).

Non-pharmacological pain relief methods were mentioned in three studies (Utriyaprasit et al., 2010; Yildrium et al., 2009; Chen et al., 2013) (1-, 1-, 2+). Such as cold and heat therapy to painful area (Yildrium et al., 2009; Chen et al., 2013), massage to painful area (Yildrium et al., 2009), relaxation exercise (Yildrium et al., 2009) and elevation of affected limbs (Utriyaprasit et al., 2010).

As suggested in Utriyaprasit et al. (2010) and Chen et al. (2013), concrete information about postoperative physiological changes and coping skills,
e.g. pain from incisions line and movement, wearing loose pants and ways to get out of bed, how to walks with aids.

5) **Follow up phone call after 72 hours to strengthen pain coping skills.**

   *(Grade of recommendation: A)*

   Follow up phone call was used to reinforce the learning from training which last about 10 minutes (Syrijala et al., 2008) (1+).

6) **Visual analog scale or Numeric rating scale is used to measure pain level and SF-36 is used to measure quality of life.** *(Grade of recommendation: A)*

   VAS was used in one study (Utriyaprasit, et al., 2010) (1-), NRS was used in two studies, both agreed that NRS is reliable and validated scale, and is frequently used scale. (Yildrium, et al., 2009; Chen, et al., 2013) (1-, 2+).

   In Utriyaprasit, et al. (2010) study, SF-36 was used to measure quality of life.
The pain education guideline

| Target group | ● On list of operation for total joint arthroplasty  
|             | ● Ambulatory  
|             | ● Able to perform out-of-bed activities |

<table>
<thead>
<tr>
<th>Preoperative period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person to conduct</td>
</tr>
<tr>
<td>Intervention</td>
</tr>
</tbody>
</table>
|                     | ● 20-45 minutes Face-to-face  
|                     | ● Pamphlet |
| Contents            | ● The use of assessment tools  
|                     | ● The effects and side effects of commonly prescribed analgesics  
|                     | ● Non-pharmacological pain relief methods  
|                     | ● Postoperative physiological changes and coping skills |

<table>
<thead>
<tr>
<th>Postoperative period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person to conduct</td>
</tr>
<tr>
<td>Intervention</td>
</tr>
</tbody>
</table>
|                      | ● 5-15 minutes Face-to-face  
|                      | ● Pamphlet given preoperatively |
| Contents             | Repeated preoperative education content |

<table>
<thead>
<tr>
<th>Follow up</th>
</tr>
</thead>
</table>
| Mode of delivery | ● Telephone call  
|                 | ● 72 hours after discharge home |
| Contents       | ● Strengthen pain coping skills |
## Appendix 6  Key to Grade of Recommendations from Scottish Intercollegiate Guidelines Network (2014)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1++ or 1+</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; Extrapolated evidence from studies rated as 2++</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2+</td>
</tr>
</tbody>
</table>
Appendix 7 Visual analog scale

No pain

Worst pain ever

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
Appendix 8 The Chinese (Hong Kong) SF-36 Health Survey

簡明健康狀況調查表 – 香港中文譯本

Eight HRQOL Domains (八項健康生活質數範疇)

- Physical functioning - 體能
- Role-physical - 日常活動
- Bodily Pain - 身體痛楚
- General Health - 整體健康
- Vitality - 精力
- Social Functioning - 社交活動
- Role-emotional - 日常活動 (心理健康的影響)
- Mental Health - 心理健康

簡明健康狀況調查表 (SF-36)

1. 總括來說，你認為你的健康狀況是：(只圈出一個答案)

極好 ................................................................. 1
很好 ................................................................ 2
好 .................................................................. 3
一般 ................................................................ 4
差 ................................................................... 5

2. 和一年前比較，你認為你目前全面的健康狀況如何？

(只圈出一個答案)

比一年前好多了 ............................................ 1
比一年前好一些 ............................................ 2
和一年前差不多 .......................................... 3
比一年前差一些 .......................................... 4
比一年前差多了 .......................................... 5
3. 下列問題是關於日常生活中可能進行的活動。以你目前的健康狀況，你在進行這些活動時，有沒有受到限制？如有的話，程度如何？

(每項只圈出一個答案)

<table>
<thead>
<tr>
<th>活動</th>
<th>有很大限制</th>
<th>有一點限制</th>
<th>沒有任何限制</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 劇烈運動, 比如跑步, 搬重物, 或參加劇烈的體育活動</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b. 中等強度的活動, 比如搬桌子, 使用吸塵器清潔地面, 玩保齡球或打太極拳</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c. 提起或攜帶蔬菜, 食品或雜貨</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>d. 上幾層樓梯</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>e. 上一層樓梯</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>f. 彎腰, 跪下或俯身</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>g. 步行十條街以上 (一公里)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>h. 步行幾條街 (幾百米)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>i. 步行一條街 (一百米)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>j. 自己洗澡或穿衣服</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

4. 在過去四個星期裏，你在工作或其他日常生活中，有多少時間會因為身體健康的原因而遇到下列的問題？

(每項只圈出一個答案)

<table>
<thead>
<tr>
<th></th>
<th>常常如此</th>
<th>大部分時間</th>
<th>有時</th>
<th>偶爾</th>
<th>從來沒有</th>
</tr>
</thead>
<tbody>
<tr>
<td>a 減少了工作或其他活動時間</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b 實際做完的比想做的要少</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c 工作或其他活動的種類受到限制</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d 進行工作或其他活動時有困難 (比如覺得更為吃力)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
5. 在過去四個星期裡，你在工作或其他日常生活中，有多少時間由於情緒方面的原因（比如感到沮喪或焦慮）遇到下列的問題？

(每項只圈出一個答案)

<table>
<thead>
<tr>
<th></th>
<th>常常如此</th>
<th>大部分時間</th>
<th>有時</th>
<th>偶爾</th>
<th>從來沒有</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 減少了工作或其他日常活動的時間</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. 實際做完的比想做的要少</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. 工作時或從事其他活動時不如往常細心了</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. 在過去四個星期裡，你的身體健康或情緒問題在多大程度上妨礙了你與家人、朋友、鄰居或社團的日常社交活動？

(只圈出一個答案)

毫無妨礙 ........................................................................ 1

有很少妨礙 ...................................................................... 2

有一些妨礙 ...................................................................... 3

有較大妨礙 ...................................................................... 4

有極大妨礙 ...................................................................... 5

7. 在過去四個星期裡，你的身體有沒有疼痛，如果有的話，疼痛到什麼程度？

(只圈出一個答案)

完全沒有 .......................................................................... 1

很輕微 .............................................................................. 2

輕微 .................................................................................. 3

有一些 .............................................................................. 4

劇烈 .................................................................................. 5

非常劇烈 .......................................................................... 6
8. 在過去四個星期裡，你身體上的疼痛對你的日常工作（包括上班和家務）有多大影響？

（只圈出一個答案）

毫無影響 ............................................................... 1
有很少影響 ............................................................ 2
有一些影響 ........................................................... 3
有較大影響 ........................................................... 4
有極大影響 ........................................................... 5

9. 下列問題是有關你在過去星期裡你覺得怎樣和你其他的情況。針對每個問題，請選擇一個最接近你感覺的答案。

在過去四個星期裡有多少時間： （每項只圈出一個答案）

<table>
<thead>
<tr>
<th></th>
<th>常常如此</th>
<th>大部分時間</th>
<th>有時</th>
<th>偶爾</th>
<th>從來沒有</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 你覺得充滿活力?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. 你覺得精神非常緊張?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. 你覺得情緒低落，以致於沒有任何事能使你高興起來?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d. 你感到心平氣和?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e. 你感到精力充足?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f. 你覺得心情不好，悶悶不樂?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>g. 你感到筋疲力盡?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>h. 你感到快樂?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>i. 你覺得疲倦?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
10. 在過去四個星期裡, 有多少時間由於你的身體健康或情緒問題妨礙了你的社交活動 (比如探親、訪友等)?

(只圈出一個答案)

常常有妨礙 ................................................................. 1
大部分時間有妨礙 .................................................. 2
有時有妨礙 ................................................................. 3
偶爾有妨礙 ................................................................. 4
完全沒有妨礙 ............................................................... 5

11. 如果用下列的句子來形容你, 你認為有多正確?

(每項只圈出一個答案)

<table>
<thead>
<tr>
<th>a 你好像比別人更容易生病</th>
<th>肯定對</th>
<th>大致對</th>
<th>不知道</th>
<th>大致不對</th>
<th>肯定不對</th>
</tr>
</thead>
<tbody>
<tr>
<td>b 你好像所有你認識的人一樣健康</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c 你覺得自己的身體狀況會變壞</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d 你的健康極好</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix 9   Staff Satisfaction Questionnaire
Title: An evidence-based education program on pain management for patient after total joint arthroplasty
Please provide feedback about the course by circling the number that best represents your response:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) I felt satisfied about the program.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2) The program has clear aims and objective.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3) The guidelines, educational materials and assessment tools are clear and easy to use.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4) The length of the program is appropriate.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Working committee</strong></td>
<td></td>
<td></td>
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<tr>
<td>5) The working committee provided clear instructions.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6) I received adequate support from working committee during implementation.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Self-development &amp; morale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7) I became competent in pain education after the implementation of the guideline.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8) The program provides me confidence in evidence-based practice (EBP).</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9) I am willing to develop EBP in the future.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10) The use of EBP gave me a sense of personal accomplishment.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12) What can be improved regarding the pain education program?</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13) Other Comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name: _______________________ (Optional)   Rank: ____________

Thank you for your participation in the program
Reference


(MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain.

*Arthritis Care & Research, 63*(S11), S240-S252.


http://www.sign.ac.uk/methodology/checklists.html


